Index of Enclosures from the Office of Inspector General

Document 36. Undated document entitled "Official Delegation to India Plane List." Information deleted under Exemptions 6 and 7(C) by the Office of Inspector General. 5 pages. (F2002-00020)

Document 37. Document entitled "Economic Benefits of Trade Missions." 66 pages. (F2002-00020)

Document 39. Document entitled "Comments from the Private Sector about Department of Energy Trade Missions (1994-1995)." 6 pages. (F2002-00020)

Document 40. Document entitled "Excerpts from August 8, 1994 letter to President Clinton from 32 Industry Participants of 1994 Presidential Mission to India." 3 pages. (F2002-00020)

Document 41. Memorandum to Policy Office, 83 Staff, from Steven Lee, Policy Office-83, dated October 3, 1995, with one attachment. Subject: Summary of Total Business Agreements. 2 pages. (F2002-00020)

A. Document entitled "Summary of Total Business Agreements Signed during Development of Energy Trade Missions, 1994- Present." Office of Energy Exports, dated October 2, 1995. 40 pages. (F2002-00020)

Document 44. Document entitled "Clinton Administration Delegation on Sustainable Energy & Empowerment to South Africa – August 20-27, 1995." Strengthened Kinship, Trip Report, dated September 13, 1995. 85 pages. (F2002-00020)

Document 45. Document entitled "Business Agreement Descriptions by Trade Mission," dated July 1994. 44 pages. (F2002-00020)

Document 46. Undated document entitled "Clinton Administration Delegation on Sustainable Energy and Empowerment to South Africa," Official Delegation. 10 pages. (F2002-00020)

Document 47. Document entitled "Master Schedule," dated August 1995. 11 pages. (F2002-00020)

Document 48. Document entitled "Clinton Administration Delegation on Sustainable Energy & Empowerment to South Africa – August 20-27, 1995." Strengthened Kinship, Trip Report, dated September

13, 1995. Information deleted under Exemption 6. 118 pages. (F2002-00020)

Document 49. Document entitled "DOE Billing/Collection & Payment Status," dated August 11, 1995. 3 pages. (F2002-00020)

Document 50. Facsimile Transmittal to Christopher Lewis, from Steven Lee, Senior Policy Analyst, dated July 28, 1995, with one attachment. Subject: DOE Revised Budget. Information. 2 pages. (F2002-00020)

A. Document entitled "Science and Technology," dated May 15, 1995. 24 pages. (F2002-00020)

Document 51. Document entitled "Bill Display/Update Screen," dated February 1, 1995. 6 pages. (F2002-00020)

Document 53. Document entitled "Status of Business Agreements Signed During Presidential Mission on Energy Investment to Pakistan," dated September 21-24, 1994. 16 pages. (F2002-00020)

Document 54. Document entitled "Summary of Total Business Agreements Signed During. Department of Energy Trade Missions, 1994 – Present," dated March 20, 1995. 34 pages. (F2002-00020)

Document 57. Document entitled "Deals Information – China Trip," Sensitive Business Information, dated February 26, 1996. 92 pages. (F2002-00020)

Document 58. Document entitled "Presidential Mission on Sustainable Energy and Trade to the People's Republic of China," Led by Secretary Hazel R. O'Leary, U.S. Department of Energy, U.S. – China Private Sector Agreements, dated February 20, 1995. 39 pages. (F2002-00020)

Document 59. Document entitled "Trip Report, Presidential Mission on Sustainable Energy and Trade to China," Hazel R. O'Leary, dated February 15-24, 1995. 60 pages. (F2002-00020)

Document 60. Undated document entitled "Presidential Mission on Sustainable Energy and Trade to China," Official Delegation. 12 pages. (F2002-00020)

Document 61. Document entitled "Trip Report, Return Journey to India," Secretary of Energy Hazel R. O'Leary, dated February 11-14, 1995. 69 pages. (F2002-00020)

Document 63. Document entitled "DOE News," Energy Secretary to Lead Presidential Mission to China, dated February 9, 1995. 33 pages. (F2002-00020)

Document 64. Undated document entitled "Renewables: Private Sector Agreements." 3 pages. (F2002-00020)

Document 65. Undated document entitled "List of American Exhibitors at ENCON '95." 7 pages. (F2002-00020)

Document 66. Document entitled "Attachments to Testimony by Secretary O'Leary," Subcommittee on Oversight and Investigations of the Committee on Commerce, U.S. House of Representatives, dated January 25, 1995. 22 pages. (F2002-00020)

Document 68. Note to Marilyn Dillon from Dawn Schrepel, dated December 23, 1994. Subject: Pakistan Addresses. 2 pages. (F2002-00020)

Document 69. Document entitled "Companies Interested-China Trip," Listed by POD, dated December 22, 1994. 24 pages. (F2002-00020)

Document 70. Note for Beth Arner, Executive Assistant, and Dawn Schrepel, Trip Coordinator, from Marilyn Dillon, Administrative and Human Resource Management Staff, Human Resources and Administration, dated December 8, 1994. Subject: Outstanding Payments for Chartered Aircraft to Pakistan – September, 1994. 3 pages. (F2002-00020)

Document 71. Undated document entitled "Plane List." 1 page. (F2002-00020)

Document 72. Memorandum to Brian Dean, Department of Energy, from Suzy Adams, Flight Time International, dated November 28, 1994, with one attachment. Subject: Manifest. 2 pages. (F2002-00020)

A. Undated document entitled "Plant List." 9 pages. (F2002-00020)

Document 73. Document entitled "Trip Report, Presidential Mission on Energy Investment to Pakistan," Led by Secretary of Energy, Hazel R. O'Leary, dated September 21-24, 1994. 58 pages. (F2002-00020)

Document 74. Document entitled "Trip Report, Presidential Mission on Energy Investment to Pakistan," Led by Secretary of Energy, Hazel R. O'Leary, dated September 21-24, 1994. 14 pages. (F2002-00020)

Document 75.	Document entitled "Presidential Mission on Energy Investment in Pakistan," dated September 17, 1994. Information deleted under Exemption 6. 58 pages. (F2002-00020)
Document 76.	Document entitled "DOE News," U. S. Energy Secretary to Visit Pakistan on Energy Mission, dated August 29, 1994. 27 pages. (F2002-00020)
Document 77.	Document entitled "U.S. DOE India Business/Government Delegation List," dated August 1, 1994. 6 pages. (F2002-00020)
Document 78.	Document entitled "Trip Report, Presidential Mission on Sustainable Energy and Trade to India," Led by Secretary of Energy Hazel R. O'Leary, dated July 7 – 15, 1994. 79 pages. (F2002-00020)
Document 79.	Undated document entitled "Plane List from Delhi to Bombay." Information deleted under Exemptions 6 and 7(C) by the Office of Inspector General. 4 pages. (2002-00020)
Document 80.	Undated document entitled "Final, Official Delegation to India Plane List." Information deleted under Exemptions 6 and 7(C) by the Office of Inspector General. 4 pages. (F2002-00020)

Document Number 36

TO ES w/ orig. REDACTIONS

b6, 7c

Per [ ] Unclaus, manif
DOE submits name to Unclaus personnel
they do not count heads or ask manif
when people board -

* Eventhough caption indicates this to be the manifest "to" India, [ ] stated that this was also the return manifest provided by DOE.

FINAL

Official Delegation to India Plane List *

Hazel R. O'Leary
Dan Reicher
Frank M. Sherwet
Derrick L. Forniner
Robert H. Annan
Johnnah Donnel
Charles Coker
Carolyn J. Walters
William W. Marshall
Thomas R. Cutler
Elizabeth Arner
Dawn Marie Schnepel

12

David Third, Agency for International Development
Lewis Reade, US-Asia Environmental Partnership
William H. Cavin, Department of Commerce
Janet McFarland, Environmental Protection Agency
Harry Flimbery, Overseas Private Investment Corporation
Commissioner Gail de Planque, Nuclear Regulatory Commission
Carlton R. Stoiber, Nuclear Regulatory Commission
Eileen Claussen, National Security Council
Thomas Wilbanks, Oak Ridge National Laboratory

9

Dennis Bakke, AES Corporation
Valto Kuusisto, Advanced Resources International
Dr. Subhash Dhar, Avenir Ovinom
Dr. Larry Papay, Bechtel Corporation
Brian O'Sullivan, Cannon Power Corporation
James W. Cook, CMS Generation Company
Peter McChesney, Community Energy Alternatives
Charles F. Goff, Dynegy Energy Inc.
Don Dudek, Environmental Defense Fund
Walter Hess, ENTECH, Incorporated
George Sterringer, Future Energy Resources Company
Niranjan S. Shah, Globeworkers Engineering Corporation
Arjun Makhijani, Institute for Energy & Environmental Research
Ellen Roy, International Energy Corporation
Deborah L. Blevins, International Institute for Energy Conservation
Rainier Lock, LeBoeuf, Lam, Greene, and MacRae
Linda A. Marvin, Lockheed Environmental Systems and Technologies Company
Amal Mansour, Manufacturing [illegible]

31

Ramesh Kapur, MED-TECH
Louis A. Marmora, Merrill Lynch
Charles A. Thibaudi, Merrill Lynch
Charles T. Cundy, Proven Alternatives
Robert Hallagan, Rural Electric Cooperative Association
Daniel Radack, SRC
Dr. Sanjiv Ehrun, Solar Power & Light
Lisa R. Good, Solar Power & Light
Ishaq M. Shatayar, Solar International, Inc.
Dr. Mohan Rao, Spectrum Technologies USA, Inc.
Roger Linde, The Spire Corporation
Ambassador Harry Barnes, World Wildlife Fund

19

~~[illegible]~~ - Terry Thorn, Enron ~~[illegible]~~ flew commercially round trip

TOTAL 52

Front + Back

note - The return manifest is the same as the departure manifest except for Terry Thorn. Since receivables had not been established for some people who the manif indicated had returned on the charter I contacted these individuals to confirm whether in fact they did fly on the

many did not return on the flight. I concluded we could not rely on the manifest to establish receivables. The document prepared used by [ ] $\left(\frac{B-1}{4-1} - \frac{B-1}{4-3}\right)$ was the best source to determine who receivables needed to be established for

TO ES w/ cxn. REDACTIONS

b6, 7C

Per [ ] Unidus, DOE submits name to Unidus personnel. They do not count heads or ask names when people board.

* Nevertheless caption indicates this to be the manifest "to" India, [ ] stated that this was also the return manifest provided by DOE.

FINAL

Official Delegation to India Plane List *

Hazel R. O'Leary
Dan Reicher
Frank M. Stewart
Derrick L. Forniner
Robert H. Annan
Johnnesh Domesi
Charles Culver
Carolyn J. Wallace
William W. Marshall
Thomas R. Cutler
Elizabeth Arner
Dawn Marie Schnepel

12

9

David Thiessl, Agency for International Development
Lewis Reade, US-Asia Environmental Partnership
William H. Cavin, Department of Commerce
Janet McFarland, Environmental Protection Agency
Henry Himberg, Overseas Private Investment Corporation
Commissioner Gail de Planque, Nuclear Regulatory Commission
Carlton R. Stoiber, Nuclear Regulatory Commission
Eileen Claussen, National Security Council
Thomas Wilbanks, Oak Ridge National Laboratory

9

These people not on flight to India

31

Dennis Bakke, AES Corporation
Vello Kasmiss, Advanced Resources International
Dr. Subhash Dhar, Avanic Ovions
Dr. Larry Papay, Bechtel Corporation
Brian O'Sullivan, Cannon Power Corporation
James W. Cook, CMS Generation Company flew commer. roundtrip
Peter McChesney, Community Energy Alternatives
Charles F. Goff, Dynegy Energy Inc.
Dan Dudek, Environmental Defense Fund
Walter Hass, ENTECH, Incorporated
George Sauringer, Fluor Energy Resources Company
Niranjan S. Shah, Globeworers Engineering Corporation
Arjun Makhijani, Institute for Energy & Environmental Research
Elias Rey, International Energy Corporation
Deborah L. Bleviss, International Institute for Energy Conservation
Reinier Lusk, LeBoeuf, Lam, Greene, and MacRae
Linda A. Marvin, Lockheed Environmental Systems and Technologies Company
Amal Mansour, Manufacturing [illegible]
Ramesh Kapur, MED-TECH
Louis A. Marmorino, Merrill Lynch
Charles A. Trabosh, Merrill Lynch
Charles T. Grady, Power Alternatives
Robert Hilligan, Rural Electric Cooperative Association
Daniel Radack, SRC
Dr. Sonja Ehrun, Solar Power & Light
Lisa R. Gaul, Solar Power & Light
Isiaq M. Shrayer, Solar International, Inc.
Dr. Mohan Rao, [illegible] Technologies USA, Inc.
Roger Little, The Spire Corporation
Ambassador Harry Barnes, World Wildlife Fund

29

Office - Terry Thorn, Enron [illegible] from India flew commercially round trip

TOTAL 52

FRONT + BACK

Total 52

note - The return manifest is the same as the departure manifest except for Terry Thorn. Since receivables had not been established for some people who the manifest indicated had returned on the charter I contacted these individuals to confirm whether in fact they did fly on the

JC

many did not return on the flight. I concluded we could not rely on the manifest to establish receivables. The document prepared used by [ ] $\left(\frac{B-1}{4-1} - \frac{B-1}{4-3}\right)$ was the best source to determine who receivables needed to be established for

Document Number 37

10 ES

L-3

23. The Department has issued various claims relating to the economic benefits of the trade missions. Please provide the Subcommittee with all documentation relating to the methodology and proof of all claims by the Department relating to the economic benefits of the trade missions.

Each of the Secretary's missions has included a formal signing ceremony, at which U.S. industry and counterpart officials sign commercial agreements for joint ventures. For each of the two India missions, the Pakistan mission and the China mission, DOE issued statements of the total financial value and estimated job benefits of the agreements. Financial value was calculated by summing the value of the individual agreements as reported to DOE by the U.S. partners. In other words, DOE simply announced the financial value as estimated by U.S. industry; it created no financial figures itself. Total job benefits are more difficult to estimate, because they include several very different kinds of jobs: for example, jobs created in U.S. manufacturing firms by export sales agreements, jobs created in the host country by facility construction, and jobs for U.S.-based experts working on the joint venture in that country either long-term or short-term. In order to arrive at rough estimates of job creation benefits from a mission, responding to strong public interest, DOE staff examined the agreements using established guidelines as appropriate to estimate job impacts and consulting with on-site industry representatives as needed. For instance, the U.S. Department of Commerce estimates that $1 billion in U.S. exports creates 20,000 new U.S. jobs; this rationale was applied to those agreements involving actual sales contracts of U.S. equipment but not to other kinds of agreements. Similarly, construction work forces for different kinds of facilities were estimated by referring to typical experience in each country involved; for these countries construction tends to be considerably more labor-intensive than in the U.S. Finally, U.S. industry was contacted and provided its own job benefit estimates. Where there were significant uncertainties, DOE used conservative numbers.

As DOE recognized -- and reported in its press briefings -- many of the agreements were Memoranda of Understanding (MOUs) rather than firm contracts. One of the most powerful contributions of a Secretarial visit to a developing country is as a catalyst to get U.S. and host-country business counterparts to agree to pursue joint ventures. Where this is the case, the major long-term benefits come from follow-up. DOE has made a concerted effort to monitor the progress of U.S. firms in converting MOUs into actual ventures and to assist U.S. industry wherever possible (see response to Question 24).

Negotiations do not always proceed quickly in developing countries, especially where U.S. firms are breaking new ground. The full payoffs from Secretary O'Leary's visits will be realized over the period of a decade or more, as we strengthen our presence in such growing economies as China and India; and they may well exceed the totals reported from the signing ceremonies.

DOE has continued to monitored the progress of the various agreements as they are reported by industry members. While many deals are still in process, others have been finalized. Our most recent status report -- dated December 19, 1995 -- indicated nearly $4.3 billion worth of activity that has either reached financial closure or signed sales contracts, or where the ventures have

otherwise made significant forward progress. Common business judgment would recognize that some of the agreements not yet finalized may not reach closure, while others may increase in actual dollar value.

Based on its experience with India, Pakistan, and China missions, including uncertainties about the economic benefits of MOUs, DOE chose not to announce financial and job creation benefits from the mission to South Africa, although the benefits are considerable. It is reviewing its estimation practices in order to learn from these missions and the follow up process.

Attached are documents that describe information reported by the industry representatives on the various trade mission commercial agreements, including estimates of the number of jobs created.

December 19, 1995

TRADE MISSION RELATED BUSINESS AGREEMENTS
PROGRESS STATUS
SINCE MISSION

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Projects Listed Below - Have Reached Financial Closure or Sales Agreements				
PAKISTAN				
AES LalPir I	Dennis Bakke, President & CEO AES Corp 1001 North 19th Street Suite 2000 Arlington, VA 22209 (T) 703 358-0509 (F) 703 276-6758	Implementation Agreement for a 360 MW oil-fired power plant. Financing completed and project currently under construction.	$350	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
AES LalPir II	Same as above	Implementation Agreement for a 360 MW oil-fired power plant. Sponsors allowed to shift project to Lal Pir to allow them to add flue gas desulphurization unit. Project is currently under construction with financial dislcosure targeted for late November 1995.	$350	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Tenaska, Hawkins Oil & Gas, GE - Uch Project	Paul G. Smith, CEO Tenaska International 1044 N. 115th Street Suite 400 Omaha, NE 68154-4446 (T) 402 691-9500 (F) 402 691-9570 Eugene W. Zeltman, Manager, Trade & Industry Associations GE Power Systems 1 River Road Bldg 1, Room 704 Schenectady, NY 12345 (T) 518 385-2320 (F) 518 385-5704	Implementation Agreement for a 585 MW Low btu natural gas combined cycle power plant. Financial closure reached. Developers estimate that the Uch project will purchase over $200 million in equipment from US firms and result in an estimated 4000 jobs in South Carolina, Oklahoma, Nebraska, and New York.	$660	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Union Texas - Concession Agreements in Pakistan	William M.Krips, Senior VP, Exploration & Production Union Texas Petroleum 1330 Post Oak Blvd PO Box 2120 Houston, TX 77252-2120 (T) 713 968-2746 (F) 713 968-2771	Oil and gas exploration and production agreements in Lower Sindh (Badin I and II) and Eastern Sindh.	$178.8	Final
Occidental Petroleum - Concession Agreements in Pakistan	Thora M. Johannson, Regional Exploration Manager Occidental Petroleum PO Box 12021 1200 Discovery Drive Bakersfield, CA 93389 (T) 805 321-6586 (F) 805 322-7457	Oil and gas exploration and production agreements in Zamurden, Shaiwal, Kamalia, Bahawalnagar, and Mehar	$125.6	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
VECO - Pipeline service contract with Pakistan State Oil	Peter Leathard, President & CEO VECO International 813 W. Northern Lights Blvd Anchorage, AK 99503 (T) 907 264-8104 (F) 907 264-8130	Pipeline service contract	$3.0	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
INDIA				
Cannon Power Corp - Wind Turbine Agreement	Brian O'Sullivan, Managing Director Cannon Power Corp PO Box 1457 Tehacapi, CA 93581 (T) 805 822-7524 (F) 805 822-8394	Company reports the sale of $9 million of wind-energy equipment to India and has started up a previously idle factory in Burke Burnett, TX. Companies from California, Ohio, Georgia, Oklahoma, Tennessee and Texas are involved and about 180 jobs are dedicated to this project alone.	$9.0	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Flowind Corp - Wind Turbine Agreement	Leon Richartz, Chairman of the Board Flowind Corp 900 A Street Suite 300 San Rafael, CA 94901 (T) 415 721-1300 (F) 415 721-1355	Company reports the sale of $60 million of wind-energy equipment to India, and considers their business with India the mainstay of their profitability. Company estimates that approximately 1200 jobs will be created in California, Kentucky, Missoiri, Illinois, Michigan and Washington.	$60	Final
Siemens Solar - Increased plant investment	George W. Roland President & CEO Siemens Solar Industries 4650 Adohr Lane Camarillo,CA 93010 (T) 805 482-6800 (F) 805 388-6395	Company announces a $3 million investment in new plant equipment in its Vancover, Washington facility in order to meet the increased demand for solar cells in the India market	$3.0	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Zond Systems - Wind Turbine Agreement	Kenneth C. Karas, President & CEO Zond Systems 13000 Jameson Road P.O. Box 1910 Tehachapi, CA 93581 (T) 805 822-6835 (F) 805 822-7880	Company reports the sale of $12.6 million in wind-energy equipment to India, resulting in about 250 jobs in California and Wisconsin	$12.6	Final
Spectrum Technologies - Combined Cycle Gas-fired power plant	Dr. Mohan Rao, VP International Projects Spectrum Technologies, USA 133 Wall Street Schenectady, NY 12305 (T) 518 382-0056 (F) 518 382-0283	Company reports that it has now secured all 18 Government of India approvals, completed financial closure and has begun construction of this project with a completion date of late 1996.	$250	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Solec - Solar Module Assembly Facility	Ishaq M. Shahyar, President and CEO Solec International Inc 12533 Chadron Avenue Hawthorn, CA 90250 (T) 310 970-0065 (F) 310 970-1065	Company reports that the venture with Pentafour Solec technology of India to assemble solar modules in India has reached contract closure. The plant is in operation and has created 100 new jobs in India and 20 in California.	$6.0	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
CHINA				
Halliburton/Brown & Root - Flow Measurement Manufacturing Joint Venture	Dale Jones, President Halliburton 3600 lincoln Plaza 500 North Arkard Dallas, TX 75201 (T) 214 978-2600 (F) 214 978-2800	Company reports that the final agreement to form a joint venture company to manufacture high technology flow measurement products was signed October 1995. Construction of the facility is scheduled to be completed in the first half of 1996 and production to begin during the second half of 1996.	$0.85	Final

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Westinghouse - Sales contract for two 600MW turbine generating units	Nat Woodson, President Energy Systems business Unit Westinghouse Electric 4350 Northern Pike Monroeville, PA (T) 412 374-6500 (F) 412 374-3851	Sale contract	$24	Final
		Subtotal - Projects reaching Financial Closure	**$2032.85**	

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Projects Listed Below- Have Made Significant Forward Progress				
CHINA				
Spire Corporation - Photovoltaic Production Plants - China	Roger Little, President Spire Corporation 1 Patriots Park Bedford, MA 01730-2396 (T) 617 275-6000 (F) 617 275-7470	Company reports the siging of two ventures to build photovoltaic production plants in China with a total value of $14 million. One venture is moving forward in discussions and information exchange. The other project has progressed to the signing of a cooperative agreement to build the production line which will lead to a final sales contract targeted for Spring 1996.	$14	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
The Wing Group - Dengfeng Power Project ** *Note: ** this project is not included in the $19.7 B figure. Project was already in the approval process pipeline and was advocated for during the mission.*	Robert Kelly, Director International Operations The Wing Group 20323 Brentmead Terrace Sterling, VA 20165 (T) 703 406-0750 (F) 703 406-0750	2X350 MW mine-mouth coal-fired project in Henan Province. Company reports that the State Planning Commission (SPC) recently approved this project. This approval is considered a significant milestone by company officials and represent one step in the continuous Chinese approval process. The company reports that this project has potential to require $700 million of investment of which about $350 million would be US exports.	$700	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
AES/Community Energy Alternatives - Wan Fang Power project - 2X125MW coal-fired power plant. ** *Note: ** this project was not included in the $19.7 B figure. Project was already in the approval process pipeline and was advocated for during the mission.*	Roger W. Sant, Chairman AES Corp 1001 North 19th St Suite 2000 Arlington, VA (T) 703 522-1315 (F) 703 276-6758 Michael J. Thompson, COO and Senior VP 1200 East Ridgewood Ridgewood, NJ 07450 (T) 201 612-5420 (F) 201 612-8450	Company reports that the State Planning Commission (SPC) and State Council have recently approved the final feasibility study report for the project. Company also expects the SPC to issue the final approval document in the near future. This will complete all the necessary approvals for the project with the exception of the approval by the Ministry of Trade and Foreign Economics (MOFTEC). This approval is considered a significant milestone by company officials and represent one step in the continuous Chinese approval process.	$130	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Honeywell - Yueyang General Petrochemical Works project	Mannie Jackson	Company reports .....need press release	$400	Ongoing
PAKISTAN				
GE Capital - Jamsboro Project	Eugene W. Zeltman, Manager, Trade & Industry Associations GE Power Systems 1 River Road Bldg 1, Room 704 Schenectady, NY 12345 (T) 518 385-2320 (F) 518 385-5704	Agreement to develop a 310 MW natural gas combined cycle power project. Negotiations are progressing and financial closure pending EXIM support.	$175	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Enron, Bechtel, GE Capital - Chenab River Project	Joesph Sutton, President & COO Enron POBox 1188 1400 Smith Street Houston, TX 77251 (T) 713 646-6586 (F) 713 646-6088 Larry Papay, Sr. VP Bechtel Corp 50 Beale Street San Francisco, CA 94105-1895 (T) 415 768-0275 (F) 415 768-0503 Eugene W. Zeltman, Manager, Trade & Industry Associations GE Power Systems 1 River Road	Implementation Agreement for a 782 MW Rankine-cycle power station fueled by furnance oil with fluridized gas desulfurization scrubbers. Contract negotiations were to be completed by October 1995. Financial closure forecasted for Summer 1996. Commercial operations planned for end of 1998. DOC was planning to advocate during recent Pakistan trip by Assistant Secretary Ray Vickery.	$740	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Coastal Power - Quetta Power Project	Robert C. Hart, President Coastal Power Production Company Coastal Tower 9 Greenway Plaza Suite 780A Houston, TX 77046 (T) 713 877-3763 (F) 713 297-1513	Implementation Agreement for a 104 MW natural gas combined cycle power plant. Coastal Power expects to complete contract negotiations by the end of December 1995. Company has sought DOC advocacy for project. Assistant Secretary Ray Vickery recently in Pakistan and was to advocate on behalf of company.	$105	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
INDIA				
Ovonics Battery - Joint venture agreement for the production of advanced batteries for transportation systems	Dr. Subhash Dhar, President Ovonic Battery Company 1707 Northwood Troy, MI 48084 (T) 810 362-1750 (F) 810 362-0332	Company reports that the venture between Ovonic and Delton Cable has been approved by the Indian Government and the two companies are proceeding with negotiations of the final terms of the venture. Estimated total value is $9 million and 200 jobs in Michigan	$9.0	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
Advanced Resources International - Proposal to operate natural gas project	Vello Kuuskraa, President Advanced Resources International 1110 North Glebe Road Suite 600 Arlington, VA 22201 (T) 703 528-8420 (F) 703 528-0439	Company was requested by Reliance, India's largest industrial firm, to propose to provide technology to and operate a pioneering $40M natural gas from coalbeds project in India. Company also reports that is has received 2 contracts to conduct geologic studies for the Government of India. These studies will employ about 2 dozen US engineers directly and many others through the use of US technology. Company is also investigating commercial opportunities in Pakistan and plans to pursue this opportunity along with others in coming months.	TBD	Ongoing

Project	Company Contact	Comments	Dollar Value (Millions of Dollars)	Status
MTCI - ThermoChem Cogen Power project	Amal Mansour, CEO Manufacturing & Technology Conversion International PO Box 21 Columbia, MD 21045 (T) 410 381-4200 (F) 410 381-4244	Company reports that it is now negotiating the terms and conditions for a 10 MW Cogen from Bagasse project in India. The value of this project is $15 million. Company further reports that this pilot project would be followed by 6 more cogen projects which are in the range size of 30-50MW costing in the range of $25-42 million apiece	$15	Ongoing
		Subtotal - Significant Progress	**$2288.0**	
		TOTAL- All projects	**$4320.85**	

*Note: ** = project advocated for during mission but not part of $19.7B total*

BUSINESS AGREEMENT DESCRIPTIONS

BY

TRADE MISSION

(Note: the attached is a representative listing of the types of business agreements signed during trade missions to India, Pakistan, China, and South Africa. Not all project descriptions were available.)

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY AND TRADE TO INDIA

JULY 1994

(Note: Not all project descriptions available for this mission)

COAL WASHING CONSORTIUM MEMORANDUM OF UNDERSTANDING

Spectrum Technologies and Jaya Foods **Elgin National Industries**

An ongoing interagency program between US DOE and US AID has resulted in a "flagship" project involving the first advanced U.S. coal washing technology applied to Indian high-ash coals (ash levels in the range of 40%). This project is significant as the Indian Ministry of Coal during the meetings this week has repeated identified coal washing as a priority industry. The Government of India needs to be applauded for its bold initiative to promote private sector owned and operated coal washing plants for steam coal. Elgin National Industries, Spectrum Technologies and Jaya Foods signed a Memorandum of Understanding with a total estimated value of US $100 million

SPECTRUM POWER PURCHASE AGREEMENT

Andhra Pradesh State Electricity Board **Spectrum Power Generation**

Spectrum project in Andhra Pradesh is a 200 MW combined-cycle gas-fired power plant. It is projected to cost $245 million and is the first joint venture project with National Thermal Power Corporation (NTPC) in India. The Andhra Pradesh State Electricity Board and the Chief Minister of Andhra Pradesh should bc commended on their progressive ideas and practices in the utility sector. The U.S. power plant developers in India are hopeful that the Government of India will expedite the signing of counter-guarantees for this and other power plant projects.

JOINT VENTURE AGREEMENT

Pentafour **Solec International, Inc.**

The Solec/Solec-Pentafour joint venture calls for assembly in India of PV module components manufactured in the U.S. by Solec. The value of the venture is $6.5 million initially, with expansion plans currently under discussion. An estimated 150 jobs will be created in the near term in California as a result of this joint venture. Jobs will be created in India also.

MANUFACTURING AGREEMENT

Siemens India **Siemens Solar Industries**

A large number (100,000 by GOI estimates) of villages are not services by the electrical grid. Many will not receive line extensions in the foreseeable future due to the high capital cost of the extensions. Siemens' efforts involve the manufacture, in India, of solar powered lanterns for rural electrification. To accomplish this, Siemens has teamed with Siemens India. This activity will result in US $30 million in equipment sales, and $10 million annually in U.S. component sales. An estimated 880 near term jobs will be created in California. Quality manufacturing jobs will also be created in India.

This approach to rural electrification will provide more reliable, better quality basic lighting than

the currently used kerosene lamps. Additionally, fossil fuels will not be burned in the enclosed areas of the homes, and, the need to import kerosene will be diminished.

SALE OF PHOTOVOLTAIC MANUFACTURING EQUIPMENT

Bharat Electronics **Spire Corporation**

Spire Corporation and Bharat Electronics signed a Memorandum of Understanding for the purchase of Spire PV cell processing equipment. The agreement signed at the MNPS Solar Energy Center will result in the purchase of Spire module manufacturing equipment by Bharat Electronics. The value of this agreement is approximately US $2 million.

In order for India to meet the demand of their own projected market for photovoltaic, increased indigenous manufacturing capabilities will be required. The investment in state-of-the-art manufacturing equipment that will produce reliable products will be critical if the commercialization of the technology is to be sustained.

This type of interaction creates economic development for both countries through the manufacture of the equipment in Mass., and the subsequent manufacture of the PV in India, and represents an ideal example of the direct linkage between environmental technologies and economic growth.

SALE OF PRODUCTION EQUIPMENT

Delton Cable **Energy Conversion Devices**
Ovonic Battery Company

The challenge to meet India's enormous transportation needs in an environmentally sustainable fashion is critical. Promotion of strategic business partnerships between India and the U.S. can create significant opportunities for the U.S. to play a positive role in this effort. Because manufacturing equipment for Ovonics batteries will be built in the U.S. and deployed by Delton Cables in India, it would create U.S. jobs, and economic development for both countries.

This agreement will accelerate opportunities for environmentally benign transportation including electric cars and scooters, as well as rural electrification technologies. The total value of the project is estimated to be US $9 million.

MEMORANDUM OF UNDERSTANDING

Emgee Solar **Martin Marietta International**

The Martin Marietta/Emgee Solar MOU address two areas vital to the sustainable introduction of photovoltaic into India's energy mix - photovoltaic systems development, and, photovoltaic manufacturing. Implementation of the terms of the MOU will result in US $16 million of systems development, and up to $50 million for manufacturing equipment. Projections call for 350 near

term jobs to be created, and, 1,100 medium term jobs in Colorado.

Potential applications is possible under this MOU include grid-connected and central generation photovoltaic systems development, which are a critical aspect of large-scale photovoltaic commercialization. Also addressed are distributed renewable energy generating facilities for grid support and rural electrification, which are potentially the largest future markets for renewable.

WIND FARM AGREEMENT
Bangor Group **Cannon Power Corporation**

Cannon Power and the Bangor Group of India signed an agreement to to construct a 25 MW wind farm. India has a potential for approximately 20,000 MW of wind energy capacity, making it one of the world's largest wind resources. The total value of the project is estimated to be US $75 million.

Cannon is the first U.S. wind energy company to open a permanent office in India. The office will initially have three permanent staff members but is expected to grow to 10 staff within the next 12 months. The opening of the office is a direct result of the Dumber of opportunities for wind energy in India. Showcasing the opening by the Secretary will illustrate the commitment of U.S. companies work directly with the Indians to develop their wind energy potential. Cannon is the first U.S. wind energy company to open a permanent office in India.

EFFICIENCY AND DEMAND SIDE MANAGEMENT CONTRACT
Bhoruka **SRC International**

Energy efficiency and demand side management efforts are important and cost effective methods to reduce capacity requirements in the industrial sector. The markets for efficiency and DSM technologies in regions of rapid economic development and hence rapid increases in electricity demands is projected to be enormous. The Indian market for these technologies represents an excellent opportunity to demonstrate the substantial economic benefits to environmental technologies.

The SRC agreement will implement these technologies in the Bombay Dyeing Company's facilities. The annual energy bill at Bombay Dyeing's textile facilities is $12 million. For a $3.7 million investment, annual savings of $1.8 million will be realized leading to a pay-back period of 2.1 years.

After the short pay-back period, the saving equate to an additional $1.8 million in earning, making the company more competitive. More competitive companies lead to growing economies, which make better trading partners for the U.S. Efficiency and DSM projects address global climate change issues while increasing environmental technology exports for U.S. firms.

BIOMASS MEMORANDUM OF UNDERSTANDING

Tata Energy Research Institute

Econergy International Corporation,
Lockheed Environmental Systems and Technologies Co.
Duke Engineering and Services, Inc.
Niagara Mohawk Power Corporation
TransAlta Corporation

A consortium of U.S., Indian, and Canadian organizations today signed a Memorandum of Understanding with two Indian sugar mills to pursue the continued development of biomass cogeneration projects in India, which will supply electricity to the national grid and steam to sugar mills. The cogeneration projects will be financed by private sector loans and equity. The consortium consists of energy and technology companies, NGOs and U.S. Department of Energy Laboratories.

The commercial partners include four U.S. and one Canadian company: Econergy International Corporation (US), Lockheed Environmental Systems and Technologies Co. (US), Duke Engineering and Services, Inc. (US), Niagara Mohawk Power Corporation (US), and TransAlta Corporation (Canada).

Technical and management assistance partners in the projects include Tata Energy Research Institute, Oak Ridge National Laboratory, Winrock International, Environmental Defense Fund, Los Alamos National Laboratory, and the Utility Biomass Energy Commercialization Association.

The MOU among the partners will initiate the first phases of developing a biomass cogeneration project at the sugar mills, the Simbhaoli Sugar Mills, Ltd. and Willard India, Ltd. The initial work will focus on selecting a sugar mill for the project, and several candidate sites will be examined. A detailed feasibility analysis will commence immediately after the project site has been selected.

The primary objective of the project is to develop, build, and operate a technically and financially viable cogeneration plant, financed by private sector equity and commercial bank debt. In addition, the project will attempt to demonstrate the technical viability of operating the cogeneration plant year-round utilizing other biomass fuels during the off-season.

RETURN TRIP TO INDIA

FEBRUARY 1995

BHILANGANA HYDROELECTRIC POWER PROJECTS
Swasti Power Engineering **Acres International**

Acres International Corporation of New York State signed a Memorandum of Understanding with Swasti Power Engineering Ltd. to form a joint venture for development of a series of small hydroelectric power projects in the Bhilangana River Valley of Uttar Pradesh state. A total of about 27 megawatts will be developed, with an investment of about $40 million. The project will generate 189 million kilowatt-hours of electrical energy with minimal environmental impact to the host waterway and its surrounding region. Funding for the projects will come mainly from outside investors, with both Acres and Swasti holding an equity interest. Once this agreement is signed, the joint venture entity will be in place to begin development of these projects. The next step will be for Acres-Swasti to initiate project design work, and begin the process of lining up financing necessary for subsequent project construction and procurement activities.

RENEWABLES COMMERCIALIZATION CENTER
Indian Renewable Energy Development Agency
KEI Energy Ltd. **Bechtel Corporation**

Bechtel Corporation of California signed a Memorandum of Understanding with KEI Energy, Ltd. and the Indian Renewable Energy Development Agency to form a joint venture to create a facility to accelerate commercial use of renewable energy technologies in India. The goal is to develop up to 1,000 megawatts of renewable energy generation capacity in India by the year 2000.

SMALL HYDROELECTRIC POWER DEVELOPMENT
Madhya Pradesh Sate Electricity Board **Dodson-Lindblom International**

Dodson-Lindblom International, Inc. of Ohio (through its India-based subsidiary, Ascent Hydro Projects Ltd.) signed a Memorandum of Understanding with the Madhya Pradesh State Electricity Board to develop five small hydroelectric projects. A total of about 5 megawatts will be developed, involving an investment of $9 million. Potential benefits include additional electrical generation capacity with minimal environmental impact to the host waterways and surrounding region. Funding for the projects will come from Dodson-Lindblom in large part. However, the United States Overseas Private Investment Corporation (OPIC) has agreed to provide $100,000 for pre-investment analysis and development of a business plan. (Note: OPIC has a separate signing with Dodson-Lindblom) Once these agreements are signed, the next step will be to initiate project design activities, and develop the business plan for the project's financial management.

FIRST SALES TRANSACTION WITH INDIAN CUSTOMER
BHEL **Donaldson**

Donaldson Company, Inc. of Minnesota has formed a joint venture with Munradtech Services Private Ltd. to manufacture U.S. technology-based air filtration subsystems for gas turbine electricity generating units. This project will create about 50 new jobs in the manufacturing sector. The joint venture (D.I. Filter Systems Private Ltd.) has already obtained start-up funding ($500,000, in the form of a low-interest loan) from the U.S. Agency for International Development (USAID) that will enable construction of its manufacturing facility in India. This sales contract with BHEL (worth $115,000) represents the joint venture's first sales transaction in India.

DELHI COMMUNITY DEVELOPMENT PROJECT
Mokul International Private Ltd. **EFH Coal Co.**

EFH Coal Company of Pennsylvania signed a Memorandum of Understanding with Mokul International Private Ltd. to form a joint venture for developing an integrated energy production/community development project involving solar thermal energy, a coal preparation facility, and a fluidized bed coal combustion power generating unit, with associated coal ash processing facility to make fertilizer and building materials, and a waste water treatment facility. The project will also include construction of greenhouses and a fish farm to efficiently utilize what would otherwise be waste heat from the project. The power production portion of the project will generate a total of about 100 megawatts, serving a population of about 100,000 (including industry). Benefits include the generation of much-needed electrical power and an integrated, sustainable approach to power generation and community development. The total investment is estimated at about $750 million. Funding will come from outside investors, with EFH and Mokul retaining significant equity interest. Once this agreement is signed, the joint venture entity will be in place, and project activities can be initiated.

ELECTRICITY TRANSMISSION/DISPATCH TECHNOLOGIES EVALUATION
Bombay Suburban Electric Supply Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with the Bombay Suburban Electric Supply Ltd. to establish a partnership to evaluate the applicability of EPRI's electricity transmission and distribution (T&D) technologies in India. Potential benefits include improved electricity transmission, which cuts transmission losses and lowers power costs. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAICS DEMONSTRATION PROJECT
Renewable Energy Systems Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of

Understanding with Renewable Energy Systems Ltd. to establish a partnership for design, installation, and evaluation of a 2 megawatt photovoltaic power project. Benefits will include development of a cost-effective renewable energy production technology for use in isolated areas of India. Once this agreement is signed, the next step will be conceptual design and a joint search for additional sources of project funding.

RENEWABLE ENERGY COOPERATIVE ACTIVITIES
Ministry of Nonconventional Energy Sources **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with the Government of India's Ministry of Nonconventional Energy Sources to establish a partnership for evaluating renewable energy sources within India, including wind energy, photovoltaics, biomass energy, and hydroelectric power. The potential benefits to India include the identification of new and efficient sources of energy, and institutional training. Cooperative activities will begin once this agreement is signed.

ELECTROTECHNOLGIES FOR INDUSTRIAL APPLICATIONS
Thermax, Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with Thermax Ltd. to establish a partnership for development within India of electricity-utilizing applications such as water purification, medical waste sterilization, and food processing. This project will contribute to more efficient use of electricity. Cooperative activities will begin once this agreement is signed.

STATE-OF-THE-ART POWER PLANT SERVICES
L&T - Sargent & Lundy, Ltd. **EPRI**

The Electricity Power Research Institute (through its SEPRIL Inc. U.S.A. joint venture with Sargent & Lundy, Inc.) signed a Memorandum of Agreement with India-based L&T-Sargent & Lundy Ltd. This agreement will set out the basis of a joint marketing/working arrangement providing technical and financial evaluation services in support of the "State-of-the-Art Power Plant" computer program and related products developed by Sargent & Lundy/SEPRIL and sponsored by EPRI. Potential benefits to India include the introduction of advanced software to facilitate design and retrofit of power plants, resulting in savings to consumers. This agreement represents the first commercial use of an EPRI-developed technology within India.

RENEWABLE ENERGY COLLABORATIVE ACTIVITIES
Indian Renewable Energy Development Agency **EPRI**

The Electric Power Research Institute, headquartered in California, signed a Memorandum of

Understanding with the Indian Renewable Energy Development Agency (IREDA) to establish a partnership for evaluation and technology transfer in the area of renewable energy. The potential benefits accrue from the widespread introduction of new technologies, and the establishment of a renewable energy training center in India. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAIC ENERGY POWER PLANT
Solaris Systems, Ltd. **Intech Global Resources, Inc.**

Intech Global Resources, Inc. of Texas signed a Memorandum of Understanding with Solaris Systems, Ltd. to develop a 2 megawatt photovoltaic energy power plant in Kerala state. The overall value of the project is $10 million.

Udhaya Semiconductors Pvt. Ltd. **Intech Global Resources, Inc.**

Intech Global Resources, Inc. of Texas signed a Memorandum of Understanding with Udhaya Semiconductors Pvt. Ltd, to develop inverters and allied hardware for grid interaction of non-renewable energy schemes with the conventional grid.

COMMERCIAL SALES TRANSACTION
ABAN Lloyd Chiles Offshore, Ltd. **Kentech**

Kenetech Windpower Inc. of California signed a sales contract with ABAN Lloyd Chiles Offshore Ltd. for delivery of 600 advanced technology wind turbines valued a $150 million that will be used to generate 200 megawatts of electrical energy. This project offers a substantial increase in the generating capacity available in India of clean, sustainable windpower.

BIOMASS-FUELED COGENERATION PROJECTS
TERI/OPIC **Lockheed Environmental Services**

Lockheed Environmental Systems and Technologies (LESAT) of Texas, along with partner Econergy International Corporation (EIC) of Colorado have formed a partnership with Tata Energy Research Institute (TERI) to develop two 50 megawatt bagasse-fuel power plants in Uttar Pradesh state valued a $50 million each. This consortium signed a financial assistance contract with the United States Overseas Private Investment Corporation (OPIC). Potential benefits include increased power generation using inexpensive, widely-available bagasse. OPIC has agreed to provide $120,000 in financial assistance that will fund a necessary feasibility study for these projects.

ADVANCED POWER AND ENERGY EFFICIENCY CENTER PROJECT

Energy Management Centre **J.Makowski Co., Apollo Hospital Group**

Bechtel and the Apollo Hospital Group of India signed a Memorandum with the Energy Management Centre of the Government of India's Ministry of Power to develop an advanced technology 200 megawatt power generating facility in Delhi state. 50 megawatts of this capacity will be derived from a renewable energy sources, and the facility will also have an exhibit area that will showcase different energy efficiency technologies that are appropriate for India. The overall value of the project is $300 million.

ENERGY EFFICIENCY COOPERATIVE ACTIVITIES

Energy Management Centre **Oak Ridge National Laboratory**

The Oak Ridge National Laboratory (ORNL) located in Tennessee signed a Memorandum of Understanding with the Energy Management Centre of the Government of India's Ministry of Power to promote scientific and technological cooperation between India and the U.S. in the area of energy efficiency. Projected cooperative activities include exchanges of personnel and non-proprietary technical information, joint testing of equipment. and co-sponsorship of seminars and conferences in the area of energy efficiency. Funding for these activities will be the joint responsibility of ORNL and India's Ministry of Power. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAIC POWER DEVELOPMENT

NEPC Micron, Ltd. **Omnion Power Engineering Company**

Omnion Power Engineering Corporation of Wisconsin signed a contract with NEPC Micron Ltd. for the supply and installation of a 100 kilowatt grid-interactive photovoltaic power plant in Tamil Nadu state, on the site of one of NEPC's existing wind farms. It is anticipated that the innovative combination of photovoltaics and wind power, when proved successful, will lead to widespread adoption of this approach on existing wind farm sites across India.

INDUSTRIAL AND COMMERCIAL ENERGY EFFICIENCY PROGRAM

First Custodian Fund (India), Ltd. **Oxford Consultants**

Oxford Consultants International Inc. of Maryland signed a Memorandum of Understanding with First Custodian Fund (India) Ltd. to establish a joint venture (First Oxford Technologies India Ltd.) aimed at improving industrial and commercial energy efficiency in India. This project will accelerate the introduction of energy saving technologies in India, by means of identification and implementation of appropriate cogeneration and energy conservation projects. Once this agreement is signed, the next step will be to initiate energy efficiency audits in the industrial and commercial sectors that will result in significant energy savings.

EFFICIENCY IN ENERGY PRODUCTION AND USE
Energy Consultants Private, Ltd. **TENSA**

TENSA Inc. of Texas signed a Memorandum of Understanding with Energy Consultants Private Ltd. (ENCON) to establish a joint venture (TENSA-ENCON) Private Ltd.) aimed at improving efficiency in the areas of energy production and use within India. Fields of expertise include energy conservation, process integration, cogeneration, and renewable energy. This joint venture will speed the introduction of energy saving technologies in India. Once this agreement is signed, the next step will be to initiate energy efficiency audits in the industrial and commercial sectors that will identify windows of investment opportunity for energy efficient projects.

SPECIALTY POWER PLANT SERVICES
Thermax, Ltd. **Tennessee Valley Authority**

The Tennessee Valley Authority (TVA) signed a Memorandum of Understanding with Thermax Ltd. to establish a joint venture that will provide specialty welding services based on technology not previously utilized in India. Benefits will include improved plant performance and lower operating costs for power plants. Additional benefits are employment and training for a significant number of skilled crafts people. The joint venture is also planning to offer these special services in other emerging world markets.

WIND ENERGY DEVELOPMENT PROJECT
Pentafour Solec Technology, Ltd. **Zond International Development. Corp.**

Zond International Development Corporation of California, along with partner Blue Chip Technologies, signed a Memorandum of Understanding with Pentafour Solec Technology Ltd. to establish a joint venture specializing in wind energy. The first identified project will be a wind energy farm in Tamil Nadu state. A total of 60 megawatts will be developed, with a total investment of about $15 million. Once this agreement is signed, the partners will initiate project design activities, and develop the business plan for the project's financial management.

CII REVERSE TRADE MISSION
FOLLOW UP AGREEMENT

(Note: project descriptions were not available for Salve and Kumar visits)

MEMORANDUM OF UNDERSTANDING FOR TWINNING INDIA INTEREST IN ADVANCED BIOMASS GASIFICATION

Thermax **Future Energy Resources Corporation**

Future Energy Resources Corporation and Thermax signed a Memorandum of Understanding to establish twin gasification projects in India utilizing biomass feedstocks with DOE supported United States projects. The parties understand and agree that the FERCO will, on terms and conditions to be agreed between the parties: provide access to construction, design and operational expertise required for the commercial development of such plants; and provide the opportunity for Thermax to test feedstocks in existing facilities in the United States for the purpose of establishing operating characteristics necessary for the design and operation of proposed projects.

In exchange, Thermax will provide appropriate documentation with regard to proposed plant needs, benefits and operating characteristics/requirements, including operational and financial parameters judged necessary for project development and, will utilize the services of FERCO for the provision of gasifier technology meeting those needs on terms and conditions to be negotiated between the parties.

L-3
38

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

SEPTEMBER 1994

IMPLEMENTATION AGREEMENTS
Ministry of Water and Power
WAPDA **AES Corporation**

AES and the Ministry of Water and Power and the WAPDA signed Implementation Agreements for the AES Lal Pir I power project, a 362 MW furnace, oil-fired power station to be located in the District of Muzaffargarh, in the Punjab province and the AES LalPir II power project is a 360 MW furnace, oil-powered power station to be located in the District of Khanewal, in the Punjab province.

The LalPir I power plant is based on conventional oil-fired boiler and steam turbine generator using state of the art equipment and is due for commissioning December 31, 1996. The total project value is estimated to be $350 million. The LalPir II plant is using the power generation technology similar to the Lal Pir plant and is due for commissioning in December 1997. The estimated cost of the project is $350 million.

MEMORANDUM OF UNDERSTANDING
Ministry of Water and Power **Agrilectric**

Agrilectric Power Inc., of Louisiana, a member of The Power Group, has proposed to construct a set of 10 MW power generation plant using rice hull as fuel at Larkana District in the Sindh province. This will be the first renewable project outside the U.S. using proven technology. The Agrilectric project is also unique in that it will provide opportunity for Pakistani citizens to own the projects themselves.

With the existing theme of the Memorandum of Understanding, Agrilectric plans to break ground on 8-10 power plants throughout Pakistan, with a total estimated value of $150 million. Typically, these power plants will be sized to the supply of rice hulls in any given vicinity in order that these plants might run 24 hours a day, 365 days a year for maximum efficiency.

IMPLEMENTATION AGREEMENT
Ministry of Water and Power **Enron Power Development**

ENRON Power and the Ministry of Water and Power signed an Implementation Agreement for the development of a 760 MW combined cycle power station using NAPTHA as fuel, which ENRON will import exclusively for this project. The project is to be located in Multan District of **the Punjab** province and is due for commissioning in October, 1997. The estimated value of the project is $850 million.

DISTRIBUTION AGREEMENT
Greaves Cotton Ltd. **Armstrong Corporation**

Armstrong International, a steam energy management company, providing steam traps, condensate

return systems, pressure reducing valves and engineering services for efficient steam utilization has negotiated an exclusive participation agreement with Greaves Cotton Pakistan Ltd. for the distribution of steam traps and other products. Greaves is one of the largest distributors of engineering products in Pakistan. The value of the project is estimated to be in the range of $750K to $1million.

IMPLEMENTATION AGREEMENT - KABIRWALA POWER PROJECT
Fauji Foundation and Ministry of Water and Power **Sceptre Power**

Kabirwala power project is 144 MW combined cycle power station, using natural gas of low BTU and pipeline gas as fuel, located in District Khanewal, Punjab province. The project is due to be commissioned by October, 1997 and has an estimated value of US $175 million.

This project is sponsored by Fauji Foundation, Sceptre and Intrag Inc. Fauji Foundation is a well renowned organization involved in a wide variety of industrial and commercial activities throughout Pakistan. Sceptre power company is a U.S. based development company, involved in a wide variety of power projects in North America and other international locations. Intrag is also an American based power company.

OIL & GAS DEVELOPMENT AND PRODUCTION LICENSE
Government of Pakistan **Occidental Petroleum**

Occidental Petroleum has been operating in Ratana Concession since 1991. The gas and condensate has since been declared commercial and put on production. It is currently producing about 800 barrels/day and of condensate and 18 million metric cubic feet of gas per day.

The grant of the lease will enable Occidental Petroleum to undertake the development of the field which will cost over $100 million. This will cover drilling of an additional four wells and surface facilities.

IMPLEMENTATION AGREEMENT - HABIBULLAH POWER PROJECT AT QUETTA
Ministry of Water and Power **Habibullah Energy Ltd.**

The Habibullah power project is a 104 MW combined cycle power station l sing natural gas supplied by Sui Southern Gas Company. The project is due to be commissioned in January, 1997 and has an estimated value of $109 million.

The lead project developer is Habibullah Energy Ltd., of Tucson, Arizona and Karachi, Pakistan, joined by ABB energy Ventures of Princeton, New Jersey and Ogden Projects, Inc. of Fairfield, New Jersey. The owners engineer and consultants for the project are Parsons Main of Boston, Massachusetts and the environment engineer is KBN of Gainesville, Florida. The letter of support was

issued in July, 1994.

MEMORANDUM OF UNDERSTANDING FOR THE PAKISTAN ENERGY AND POWER DEVELOPMENT FUND
First Capital Securities Corporation Ltd.
Ministry of Water and Power **Smith Barney**

Smith Barney and First Capital Securities are exploring the formation of a $100 million Pakistan Energy and Power Development Fund which is intended to provide a portion of the senior debt financing required by a pre-identified package of projects. The Government will also lend its full support for the Fund and appropriate officials will participated in the marketing as well.

Smith Barney is one of the leading American merchant banks and has one of the most experienced corporate finance teams in Asia. In Pakistan, Smith Barney's investment banking business is in conjunction with First Capital Securities, a publicly quoted company.

TURNKEY AGREEMENT EXTENSION
Security Electric Power Company Ltd. **General Electric, Morgan Stanley**
(SEPCO)

An extension of the turnkey agreement was signed between SEPCO and General Electric. SEPCO is in the process of implementing an electric power generation project, with a capacity of 310 MW (210 MW simple and 100 MW combined cycle) with a total value of US $174 million.

The project is being co-sponsored by Yunus Brothers and Saifullah Group. Yunus Brothers are the largest textile exporters of Pakistan having interest in textile, cement and power sectors. Saifullah Group is one of the leading industrial groups in Pakistan, having an interest in textiles, communications, cement and power sectors.

The equipment is being purchased from General Electric, with whom a Memorandum of Understanding has been signed for the supply of equipment and to implement the project on a turnkey basis.

L-2
4?

HIGH EFFICIENCY GAS COMPRESSOR AGREEMENT
Sui Northern Gas Pipelines, Ltd **Solar Turbines**

Sui Northern Gas Pipelines, Ltd. of Punjab, is buying four compressor gas sets from Solar Turbines, a subsidiary of Caterpillar Inc. The estimated value of the transaction is US $7 million.

Sui Northern has currently embarked upon a major pipeline expansion program and has already placed order for four additional compression packages on Solar. Another five compressor packages are being purchased against competitive bidding where they expect Solar will be participating.

The sale will be financed by the Export-Import Bank, who broke new ground by agreeing to support the loan request without sovereign guarantee. Typically, with a public, non sovereign obligor, the Bank requires either a guarantee of the Ministry of Finance, or an acceptable financial institution. However, in keeping with the Bank's new initiative to be more flexible in its financing decision, the loan was approved on the credit worthiness of Sui Northern.

IMPLEMENTATION AGREEMENT -UCH POWER PROJECT
WAPDA **Tenaska Inc, Hawkins Oil and Gas**

The Uch Power Project is a 584 MW combined cycle power station, using low BTU gas from the Uch gas field, to be located in the District Nasirabad, in Balochistan province. It is due for commissioning in October; 1997 and has an estimated total value of $600 million.

The project is sponsored by Tenaska, Inc. Hawkins Oil and Gas, Inc., Hassan Associates Ltd., and Central Power Holdings Ltd. Tenaska Inc., a U.S. based company, has a vast experience of carrying out power projects in North America. Central Power is of subsidiary of Midland electricity PLC, U.K. Midland Electricity is carrying on several power generation projects worldwide Hawkins Oil and Gas has vast expertise in power generation projects and Hassan Associates are the local sponsors, based in Karachi. Design and construction of the facility will be performed by an international consortium led by General Electric Industrial and Power Systems.

Upon completion in 1997, the Uch Power Project will provide WAPDA and its customers a significant new source of electrical capacity, electricity to promote economic growth and increased prosperity for people of Pakistan.

OIL & GAS EXPLORATION AND PRODUCTION LICENSE
Government of Pakistan **Union Texas**

Union Texas led joint venture comprising Occidental and the Oil and Gas Development Corporation of Pakistan is operating in the Badin area since 1977. The joint venture is currently producing 18,000 barrels of oil per day and 17 million metric cubic feet of gas per day from the area. The existing license is expiring in January, 1995. The government of

Pakistan has approved the grant of license for another three years. The joint venture will drill a minimum of five wells at a cost of $3.75 million during the three year period. The overall investment as a result of this extension during the period 1994-96 on exploration and production activities in the area, will be $175 million.

IMPLEMENTATION AGREEMENT -WAKGAS
Wak Ltd, Karachi Electric Supply Corporation **Orient Point, Caterpillar Co**

The Wakgas Power Project is a 800 MW barge mounted power station based on heavy-fuel oil fired diesel engines. The project is located at Port Qasim, West Wharf, Sindh province, and is due for commissioning in September, 1996. The total estimated value of the project is $880 million.

Wak Ltd and Orient Point Inc., the sponsors of this project, are using the capabilities of Bender Shipbuilding and Repair Co., Inc., Caterpillar Inc., and Energy Transportation Group. Caterpillar's worldwide product support and Bender's reputation for solidly built vessels makes the Bender Power Barge a most dependable power source. Energy Transportation Corporation specializes in the ocean transportation of bulk commodities, particularly those which are energy related. They operate vessels under U.S. registry as well as under flags of other countries.

HYDROPOWER PROJECT AGREEMENT
Power Gencorp Ltd. **Synergics Energy Development, Inc**

Synergics Energy Development, Inc., of Maryland, U.S. and Power Gencorp Ltd., of Lahore, Pakistan will agree to jointly develop, finance, design and construct and operate three hydroelectric US power plants In the province of PunJab, totalling 75 MW in capacity at total value US $15 million. The projects are expected to come on line in December, 1997.

SOLAR POWER AGREEMENT
Power Gencorp Ltd. **ENTECH, Inc**

ENTECH, Inc. of Dallas, TX and Power Gencorp Ltd. of Lahore, Pakistan will sign a agree to jointly develop solar power projects in Pakistan, including an initial project valued at more than US $40 million.

FOLLOW UP MISSION TO PAKISTAN

DECEMBER 1994

CONCESSION AGREEMENTS

Union Texas Petroleum

Union Texas Petroleum (UTP), a Houston, Texas, based company, signed an extension and revision of concession agreements on its principle properties in lower Sindh (Badin I and Badin II) where it will continue production and exploration under the basic terms of its 1977 agreement. UTP also signed an entirely new concession agreement valued at $3.8 million for the eastern Sindh block, which will be governed by the 1994 Petroleum Policy. Details of the new concession agreement will include geological and geophysical work, including 150 KM of new seismic data and a 10,000 test well.

CONCESSION AGREEMENTS

Occidental Petroleum

Occidental Petroleum, based out of California, Oxy signed concession agreements valued at $25.6 million for oil and gas exploration in five blocks in the Punjab, completing a rapid transformation of its focus from production to exploration. Details of the concession include:

- Occidental Zamurden Concession - will include a 400 km of new seismic data and three exploratory wells
- Occidental Shaiwal Concession - geological and geophysical work
- Occidental Kamalia Concession - geological and geophysical work including an aeromagnetic gravity survey
- Occidental Bahawalnagar Concession - geological and geophysical work including an aeromagnetic gravity survey ,
- Occidental Mehar Concession - geological and geophysical work including seismic data processing

DRY HOLE STUDY

Hydrocarbon Development Institute of Pakistan
Oil and Gas Development Corp **Improved Petroleum Recovery International**

Improved Petroleum Recovery International, a Fort Worth, Texas based R&D Service company, IPRI signed an agreement with the Hydrocarbon Development Institute of Pakistan and the Oil and Gas Development Corp. for $400,000 study of dry holes.

LPG TERMINAL MEMORANDUM OF UNDERSTANDING

Ferrell North American

Ferrell North American - A Houston, Texas, based company, Ferrell North American is the second largest retail marketer of propane in the United States. Ferrell North American signed a Memorandum of Understanding concerning the development of a $25 million LPG terminal at

Pon Qasim near Karachi.

PIPELINE SERVICE CONTRACT
Pakistan State Oil, **VECO**

VECO, an Anchorage, Alaska, based oil and gas service contractor, VECO signed a $3 million pipeline service contract with Pakistan State Oil, the first public/private sector pipeline service contract in Pakistan.

TURNKEY CONSTRUCTION AGREEMENT
Pak-Arab Refinery, Ltd **Wilbros Group, Inc**

Willbros Group, Inc., a Tulsa, Oklahoma, based oil and gas pipeline construction company, Willbros signed a $79 million contract (or the turnkey construction of some 364 kilometers of 16 /18 pipeline, storage, pumping and terminal facilities for Pak-Arab Refinery Limited (PARCO).

MEMORANDUM OF UNDERSTANDING
Hong Pak **American United Machinery Company**

American United Machinery Co., a Columbus, Ohio, based machinery and-power operational procurement and sales company, American United Machinery signed an agreement to supply equipment to HongPak to develop a 1350 MW coal-fired power project in Sindh. The total value of the project is estimated to be US $1.7 billion.

MEMORANDUM OF UNDERSTANDING
Sindha Coal Authority **BBI/Brooklyn Marine & Oil**

BBI\Brooklyn Marine and Oil, Inc., a U.S. partnership consisting of Besicoys Group, Inc., a New York based independent power developer, Brooklyn Marine & Oil, Inc., a New York based shipping and transportation company, BBI signed agreement with the Sindh Coal Authority to develop a 200-MW coal-fired power plant near Hyderbad in southern Sindh. The total value of the project is estimated to be US $200 million.

100 MW POWER PLANT AGREEMENT
Sindh Coal Electric Power Co **Leesburg Financial**

Leesburg Financial, a Washington, D.C. based energy development investment fund, Leesburg Financial signed an agreement to develop a 100 MW coal-fired power plant in Sindh. The total estimated value of the project is US $100 million.

20 MW THERMAL POWER PLANT MEMORANDUM OF UNDERSTANDING
Model Town **Altern Energy**

Altern - A Colorado based company that specializes in private power generation, Altern is one of the leading firms studying the potential of geothermal resources in Pakistan, and is one of the first American companies to explore private power opportunities in Pakistan. Altern signed an agreement to develop a 20 MW thermal power project based on flared gas.

MEMORANDUM OF UNDERSTANDING- HYDROPOWER PROJECT
Synergics, Inc

Synergics, Inc, an Annapolis, Maryland, based company specializing in private power generation, Synergics has developed, owns and is currently operating 13 hydro, gas and oil-fired plants in the United States. Synergics signed an agreement for a 97 MW hydropower project on the Punch River in Kashmir. The power project has an estimated cost of $180 million and project sponsors hope to bring it on line by the end of 1998.

MEMORANDUM OF UNDERSTANDING - WIND PROJECT
Kenetech Wind Power

Kenetech, a San Francisco, California based wind power company, Kenetech is the world's leading developer of wind energy and has installed more wind turbines than any other company in the world. Kenetech signed an agreement for a 100 MW wind power project in Baluchistan. The total value of the project is estimated to be US $100 million.

MEMORANDUM OF UNDERSTANDING - WIND PROJECT
Karachi Power Company
Omega Pvt, Ltd **Omega Zond**

Omega Zond, a California based company that specializes in wind power generation, Zond has installed and currently operates more than 2500 wind-- turbines ranging in size from 65 kilowatts to 500 kilowatts. Omega Zond signed an agreement for a 150 MW wind power project in Sindh. The total estimated value of the project is US $138 million.

PILOT STUDY AGREEMENT
Condyne

Condyne, a company from Longwood, Florida, which has developed and patented unique energy efficiency technology, Condyne signed an agreement to conduct a pilot study of its energy efficient technologies to reduce electricity consumption by refrigerators and air conditioners in Pakistan. The total value of the project is estimated to be US $400 thousand.

L-3
48

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY AND TRADE TO CHINA

FEBRUARY 1995

TRIGERNERATION PHASE II
Shanghai Coking
and Chemical Plant **The Institute of Gas Technology**

The Institute of Gas Technology and the Shanghai Coking and Chemical Plant will signed a Memorandum of Understanding to install a gas turbine which will produce 70 MW of power. IGT previously established a joint venture with the Shanghai Coking and Chemical Plant to market their gasification technology to China. Eight IGT gasifiers, installed during Phase I of this project, produce clean gas from coal which will fuel the new turbine. IGT's gasifiers yield significantly lower emissions producing cleaner energy benefitting the residents of Shanghai and its environs. The total Project is expected to result in a capital investment of U.S. $70 million and IGT expects their share to be between U.S. $35 to $46 million.

MEMORANDUM OF INTENT
Great Asia Industrial Development Company
Shanghai General Building Material
Group Corporation **Owens-Corning**

Owens-Corning and the Great Asia Industrial Development Company and the Shanghai General Building Material Group Corporation signed a Memorandum of Intent to establish a joint venture to construct a fiber glass insulation plant. Owens-Corning is a leading supplier of residential and commercial glass fibre blanket insulation. The proposed plant is of U.S. design and technology and will produce significant energy conservation and environmental benefits as these materials are introduced to the Chinese market. Owens-Corning estimates that the total capital investment by all partners will be approximately U.S. $25 million over the next two years. The plant will employ approximately 120 people and is expected to commence production in the second quarter of 1996 if the joint venture is successfully signed by April, 1995 as planned.

WU JING EXPANSION PROJECT EIGHTH PHASE
Shanghai Municipal Electric Power **Cogen Technologies**
Corp & Shenergy Company **Aig-Asian Infrastructure Fund**

Cogen Technologies & Aig-Asian Infrastructure Fund and their partners, the Shanghai Municipal Electric Power Corporation and Shenergy Company Limited signed a Memorandum of Understanding to expand the Wujing Project in Shanghai. The project will consist of 2 X 600 MW coal-fired units and will result in reduced SO2 emissions in Shanghai. The total cost of this project is expected to be U.S. $1.2 billion with the American partners share estimated at up to $U.S. 150 million.

JOINT VENTURE CONTRACT
Meiya Jinqiao Energy Company Ltd. **Community Energy Alternatives**

Community Energy Alternatives Inc. and the Shanghai Jinqiao Heat Power Corporation signed a joint venture contract to establish the Meiya Jinqiao Energy Company Ltd. The project will provide a centralized steam, hot water and cooling system in the Jinqiao Export Processing Zone in Pudong, Shanghai. The Joint Venture Company will employ foreign control equipment and systems in its operation as well as in servicing its customers during Phase I. The Jingiao Project will eliminate the need for individual boilers, thus enhancing overall energy efficiency. Phase I of the Joint Venture is expected to result in a U.S. $28 million investment with CEA's share estimated to be $16.8 million.

LU MAO JIANG PROJECT
Lu Mao Jiang Coal Mine Company **EFH Coal Company**

The EFH Coal Company and the Lu Mao Jiang Coal Mine Company and signed a Memorandum of Understanding to conduct a feasibility study for a 50 MW coal-fired co-generation project. The project will be located in Hunan Province and will employ the latest environmental technologies. The project is estimated to be valued at U.S. $50 million.

ZHEJL NG YONG-KE THERMAL POWER PROJECT
EDC Shaoxing Power Ltd. **Enserch Development Corporation**
East Wind Power Partners

Enserch Development Corporation and the Zhequian Xiao-Xiao Enterprise General Company and East Wind Power Partners signed cooperative joint venture and articles of association to develop a 3 X 12 MW coal-fired power plant. The developers estimate that the project will generate electricity sales of 180 to 260 GWH and annual steam production of 1.3 to 3.1 million GJ. The total project is valued at U.S. $27 million and Enserch estimates their share of the project to be U.S. $18.8 million. This plant is an efficient co-generating plant which will serve about 30 local enterprises and the developers believe it will be among the first Sino-U.S. joint venture to generate power in the People's Republic of China.

The parties also announce that a separate letter of intent has been signed to jointly develop an additional 100 MW power plant near Shaoxing City. This new plant will use efficient, clean, combined-cycle technology. Feasibility studies and cost estimates are not yet complete but a total investment on the order of U.S. $80-100 million is indicated.

WUXI CITY PEAKING PROJECT
China National Aero-Engine Corporation and Wuxi New Energy Investment Company **The Coastal Corporation**

Coastal Corporation, and the China National Aero-Engine Corporation and the Wuxi New Energy Investment Company signed a Letter of Intent to establish the Wuxi City Peaking Project Phase I and Phase II. Phase I of the Wuxi City Peaking Project will provide Peaking capacity to alleviate peak capacity demand in Wuxi City using clean and efficient gas turbines. The project is expected to result in an investment of U.S. $25 million with Coastal's share expected to be U.S. $15 million.

PRODUCTION SHARING CONTRACT
China National Offshore Oil Corporation **Chevron**

China National Offshore Oil Corporation (CNOOC) and Chevron Overseas Petroleum Corporation signed a Production Sharing Contract to jointly explore, develop, and produce natural gas in the offshore block 62/23 in the South China Sea.

This exploration joint venture between CNOOC and Chevron will benefit the growing industry base in southern China by supplying energy in an environmentally sensitive way. The agreement will add to Chevron's already significant presence in China. The joint venture will commence immediately beginning with a joint exploration study in 1995. The total project value is estimated to be US $30 million.

MULTIPLANT LICENSE AGREEMENT
MINISTRY OF CHEMICAL INDUSTRY AND SINOPEC **TEXACO**

The Ministry of Chemical Industry, the China Petro-Chemical Corporation (SINOPEC) and Texaco signed an agreement for the Ministry of Chemical Industry and SINOPEC to build nine plants using Texaco's gasification technology. The nine plants will convert coal into clean synthetic gas for the production of chemical fertilizer. Texaco is the world leader in gasification technology, considered to be the cleanest, most efficient technology for the conversion of coal and other hydrocarbons into useful products including electric power, fuels, chemicals and fertilizer.

The nine plants to be built under this agreement represent a capital investment in excess of $500 million by the Ministry of Chemical Industry and SINOPEC and will increase domestic fertilizer production using the best available technology. By utilizing the Texaco Gasification Process, these plants will contribute to a significant improvement in environmental quality, reducing emissions by as much as 20 million metric tons per year.

EASTERN HEATING PLANT
Beijing District Heating Company **Cogen Technologies**

Cogen Technologies Capital Company and the Beijing District Heating Company signed an agreement for the Eastern Heating Plant to be located in an eastern suburb of Beijing. This facility will provide hot water to commercial, industrial and residential customers in the area through the existing and an expanded, district heating system. The partners estimate the total cost of the facility to be U.S. $65 million. Cogen's portion of the equity investment will be 70%.

COOPERATION AGREEMENT
State Science and Technology Commission **AMOCO/ENRON SOLAR**

Amoco/Enron Solar and the Department of Industrial Technology of the State Science and Technology Commission signed an agreement to jointly conduct a feasibility study which should lead to the construction of a thin-film photovoltaic manufacturing facility and a solar electric generating facility in the People's Republic of China.

The proposed manufacturing facility would produce a new generation of solar cells which would enable solar power to be competitively priced in China. When the project receives final government approval, it will represent an investment of U.S. $300-400 million and will set a model for environmentally friendly energy production in China. The two facilities would employ an estimated 200 people at full production and are expected to commence production within two years from a successful completion of the feasibility study and related contracts.

MEMORANDUM OF UNDERSTANDING
China Photovoltaic Electronic Company
And Beijing General Research Institute **Spire Corporation**

Spire Corporation and China Photovoltaic Electronic Company and the Beijing General Research Institute signed a Memorandum of Understanding to establish a new photovoltaic module manufacturing factory in China.

The new factory will nearly double China's manufacturing capacity for photovoltaic modules. These modules are used throughout China for village electrification. Spire estimates that the total investment by all parties will be between U.S. $7 - 12 million over the next two years. The plant will employ approximately 400 people and is expected to begin production in late 1996 if the contract is successful signed by October 1995.

MEMORANDUM OF UNDERSTANDING
Yunnan Semiconductor Device Factory **Spire Corporation**

Spire Corporation and the Yunnan Semiconductor Device Factory signed Memorandum of Understanding to expand the production of photovoltaic manufacturing in Yunnan. The module production resulting from the expanded capacity at the Yunnan Plant will be used throughout China for telecommunications, lighting, refrigerating and other applicators. Spire estimates that the investment will be approximately U.S. $1 million over the next year. The expanded factory will employ approximately 200 people in full production in 1996, if the contract is successfully signed by October 1995.

JOINT VENTURE FOR WIND POWER PLANT
Inner Mongolian Electric Power Company **Flowind**

FloWind Corporation and the Inner Mongolian Electric Power Company signed an agreement to form a joint venture to build, install and operate a 110MW wind power plant using FloWind's advanced wind turbine technology.

FloWind offers two advanced utility-class wind turbines, developed in collaboration with the U.S. Department of Energy's national laboratories. The FloWind-Inner Mongolian joint venture, valued at approximately $85 million will be a major source of reliable, pollution free power for the consumers of the Inner Mongolian Electric Power Company.

JOINT VENTURE FOR WIND POWER PLANT
Zhejiang Wind Energy Company **Flowind**

FloWind Corporation and the Zhejiang Wind Energy signed a Letter of Intent to form a joint venture to build, install and operate a 30MW wind power plant using FloWind's advanced wind turbine technology.

FloWind offers two advanced utility-class wind turbines, developed in collaboration with the U. S. Department of Energy's national laboratories. The FloWind-Zhejiang Wind Energy joint venture, valued at approximately U.S. $29.5 million, will be a major source of reliable, pollution-free power for the consumers of the Zhejiang Power Electric Company.

JOINT VENTURE AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCIEC), one of the largest power development and equipment companies in China signed a joint venture agreement to develop five contiguous hydropower sites on the Upper Ming River in the Fujian

Province of China. The "Fujian Nan Ping Hydro Power Company," a 39 MW project is now under construction and scheduled to come on line by the end of this year.

New World is today contracting to purchase a forty (40) percent interest in this first Fujian hydroelectric project. New World and CCJEC will be negotiating for their relative ownership interests in the remaining four projects over the next several months.

New World and CCJEC plan to develop renewable power projects throughout China and the Pacific Rim. They have previously executed a joint venture agreement to develop two wind farms, in Shenzhen and Nanao Island, Guangdong Province, respectively, and have also executed a letter of intent calling for the manufacture, assembly and distribution of wind and solar power products. The total value of the project is estimated to be US $30 million.

SUSTAINABLE DEVELOPMENT AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCIEC), one of the largest power development and equipment companies in China have agreed to an annual series of official visits between Chinese and American officials in order to educate leaders on the advantages of renewable resources as solutions to electric power needs, and to inaugurate a series of academic exchanges between universities in the United States, including Georgetown University, where New World has begun the process of sponsoring a course on renewable energy applications, and universities in China selected by CCJEC.

As a first step in the implementation of this agreement, New World, CCJEC and the Government of the State of Hawaii have invited a delegation from Fujian Province, headed by Vice Governor Tong Wan Heng, to visit hydroelectric, wind, and solar technology sites in the United States, this Spring.

LETTER OF INTENT
Inner Mongolia Electric
Power Company **Zond Energy Systems**

Zond Energy Systems, Inc. and the Inner Mongolia Electric Power Company (IMEPA)signed a Letter of Intent to build a 100 MW wind power plant using 182 of Zond's Z40 wind turbine generators. Zond is a leading company in wind turbine manufacturing and wind power project development, construction and operation. IMEPA is a large electric utility serving the Chinese autonomous region of Inner Mongolia. The total project value is estimated to be US $110 million.

LETTER OF INTENT
Zhejiang Wind Power Development Company **Zond Energy Systems, Inc.**

Zond Energy Systems, Inc. and Zhejiang Wind Power Development Company (ZWE)signed a Letter of Intent to purchase 128 of Zonds Z40'm wind turbine generators to be used in a 70MW wind power plant to be constructed by ZWE on Dachen Island. The Zond-Z40 is a 550kW, 40 meter rotor advanced wind turbine. Zond, is a leading company in wind turbine manufacturing and wind power project development, construction and operation. ZWE is a subsidiary of Zhejiang Provincial Electric Power Company, a large electric utility serving the Chinese province of Zhejiang. The total value of the project is estimated to be US $51 million.

LETTER OF INTENT
Guangdong Nanao Zhen Neng Wind Power Development **Zond Energy Systems, Inc.**

Zond Energy Systems, Inc. and Guangdong Nanao Zhen Neng Wind Power Development Company signed a Letter of Intent to purchase 54 of Zond's Z-40 wind turbine generators for use in a 30 MW wind power plant to be constructed on Nanao Island. The Zond Z-40 is a 550 KW, 40 meter rotor advanced wind turbine. The total value of the project is estimated to be US $21 million.

JOINT VENTURE AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCJEC) signed a joint venture agreement to develop five contiguous hydropower sites on the Upper Ming River in the Fujian Province of China. The "Fujian Nan Ping Hydro Power Company," a 39 MW project is now under construction and scheduled to come on line by the end of this year.

New World is today contracting to purchase a forty (40) percent interest in this first Fujian hydroelectric power. New World and CCJEC will be negotiating for their relative ownership interests in the remaining four projects over the next several months.

New World and CCJEC plan to develop renewable power projects throughout China and the Pacific Rim. They have previously executed a joint venture agreement to develop two wind farms, in Shenzhen and Nanao Island, Guangdong Province, respectively and have also executed a letter of intent calling for the manufacture, assembly and distribution of wind and solar power products. The total value of the project is estimated to be US $ 30 million.

SUSTAINABLE DEVELOPMENT AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCJEC) have agreed to an annual series of official visits between Chinese and American officials in order to educate leaders on the advantages of renewable resources as solutions to electric power needs, and to inaugurate a series of academic exchanges between universities in the United States, including Georgetown University, where New World has begun the process of sponsoring a course on renewable energy applications, and universities in China selected by CCJEC.

As a first step in the implementation of this agreement, New World, CCJEC and the Government of the State of Hawaii have invited a delegation from Fujian Province, headed by Vice Governor Tong Wan Heng, to visit hydroelectric, wind, and solar technology sites in the United States, this Spring.

COMMERCIAL SALES AGREEMENT
Yangzi Petrochemical Company **Honeywell**

Honeywell, Inc. and Yangzi Petrochemical Company signed a U.S. $3.8 million sales contract.

Under this contract, Sinopec Honeywell (Tianjin) Ltd., is to replace the existing Foxboro analog instrumentation with Honeywell State-of-the-art TDC 3000x Distributed Control system (DCS) as Yangzi expands its Purified Terephathalic Acid (PTA) production capacity from 450 kton/y to 600 kton/y. The DCS will provide tighter control of the plant to reduce process upsets and product variation, both of which will result in reduced energy consumption. Also included in the contract is a safety management system to safeguard the environment and to provide a safer work environment for plant personnel.

LETTER OF INTENT
Yueyang General Petrochemical Works **Honeywell**

Honeywell, Inc. and the Yueyang General Petrochemical Works signed a Letter of Intent to replace the existing Fuji distributed control system, installed in Yueyang SBS & BUT Plants, with state-of-the-art TDC 3000x technology.

The initial phase of the contract is U.S. $400,000 and represents the first of a series of projects to modernize Yueyang's production facilities.

PURCHASE CONTRACT
Daqing Petroleum Administrative Bureau **Halliburton International, Inc.**

Halliburton and the Far-East International Trading Corporation of the Daqing Petroleum

Administrative Bureau, signed a contract to establish a perforating charge API test facility. The perforating charge API test facility will have significant impact on the China National Petroleum Corporation (CNPC) by enhancing oil recovery in their oil fields throughout China through the use of Halliburton's charges. The total value of the contract is estimated to be $638,000.

JOINT VENTURE AND TECHNOLOGY TRANSFER AGREEMENT
Liaohe Petroleum Exploration Bureau **Halliburton International, Inc.**

Halliburton and Liaohe Petroleum Exploration Bureau signed a contract to form a Chinese-American Joint Venture Company to manufacture and market flow measurement equipment. The Joint Venture will produce high technology turbine flow meter and flow measurement products for oil field service application in the People's Republic of China and throughout the world. The total amount of capital investment by the joint venture parties will be U.S. $850,000 with generated revenue projections of up to $40 million over the next ten years.

MEMORANDUM OF UNDERSTANDING
Guizhou Power Investment Company
Huamei Coal Water Mixture Technology Center **Ahlstrom Development Corp.**

Huamei Coal Water Mixture Technology Center and Ahlstrom Development Corporation signed a Memorandum of Understanding to build three power plants in Chinese coal mines introducing Ahlstrom's Circulating Fluidized Bed Combustion technology to produce inexpensive, environmentally clean electric power from waste coal and coal washery rejects. These projects may use dry cooling technology to save water and will demonstrate United States Clean Coal Technology which could produce up to 20,000 MW of electric power from coal mining waste using advanced environmental controls to limit acid rain and other emissions. The total cost of these projects will be approximately U.S. $500 million with U.S. $100 to 200 million provided by United States lenders and investors.

Guizhou Power Investment Company and Ahlstrom Development Corporation also signed a Memorandum of Understanding to building two 200 MW power plants in Zunyi, Guizhou Province using Ahlstrom Pyropower's Circulating Fluidized Bed Combustion technology to produce clean electric power from high sulphur coal. This project will be the largest circulating fluidized bed power plants in Asia and will use advanced environmental controls to remove over 95% of the SO2 emissions that cause acid rain simultaneously lowering other atmospheric pollution. This project will be built in two phases at a total cost of approximately U.S. $280 million with approximately U.S. $50 million to be supplied by U.S. lenders and investors.

MEMORANDUM OF UNDERSTANDING
Beijing Min Metals **Carbon Fuels Corporation**

Beijing Min Metals and China Nuclear Industry Rem Co. and Carbon Fuels Corporation signed a

Memorandum of Understanding to establish a joint venture for the exclusive development of the Charfuel coal refining process in the People's Republic of China.

Beijing MinMetals is a large industrial trading company in China. The joint venture will own and operate its own refineries and cogeneration facilities and will license third parties to practice the Carbon Fuels' Charfuel process in China. The Chinese Academy of Sciences, the Government of Shanxi Province and the Municipality of Taiyuan, Shanxi will also join in the venture.

The venture intends to develop engineering design criteria using Chinese coal and to construct a showcase plant near Taiyuan Chanxi Provice. The plant will employ 150 people to operate and maintain the facility and construction is expected to commence in 1997 if a joint venture contract is signed by April 1995. The cost of the showcase project is expected to be about $300 million.

COOPERATION AGREEMENT
North China Power Group **Entergy**

The North China Power Group and Entergy Power Group signed a Long Term Friendly Cooperation Agreement to cooperate in international projects and develop strategic plans on domestic and international business. Specifically, the agreement calls for Entergy to assist North China Power Group in establishing management and control systems and in developing personnel and technical training. Both parties will begin exchanging managerial experiences in the power industry and science and technology achievements and information.

LETTER OF INTENT
Sichuan Electric Power Company **Energy Initiatives, Intesol Int.**

Energy Initiatives (a subsidiary of General Public Utilities) and InTeSol International, Ltd. and the Sichuan Electric Power Company signed a Letter of Intent to establish a joint venture to construct, own and operate a 2x600MW coal-fired power plant in Sichuan Province. The power plant is an expansion of an existing power plant site and will provide over 6 billion kilowatt-hours of electricity per year to the Sichuan Province power grid. The proposed power plant is estimated to require a capital investment of greater than U.S. $1.2 billion with the United States share of financing estimated to be greater than U.S. $1 billion. The power plant will provide significant air pollution benefits due to displacement of local small boilers, use of low sulfur coal, and use of more effective particulate emission controls. The power plant is scheduled to begin operation in the late 1990's.

LETTER OF INTENT
Jilin Province Energy and Transportation Company
Jilin Province Power Company **Energy Initiatives, Intesol Int.**

Energy Initiatives (a subsidiary of General Public Utilities), InTeSol International, Ltd., Jilin

Province Energy and Transportation Company, and the Jilin Province Power Company signed a Letter of Intent to establish a joint venture to construct, own and operate a 2x300 MW coal-fired power plant in Jilin Province. The proposed project will expand on an existing power plant site and will provide over 3 billion kilowatt-hours of electricity per year to the port city's development zone. The proposed power plant is estimated to require a capital investment of almost U.S. $300 million with the U.S. share of financing estimated to be nearly U.S. $150 million. The power plant will provide significant air pollution benefits due to displacement of small local boilers, use of low sulfur coal, and use of more effective particulate emission controls. The power plant is scheduled to start construction in early 1996 and begin operation in 1999.

SALES CONTRACT
Qinshan Nuclear Power Station **Westinghouse Electric Corp.**

The China Nuclear Energy Industry Corporation, on behalf of the Harbin Turbine Works and Westinghouse Electric Corporation signed a contract for components of two 600 MW turbine generator units for the conventional island of Phase II of the Qinshan Nuclear Power Station. The contract is for joint design of the turbine and for major components including rotating parts, valves and control systems from the United States. The Qinshan Nuclear Power Station is China's first nuclear power plant. The total value of the contract is estimated to be US $24 million.

JOINT STATEMENT OF INTENT
China National Environmental Protection Agency **Energy Resources International**

Energy Resources International, Inc. and the Foreign Economic Cooperation Office of the National Environmental Protection Agency of the People's Republic of China signed a Joint Statement of Intent to establish a long-term cooperation program aimed at controlling emissions from existing and future energy facilities in China. The proposed program will be conducted in two steps. First ERI and FECO will conduct an Environmental Study Tour of China to introduce foreign companies to the environmental problems facing China, actions being taken to address the problems, and methods of undertake joint business partnerships to support the actions. In the second step, ERI and FECO will work toward the creation of partnerships to carry out the programs and projects for the control and prevention of pollution from energy facilities in China. It is the intent of both parties that the Joint Statement of Intent lead to a venture that will create significant environmental and economic benefits.

ASSOCIATION AGREEMENT
China International Engineering Consulting Corp. **CH2M Hill**

CH2M-Hill International Ltd. (USA), and CIECC (PRC) signed an Association Agreement to provide environmental consulting services in China and other countries. This association of these two leading firms will help to protect and improve the quality of the environment by their activities in the area of pollution prevention, renewable resources and essential infrastructure.

Advanced technology will be utilized on projects and many opportunities for training and technical exchange will result. Contracts of up to U.S. $20 million (equating to over U.S. $200 million of construction project) are expected in the first two years. Opportunities will be opened for the export of United States technology, pollution control equipment and operating services. Significant opportunities for export of U.S. technologies, pollution control equipment and operating services will result from this association.

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY AND EMPOWERMENT

AUGUST 1995

LETTER OF AGREEMENT
SUNCORPS **SPIRE and AES**

Letter of Agreement to build a PV manufacturing facility adjacent to Alexandra township. This facility will produce 500 kw/year, electrify 10,000 homes, 600 clinics and 1,000 schools. This is considered a fast track pilot project. This program will bring 200 jobs associated with manufacturing, sales, maintenance, and installation of the products made at this facility. 15-30 jobs in the United States are needed to support the South Africa partner.

MEMORANDUM OF UNDERSTANDING TO STUDY OF COAL BED METHANE POTENTIAL ON LEBOWA MINERALS TRUST LANDS
Lebowa Minerals Trust and RED **Advanced Resources International, Inc.**

Letter of Intent to evaluate potential market for coal bed methane supply and utilization. In addition, the project is designed to create utility partnerships and train people in field operations, power plant operations and other areas of management. Fifty (50) engineers would be identified and trained in technical, managerial, operations, energy research and environmental technologies. A fast track project. Once geological appraisal work is complete, hopefully South Africa will pursue development and utilization of natural gas which is estimated to be worth $50 million. U.S. companies would be the primary recipients of the materials and supply contracts. This project would create 200 jobs.

MEMORANDUM OF UNDERSTANDING
Township of Guguletu **Sandia National Laboratory**
African Electrification Foundation
Historically Black Colleges and Universities

Memorandum of Understanding to design a to bring an enterprise zone to the Township of Guguletu. Sandia Labs will draft a plant to bring an enterprise zone to the Township of Guguletu, in the Western Cape. This is an effort to implement the Township's strategic plan to develop an economic infrastructure. This plan will incorporate the idea of creating an enterprise zone with vocational training that will draw investors and create approximately 1,000 new jobs over time. The design will combine facility and manpower requirements that will form the basis of a Guguletu vocational training program. Types of industry considered for this zone include brick manufacturing, textiles, electronic controls, and lumber mill work.

MEMORANDUM OF UNDERSTANDING
Renewable Energy for Southern Africa **US Agency for International Development**
US Department of Energy

Memorandum of Understanding to promote renewable energy for rural housing in South Africa. This pilot program will electrify 2,500 rural homes through use of photovoltaic systems. It will

introduce the use of alternate energy sources for home heating, cooking, and other purposes. In addition, the pilot system will evaluate financing, installation, and support mechanisms. This program will lead to a project that will benefit approximately 10 million rural citizens over the next 20 years.

Potential access to billion dollar market for rural domestic business electrification.

MEMORANDUM OF UNDERSTANDING
ESKOM **Electric Power Research Institute**

Center for Essential Community Services. The primary role of the Center for Essential Community Services will be to act as a technology transfer mechanism for moving EPRI technology through ESKOM into Sub-Saharan Africa. The Centre's work will also include project management, closely coordinated with government objectives, initially focused on water purification, health care and the role of electricity in these efforts. EPRI and ESKOM are working to align its mission with the South African Government's Reconstruction and Development Program which focuses on water and electricity supplies and health care issues.

The Center will function as a satellite of EPRI's Customer Systems Group Community Environmental Center in St. Louis, Missouri, and will become a part EPRI's center and office network. Official ties and support from EPRI will include technology transfer, shared projects and project management.

The Community Training Center is expected to serve between 5,000 to 50,000 people at each community impacted growing to assist 500,000 people within five years. Impact on jobs could ultimately range up to several thousand.

The host site for the CECS, most likely a major South African University, will be selected by the request for proposal process, now underway. Selection criteria include technical capabilities, community presence, ties to key South African industries and resource contributions. The site selection is expected to be made this fall and the Center to open thereafter.

LETTER OF INTENT
Group for Environmental Monitoring **International Institute for Energy Conservation**

Letter of Intent for a needs assessment for U.S. efficient transport industry in South Africa. IIEC will be funded by DOE to perform a joint study with GEM to determine opportunities in South Africa for electric vehicles and manufacturing component parts as well as opportunities for production of ethanol from biomass.

The project will identify areas of opportunities for U.S. efficient and sustainable transportation technologies. If the needs assessment indicates opportunities for electric vehicles or production of ethanol, job creation will be significant.

CONTRACT FOR BUILDING MANAGEMENT SYSTEMS INSTALLATION
ESKOM **Johnson Controls**

Contract for energy management and other services. Johnson Controls will contract with ESKOM to install energy efficient building management systems, fire detection access controls and audio evacuation systems at the Technical Research Institute. Johnson Controls will also train operators to maintain the systems once installed and operational.

This project will showcase management control systems that are energy efficient. It will provide an opportunity to learn about the economic benefits of energy efficiency.

Products will be made and shipped from the United States. This project will create 4-5 jobs in South Africa.

MEMORANDUM OF AGREEMENT
South Africa National Electricity Regulator **Department of Energy**

Agreement to conduct two regulatory workshop. One workshop will be held in the United States and the other in the Republic of South Africa. This Agreement discusses the intent to conduct two (2) workshops on regulatory system to facilitate investment in electric power systems.

This program will assist South Africa in the development of a regulatory system necessary to facilitate investment in the electric power sector and other energy sectors.

LETTER OF UNDERSTANDING
Manong Construction, Mouke Industries,
Luthuli Lewis and Associates **PEER Consultants**
Advanced Panel Manufacturers

Community Development Project (Kimberley). This project is designed to evaluate and test holistic community development assumptions and should result in the development of an approach to community planning and development which can be replicated in other communities.

This project will utilize low-cost, energy efficient housing piloted by the US Department of Energy, and bring electrification to urban and rural areas through the use of conventional and alternative renewable energy sources, energy efficient and high combustion appliances and where applicable, low smoke fuels. The community design includes schools, police station, health clinics and small business centers.

This project will involve the community in the design of the community , and will offer training and skill building opportunities. This project fits into the goals of Reconstruction Development Programme of South Africa.

JOINT STATEMENT OF INTENT

The Provincial Government of Northern Cape **The Department of Energy**

Joint Statement of Intent on Renewable Technologies. This Joint Statement of Intent would create a cooperative relationship to promote increased economic interaction, facilitate technology transfer and accelerate commercialization of renewable energy based systems and products.

This agreement will help foster relationships between the Department of Energy and the provincial government of the Northern Cape. This agreement will help:

- increase the level of energy policy expertise,
- encourage education and investment though technical personnel exchanges and seminars,
- promote private investment in energy projects, and
- educate the rural communities in the use of alternate energy sources for electrification.

This agreement will also facilitate closer government-to-government coordination on energy policy.

Document Number 39

TO ES

Comments from the Private Sector*
about
Department of Energy Trade Missions (1994-1995)

"I want to take this opportunity to thank you personally for all of your support. I believe that the initiative the DOE has undertaken, under your leadership, for industry/government partnership in renewable energy in India is of profound importance. We strongly support the efforts you have innovated at DOE to simultaneously seek expanded commercial opportunities for U.S. firms in the growing global market and also to vigorously support development of renewable and other non-polluting energy technologies."

"We are looking forward to seeing United Solar Systems and our Ovonics Battery products introduced to India in large scale market seeding programs."

Ovonics (Troy, MI)
Nancy M. Bacon
Senior Vice President
February 24, 1995

"You have been a great friend and supporter of American Businesses attempting to conduct business around the world and we applaud your leadership on the various trade missions conducted these past two years. These missions have had a positive effect on promoting U.S. projects in India and other countries."

Enron Corporation (Houston, TX)
Kenneth L. Lay
Chairman and Chief Executive Officer
August 8, 1995

"In spite of the political complexities of the moment, the mission proved to be a tremendous success, and should be viewed as a testament to the Administration's policy of constructive engagement and your ability to present a clear and reassuring message to the Chinese. Many important agreements were signed during this trip which will lay the foundation for further cooperation between the Chinese government and U. S. government and private sector representatives in the development of that country's energy sector. Amoco was proud to be a part of this endeavor and looks forward to working together with the Department of Energy as it seeks to build upon these achievements."

"Amoco truly appreciates your commitment to facilitating dialogue and cooperation between the Chinese government, the U.S. government and the private sector. Your mission inaugurated a new initiative which, as it continues, will benefit all parties."

Amoco Corporation (Chicago, IL)
Garry P. Mihaichuk
Senior Vice President
March 20, 1995

*Excerpts taken from letters to the Department from members of private sector delegation on DOE trade missions.

vant to thank you, the Secretary and the Staff for everything you have done for Fulton. Also, I want to gratulate you on an unbelievable job promoting U.S. business abroad. As an established exporter (we have been around for 143 years and over 60% of Fulton's gross sales are for export), I can honestly say that you have renewed our faith in our government ."

Fulton Ferracute Industries International (St. Lois, MO)
Ramon A. Marin. P.E.
President
April 17, 1995

"I was honored to be included in your delegation to China. I thought it [was] very successful in both enhancing the US-China relationship and furthering various private energy projects we are all pursuing."

The AES Corporation (Arlington, VA)
Roger W. Sant
Chairman
March 13, 1995

"This is my sincere appreciation for your invitation to the Presidential Mission on Sustainable Energy and Trade to China. Myself, my company, as well as my community in Richland Washington are proud of being a part of such a successful mission."

elieve that we have created friendship, understanding and trust with our hosts in China, that will be the ıundation of future successful business relationships in the years to come."

Allied Technology Group (Freemont CA)
Doreen Chiu
President
March 16, 1995

"Congratulations to the U.S. Department of Energy for an impressive, influential and well managed mission to Hong Kong and China."

Black & Veatch Power Asia (Kansas City, KA)
Thomas E. Kalin
Managing Director and CEO
March 3, 1995

"I wanted to take a minute to express my gratitude to you and the rest of the DOE entourage for a most successful mission to China. The experience was invaluable to me and I have made contacts that are going to facilitate further development of our technology in China."

Carbon Fuels Corporation (Englewood, CO)
Lee G. Myer
President & CEO
February 27, 1995

"I was very much impressed with the organization and substance of the Presidential Mission on Sustainable Energy & Trade to China. I was honored to have been selected as a delegate and wanted you and [Assistant Secretary] Sue Tierney to know how helpful Cogen Technologies believes the mission was."

Cogen Technologies (Houston, TX)
Robert T. Sherman, Jr.
Vice President
March 6, 1995

"I want to thank you for including me as a delegate on last week's Presidential Mission on Sustainable Energy and Trade to China. As the only U.S. law firm authorized by the Chinese Ministry of Justice to have an office in Shanghai, it was particularly useful for me to participate. You and the entire Energy Department staff are to be commended for the fine organization and execution of the mission. You might be interested to hear that one of the U.S. Embassy staff members told me this trip was the best organized she had seen. Every delegate I spoke with also was highly complimentary."

Davis Wright Tremaine (Washington, D.C.)
Omer F. Brown, II
Attorney at Law
February 27, 1995

"Congratulations and thanks! Your incredible leadership, this time promoting sustainable energy development in China, has resulted in significant advances in positioning U.S. companies to play a major role in China's important energy and environmental markets. The mission helped the industry participants, and my firm, Energy Resources International, Inc., make great strides in developing the relationships so important with doing business in China."

Energy Resources International, Inc. (Washington, D.C.)
Jack S. Siegal
President
February 27, 1995

"I want you to know how very much I appreciated your kind invitation to participate in the Presidential Mission to China. We learned so much...so many positives-some negatives...all of which are very useful in formulating business strategy regarding China.

"I would like to add my sincere congratulations to you on your outstanding comments and actions on the behalf of all US industry while we were there."

I also congratulate you on your pursuit of these trade missions. They are helpful, they bring different cultures together, and they get positive results."

General Electric (Schenectady, NY)
Eugene W. Zeltmann
Manager, Trade & Industry Associations
February 28, 1995

'ant to let you know how much I appreciate the opportunity to have joined you and your associates on recently completed Presidential Mission to Pakistan. I could not help but think that you and the team were making solid progress in improving Pakistan's ability to solve infrastructure problems as well as creating a much better rapport between our two countries."

I look forward to working with you and your associates to assure that we do the follow-up to keep the extraordinary initial benefits from this trip alive and well."

General Electric (Schenectady, NY)
Eugene W. Zeltmann
Manager, Trade & Industry Associations
September 28, 1995

"I am writing to let you know how impressed I was with your outstanding advocacy efforts on behalf of American companies during the Presidential Mission on Sustainable Energy and Trade to China. The mission provided the platform by which we, the American companies, could express our views in a unified manner. This of course adds weight to the message."

"I gained a broader knowledge about several aspects of the petroleum, gas and electric power sectors in China and am confident that the information which I gained from the mission will benefit Occidental as it seeks to define its strategies in China. It is my hope that the openings which you presented to all American companies could soon be turned into concrete opportunities."

I know that you have been actively engaged with helping U.S. companies to gain access to new markets around the world and I would strongly encourage you to continue promoting U.S. business abroad."

Occidental Oil and Gas Corporation (Bakersfield, CA)
John A. Carver
Executive Vice President
March 7, 1995

"Thank you for the opportunity to participate in the Presidential Trade Mission to China. You did an outstanding job in your role as Secretary of Energy and Mission leader. The Mission's success was due to your energy, drive and results-oriented approach. The DOE has done a great job in helping further the interests of the U.S. in China."

Oxbow Power Corporation (West Palm Beach, FL)
Bernard H. Cherry
President
March 3, 1995

recently concluded Presidential Mission on Sustainable Energy and Trade to China was unique ...rtunity to present the strength and diversity of the U.S. energy industry to the single largest emerging energy market. Texaco appreciated the opportunity to participate in this Mission."

Texaco Inc. (White Plains, NY)
David C. Crikelair
Vice President
March 8, 1995

"I would like to thank you and your staff for the role you played in support of the successful U.S./Pakistan signing ceremony for Commercial Contracts, Memorandum of Understanding, and Expressions of Interest, held on 6 April 1995 in the presence of Ms. Benazir Bhutto, Prime Minister of Pakistan, and yourself."

"I very much appreciate all that you have accomplished to date, and look forward to your continuing support for this very important endeaver."

Unocal Corporation (Los Angeles, CA)
John F. Imic, Jr.
President
April 20, 1995

"I wanted to thank you for leading the President's Trade Mission to China and your staff for the huge amount of work it must have required to put it together. I thought you and your colleagues did an excellent job and the Trade Mission was a clear success."

"We are excited about the potential in China and firmly believe that significant progress was made towards obtaining business in China for Energy related U.S. firms as result of your Mission."

Zond Systems Inc. (Tehachapi, CA)
Kenneth C. Karas
President and Chief Executive Officer
March 7, 1995

Document Number 40

13
To ES

Excerpts from August 8, 1994 letter to President Clinton from 32 industry participants of 1994 Presidential Mission to India

"Dear Mr. President:

This letter is being written by the industry representatives of the Presidential Mission on Sustainable Energy and Trade to India which returned to the United States July 14, 1994. We believe that the delegation, its composition, mission objectives and outcomes should be used as a model for future trade missions... The success far exceeded the expectations of the companies represented...

We cannot say enough about the leadership of Secretary of Energy Hazel O'Leary. She was able to develop a relationship of trust between her Indian counterparts that was the cornerstone of the mission's success...

It is our view that the specific expertise of the Department of Energy personnel, as it applies to the increasing energy and environmental requirements of developing nations, was invaluable and is critical to the ongoing success of the Indo-U.S. partnership.

We feel proud to be American citizens and appreciate the opportunity to partner with our government in a way that serves all our interests."

Sincerely,

Nancy M. Bacon
Senior Vice President
Energy Conversion Devices, Inc.
Troy, MI

Dennis W. Bakke
President and CEO
The AES Corporation
Arlington, VA

Scott Bayman
President and CEO, GE India
GE International Operations Co.
Nehru, New Delhi

James W. Cook
President and CEO
CMS Generation Company
Dearborn, MI

Sonja Ebron
President
Solar Power and Light, Inc.
Palm Bay, FL

Robert H. Eggleston
President
EFH Coal Company
North American Division
Mars, PA

Charles F. Goff
President & CEO
Destec Energy, Inc.
Houston, TX

Lisa R. Gued
Vice President
Solar Power and Light, Inc.
Palm Bay, FL

Walter J. Hesse
President and CEO
ENTECH, Inc.
DFW Airport, TX

Paul C. Johnson
President, South Asia Region
Martin Marietta International, Inc.
GE Tower #08-00, Singapore

Ramesh Kapur
MED-TECH Medical
Technical Gases
Medford, MA

Martin Klepper, Esquire
Partner
Skadden, Arps, Slate, Meagher &Flom
Washington, D.C.

Vello S. Kuuskraa
President and CEO
Advanced Resources International, Inc.
Arlington, VA

Roger G. Little
President
Spire Corporation
Bedford, MA

Reinier H.J.H. Lock, Esquire
Leboeuf, Lamb, Greene & McRac
Washington, D.C.

(continued)

Amal M. Mansour
Chairman of the Board and CEO
lanufacturing & Technology Conversion International, Inc.
Washington, D.C.

Louis Martarano
Dir., Strategic Advisory Services
Global Power
Merrill Lynch & Co.
New York, NY

Linda A. Marvin
Acting President
Lockheed Environmental Systems and Technologies Co.
Houston, TX

Peter McChesney
Director of Business Development
Community Energy Alternatives
Ridgeview, NJ

Lawrence T. Papay
Senior Vice President & Manager of Research & Development
Bechtel Group Inc.
San Francisco, CA

Daniel Radack
Manager, Internat'l Business Dev.
SRC International
Bala Cynwyd, PA

A. V. Mohan Rao
Vice President, Marketing
Spectrum Power Generation, Ltd.
Schenectady, NY

George Roland
President and CEO
Siemens Solar Industries
Camarillo, CA

Ellen S. Roy
Vice President
Intercontinental Energy Group
Hingham, MA

Fred Schulte
President and CEO
Elgin Solar Industries
Chicago, IL

Niranjan S. Shah
CEO
Globetrotters Engineering Corporation
Chicago, IL

Ishaq M. Shahryar
President and Chief EOfficer
Solar International, Incorporated
Hawthorne, CA

Brian O'Sullivan
Managing Director
Cannon Power Corporation
Tehachapi, CA

George Sterzinger
Manager, Biomast to Energy Div.
Future Energy Resources Co.
Washington, D.C.

Richard L. Thompson
Chief Executive, Engine Division
Caterpillar, Inc.
Mossville, TX

Terence H. Thorn
Senior Vice President, Gov't Affairs
Enron Corporation
Washington, D.C.

Charles A. Trabandt
Chairman, Strategic Advisory Services
Global Power
New York, NY

Document Number 41

MEMORANDUM

to: PO-83 Staff

cc: D. Reicher
J. Harris
D. Thirad
A. Haspel

from: Steven Lee, PO-83

re: Revision 1 to Trade Mission Deals Report

date: October 3, 1995

Attached is the most recent update of the Summary of Total Business Agreements Signed during DOE Trade Missions. Included in this report is the most recent mission to South Africa and updates of previously unreported projects stemming from post India activities with Power Minister Salve, Minister Kumar and the Confederation of India Industry (CII). Fast facts you should know include: total number of agreements signed: 143, potential total dollar value of these agreements: $19.7 billion.

from the desk of...

Steven Lee
Senior Policy Analyst
U.S. Department of Energy, Energy Export Office
1000 Independence Avenue, SW
Washington, DC 20585

202 586-0836
Fax: 202 586-0823

Source - Steven Lee
DOE Energy Export Office

01/03/96 WED 09:46 FAX 64931 OIG OFC of INSPECTIONS *** INS ALB 002

October 2, 1995
Rev 1

H-1
2

SUMMARY OF TOTAL BUSINESS AGREEMENTS SIGNED DURING DEPARTMENT OF ENERGY TRADE MISSIONS

1994 - PRESENT

Prepared by

OFFICE OF ENERGY EXPORTS

October 2, 1995

TABLE OF CONTENTS

	PAGE(S)
INTRODUCTION	1
SUMMARY OF ALL MISSIONS	1
INDIA 1	2-5
INDIA 2	6-11
INDIA FOLLOWUP	12-15
PAKISTAN 1	16-18
PAKISTAN 2	19-21
CHINA	22-28
SOUTH AFRICA	29-33

INTRODUCTION

As the U.S. prepares to enter the 21st Century, Secretary O'Leary and Deputy Secretary White have undertaken a series of trade missions over the past year and one-half, to establish stronger relationships between the United States and the nations who represent the world's largest emerging markets. There is little doubt that U.S. energy technology represents some of the best in the world and many countries prefer to do business with American companies. Many developing countries recognize this, however, our principal competitors are in many cases more aggresive in marketing their countries firms and technologies. The missions are designed to encourage and promote continued development of commercial partnerships in an economic climate with an eye to sustainable development and environmentally sound technologies. Three basic tenets have focused each of the missions to-date. These include:

- The promotion of trade and investment partnerships that will deliver clean, affordable energy sources of fueling economic growth using U.S. technology, capital and expertise.
- To facilitate cooperation on sustainable development policies that offer environmental and economic benefits for both countries and the global condition.
- To establish a structure for bilateral problem-solving on energy, environment and science and build a long-term mutually benefifical relationship.

In an effort to communicate the results of each of these missions to a wider DOE audience, the Office of Energy Exports has prepared this report which summarizes the number and types of business agreements signed during the following Secretarial and Deputy Secretarial trade missions:

- Presidential Mission on Sustainable Energy & Trade to India, July 7-15, 1994
- Return Journey to India, February 11-14, 1995
- Presidential Mission on Energy Investment to Pakistan, September 21-24, 1994

- Follow up Mission to Pakistan on Energy Investments, December 12-17, 1994
- Presidential Mission on Sustainable Energy & Trade to China, February 15-24, 1995
- Clinton Administration Delegation on Sustainable Energy & Empowerment to South Africa, August 18-28, 1995

Included in this report is a summary of the total dollar value signed during each mission broken out by energy sectors or "POD" which to-date totals over $19.7 billion. Also attached is a trip-specific matrix detailing the specific business agreements by POD.

This information is intended to provide a snap shot of the Department's trade missions, and to be a living document that will be revised as future trade missions are completed and existing agreements develop, mature and expand.

The Office of Energy Exports would be pleased to hear your suggestions on this document. Please forward any comments to Steven Lee at telephone: 202 586-0836 or fax: 202 586-0823.

1

2

3

TAB A

SUMMARY OF TOTAL SIGNED BUSINESS AGREEMENTS

BY ENERGY SECTOR AND TRADE MISSION

1

6

DEPARTMENT OF ENERGY TRADE MISSIONS
TOTAL BUSINESS AGREEMENTS SIGNED
BY
ENERGY SECTOR & TRADE MISSION
($ MILLION)

MISSION	RENEWABLES	EFFICIENCY	OIL & GAS	COAL	POWER	ENVIRONMENT	TOTAL
INDIA 1	$202.3			$100.0	$4870.0		$5172.3
INDIA 2	$1274.3	$50.0					$1324.3
INDIA- Salve, Kumar, CII	215.0						215.0
PAKISTAN 1	$200.0	$8.0	$275.0		$3454.0		$3937.0
PAKISTAN 2	$425.0	$0.4	$136.8		$2018.0		$2580.2
CHINA	$630.5	$428.8	$31.5	$1750.0	$3669.0	20.0	$6529.79
SOUTH AFRICA	NA	NA	NA	NA	NA	NA	NA
TOTAL	$2,947.10	$487.20	$443.30	$1,850.00	14,011.00	20.00	$19,758.59

October 2, 1995

DEPARTMENT OF ENERGY TRADE MISSIONS
TOTAL NUMBER OF BUSINESS AGREEMENTS SIGNED
BY
ENERGY SECTOR AND TRADE MISSION

MISSION	RENEWABLES	EFFICIENCY	OIL & GAS	COAL	POWER	ENVIR	TOTAL
INDIA 1	9	0	0	1	8	0	18
INDIA 2	19	4	0	0	0	0	23
INDIA FOLLOWUP (SALVE, KUMAR, CII)	23	0	0	0	0	0	23
PAKISTAN 1	3	2	2	0	9	0	16
PAKISTAN 2	3	1	10	0	4	0	18
CHINA	10	3	3	6	11	2	35
SOUTH AFRICA	4	1	0	1	2	2	10
TOTAL	71	11	15	8	34	4	143

A-1

1

2

3

4

TAB B

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE

TO INDIA

JULY 7-15, 1994

A-1

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO INDIA

July 7-15, 1994

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
Baharat Electronics	Spire Corporation (MA)	Sale of PV manufacturing equipment for Indian production	$2.0M
Pentafour Solec Technology, Ltd.	Solec International, Inc. (CA)	Sale of PV cells for module assembly in India	$6.5M
Bangor Group	Cannon Power Corp (CA)	Opening of Cannon office in India & signing agreement on 25 MW wind farm	$75.0M
ESVIN TECH	MTCI (MD)	Licensing US gasification technologies for Indian waste to energy market	TBD
Bhoruka	SRC International (PA)	Efficiency & demand side management contract for Bombay textile firms	$3.8M
Emgee Solar	Martin Marietta (CO)	Develop PV systems and begin joint venture manufacturing	$66.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Siemens India	Siemens Solar Industries (CA)	Assemble & sell solar lanterns with components manufactured in US	$40.0M
Tata Energy Research Institute	Lockheed Environmental Services (TX), Econergy Int'l, Duke Engineering & Services, Environmental Defense Fund, TransAlta Utilities, Niagara Mohawk Power	Develop a bagasse-fired cogeneration facility at 4 Indian sugar mills as joint implementation pilot project	$TBD
Delton Cable	Ovonic Battery Company (OH)	Sale of production equipment and license for Indian production of advanced batteries	$9.0M
		SUBTOTAL	$202.30
ELECTRICITY POD			
Dabhol Power Company	Enron, GE, Bechtel	Agreement to develop a liquefied natural gas fueled power plant in Maharashtra state. Phase I will be a 695 MW with Phase II bringing on-line additional 1320 MW	$2100.0M
No Indian partners	AES, Raytheon, Foster Wheeler, GE	Development of a 420 MW coal-fired power generating plant in the Ib Valley of Orissa state	$650.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
	Spectrum Power Generation, Ltd (NY)	Power Purchase agreement to finance a gas combined cycle power project	$245.0M
Ajinkyatara Cooperative Sugar Factory/Esvin Technology - Mr. Aparadh/T.S. Venkatraman	ThermoChem, Inc (MD) - Amal Mansour	Agreement on detailed project report and subsequent implementation of a demonstration project for bagasse gasification based co-generation using technology developed by Manufacturing & Technology Conversion International (MTCI)	$400.0M
Thermax Ltd.	Proven Alternatives (CA)	Agreement to develop the market in India for micro cogeneration technology (developed by Micro Cogen) and for thermal storage and desiccant air conditioning technologies	$400.0M
Raunaq Industries	Cogentrix Development Company (NC)	Agreement to establish a lignite-fuel facility in the state of Gujarat and to investigate the feasibility of a second facility in Rajasthan	$275.0M
Raunaq Industries	US Environment Systems (FL)	Agreement to develop a coal-fired power project in the state of Punjab	$600.0M
GVK Industries, Ltd	CMS Generation Company (MI)	Agreement to develop a 235 MW natural gas power plant in Andhra Pradesh state	$200.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		SUBTOTAL	$4870.00
		COAL POD	
Jaya Foods, Spectrum Washeries	Spectrum Technologies (NY), Elgin Industries (IL)	Consortia agreement to demonstrate coal washing technology	$100.0M
		SUBTOTAL	$100.0M
		TOTAL	$5,172.30

TAB C

RETURN JOURNEY TO INDIA

FEBRUARY 11-14, 1995

RETURN JOURNEY TO INDIA

February 11-14, 1995

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
Swasti Power Engineering Ltd.	Acres International Corporation (NY)	Memorandum of Understanding to form a joint venture for developing a series of small hydro projects in Uttar Pradesh State	$40.0M
KEI Energy, Ltd., Indian Renewable Energy Development Agency	Bechtel Corporation (CA)	Memorandum of Understanding to establish joint venture to create a facility to accelerate commercial use of renewable energy technologies in India	TBD
Madhya Pradesh State Electricity Board	Dodson-Lindblom International, Inc. (OH)	Memorandum of Understanding to develop 5 small hydro projects (5.1 MW total) in the Madhya Pradesh state through DLI's Indian subsidiary (Ascent Hydro Projects Ltd.)	$9.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Financial Assistance Agreement with OPIC (no Indian partner)	Dodson-Lindblom International (OH) /Overseas Private Investment Corp. (D.C.)	Provide funding of pre-investment analysis for developing 5 small hydro projects in Madhya Pradesh state.	$.100
Bharat Heavy Electricals Ltd.	Donaldson Company, Inc. (MN)	Commercial sales agreement for DI Filter Systems (joint venture of Donaldson and Munradtech of India) to manufacture air filtration modules for gas turbines, in Haryana state	$.115
Mokul International Private Ltd.	EHF Corporation (PA)	Memorandum of Understanding to form a joint venture for developing an integrated energy production/community development project involving a solar thermal energy, a coal-preparation facility, and a fluidized bed coal combustion power generating unit.	$750.0M
Ministry of Nonconventional Energy Sources	Electric Power Research Institute (EPRI) (CA)	Memorandum of Understanding to establish a partnership for evaluating renewable energy sources in India (i.e., wind, photovoltaics, and biomass)	N/A
Bombay Suburban Electric Supply Ltd.	EPRI (CA)	Memorandum of Understanding to establish partnership to evaluate EPRI electricity transmission/distribution technologies in India	TBD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Larson & Toubro Ltd. - Sargent & Lundy, Ltd.	EPRI (CA)	Memorandum of Understanding to establish joint venture partnership for marketing and technology support for "State of the Art Power Plant" computer model and related products jointly developed by EPRI and Sargent & Lundy through their SEPRIL jointly-owned subsidiary.	TBD
Renewable Energy Systems Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for design, installation and evaluation of a 2 MW photovoltaic power project	N/A
Thermax Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for development of electricity-utilizing applications such as water purification, medical waste sterilization, and food processing	N/A
Indian Renewable Energy Development Agency	EPRI (CA)	Memorandum of Understanding to establish a partnership for evaluation and technology transfer in the area of renewable energy.	N/A

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Solaris Systems Ltd.	Intech Global Resources Inc (TX)	Memorandum of Understanding to develop a 2-MW photovoltaic energy power plant in Kerala state	$10.0M
Udhaya Semiconductors Pvt. Ltd.	Intech Global Resources, Inc. (TX)	Memorandum of Understanding to develop inverters and allied hardware for grid interaction of non-renewable energy schemes with the conventional grid	TBD
Energy Management Centre of GOI Ministry of Power	J. Makowski Company (MA) Apollo Hospital Group	Memorandum of Understanding to develop a 200-MW combined fossil energy/renewable energy power generating facility with energy efficiency center, in Delhi state	$300.0M
ABAN Lloyd Chiles Offshore Ltd.	Kenetech Windpower (CA)	Sales contract for delivery of 600 advanced wind turbines (equivalent to approx. 200 MW generating capacity).	$150.0M
Tata Energy Research Institute (TERI)/OPIC	Lockheed Environmental Systems and Technologies (TX)/Econergy International Corp (CO)	Partnership to develop two 50-MW bagasse-fueled cogeneration power plants, in Uttar Pradesh state.	$.100

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
NEPC Micon Ltd.	Omnion Power Engineering Company (WI)	Sales agreement to supply and install a 100 kilowatt grid-interactive photovoltaic power plant in Tamil Nadu state, at an existing wind power site	TBD
Pentafour Solec Technology, Ltd.	Zond International Development Corp. (CA)/Blue Chip Technologies	Memorandum of Understanding to establish a joint venture specializing in wind energy. The first project will be a 60 MW wind energy project in Tamil Nadu state.	$15.0M
		SUBTOTAL	$1,274.315
		EFFICIENCY POD	
Energy Management Centre of the Ministry of Power	Oak Ridge National Laboratory (TN)	Memorandum of Understanding to promote scientific and technological cooperation betwen India and U.S. in area of energy efficiency	TBD
First Custodian Fund Ltd.	Oxford Consultants Int'l (MD)	Memorandum of Understanding to establish a joint venture (First Oxford Technologies India Ltd.) for the purpose of improving industrial and commercial energy efficiency in India	$50.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Energy Consultants Private Ltd.	TENSA Inc. (TX)	Memorandum of Understanding to establish a joint venture in India in areas of energy conservation, process integration, cogeneration, and renewable energy	N/A
Thermax, Ltd.	Tennessee Valley Authority (TN)	Memorandum of Understanding to establish a joint venture to provide specially welding services and technologies for the utility industry	TBD
		SUBTOTAL	$50.0M
		TOTAL	$1324.315

TAB D

INDIA FOLLOW UP AGREEMENTS SIGNED
DURING
MINISTER OF NON-COVENTIONAL ENERGY SOURCES KUMAR, POWER MINISTER SALVE, AND CII REVERSE TRADE MISSION TO US

SEPTEMBER-DECEMBER 1994

INDIA BUSINESS AGREEMENTS SIGNED BY POD
DURING
MINISTER OF NON-CONVENTIONAL ENERGY SOURCES KUMAR, POWER MINISTER SALVE, AND CII REVERSE MISSIONS TO US

September - December 1994

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		RENEWABLES POD	
Indian Institute of Petroleum - Indu Patel	Bioenergy Development Corporation (NY) - Earl A. Rogers	Memorandum of Understanding on biomass cooperation	50.0M
International Power Corp	Essex Hydro (MA) - Thomas A. Tarpey	2 small hydro porjects in Karnataka state totalling 11MW	$11.0M
Swasti Power Engineering Ltd	Essex Hydro (MA) - Thomas A. Tarpey	Small hydro run of the river project in Uttar Pradesh to construct 3-5 plants with a target total capacity of 9-25 MW	$25.0M
Kalinga Power Corp, Ltd	Essex Hydro (MA) - Thomas A. Tarpey	2 small hydro projects in Orissa State totalling 11.5MW	TBD
Diacon Impex - Kamlesh Sojatia	High Lifter International (CA)/Alternative Energy Engineering Inc. (CA) - Ethan Silva/David Katz	Agreement to manufacture and market renewable energy water pumps	$5.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
KEI Energy - Anil Kaminen	Kenetech (CA) - Ronna Freekein	Memorandum of Understanding to develop wind power generation stations in India	$45.0M
KEI Energy - Anil Kaminen	J. Makowski Company (MA) - Mike Hogan	Memorandum of Understanding on biomass and agricultural waise power development	$37.5M
Indian Solar Energy Centre - U.N. Panjiar	NREL - Bill Marshall	Memorandum of Understanding to more closely cooperate in renewable energy for rural economic development, joint technology validation and resource assessment	$3.0M
	Optimum Power (CA) - Nanda Nair	Announcement of the first ever power purchase agreement for a 25MW wind farm. The PPA is with Minister Kumar's home State of Kerala	$37.5M
Gujarat Auto Projects & Services Ltd - Indu Patel	American Methanol Institute (DC) - David Washington	Memorandum of Understanding on alternative fuels for transportation	TBD
India Renewable Energy Development Agency (IREDA) - Dr. V. Bakthavatsalam	Global Trade, Inc - Chris Kieth	Letter of Intent on Business Cooperation aimed at strengthening the renewable energy industries financing infrastructure	TBD
IREDA - Dr. V. Bakthavatsalam	International Development Business Consultants - John Bayard	Letter of Intent on cooperation aimed at extending IREDA's business network to an international level	TBD

6 J-1C 12/19-21

7 J-1C 13/1-4

8 J-1C 8/2-8

9 J-1C 12/15-18

10 J-1C 12/4-7

11 J-1C 9/8-11

12 J-1C 9/12-15

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
IREDA - Dr. V. Bakthavatsalam	International Fund for Renewable Energy (IFFRE) - Patrick D'Addirio	Memorandum of Understanding to cooperate in energy efficiency issues	TBD
IREDA - Dr. V. Bakthavatsalam	Solar Power & Light - Lisa Gued	Memorandum of Understanding to develop PV training courses	TBD
IREDA - Dr. V. Bakthavatsalam	Environmental Enterprises Assistance Fund - Tammy Newmark	Letter of Intent on cooperation aimed at setting up NRSE projects on a large scale in India	TBD
Bharat Heavy Electrical Ltd - Narayan Valluri	EPRI - Jim Birk	Memorandum of Understanding on low speed variable speed wind turbines and advanced high efficiency PV concentrators	TBD
Ministry of Non-Conventional Energy Sources (MNES) - U.N. Panjiar	EPRI - Jim Birk	Memorandum of Understanding to expand cooperation between MNES and US utilities with emphasis on PV, wind, and biomass	TBD
	Intech Global Resources Inc. (TX) - Nalina R. Pillai	Announcement of the beginning of a project development effort in the areas of solar power, bagasse based power, and renewable energy resources assessment	NA
Tata Energy Research Institute (TERI) - Dr. R. K. Pachauri	Solstar Power & Light - John Johanson	Memorandum of understanding on wind energy resource mapping	TBD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
MNES/TERI/Scooter manufacturers	Ovonics, Inc/DOE/EPA/AID/US-Asia Environmental Partnership.	Cost shared partnership among US firms to develop and market electric-powered two and three-wheel scooters in India	1.0M
NEPC-MICON, Ltd - Raj Kumar	Spire Corp. - Roger Little	Memorandum of Understanding to establish a PV module manufacturing facility in India to be owned and managed by NEPC-MICON using Spire technology	TBD
Thermax Ltd	Energy Performance Services of Pennsylvania (PA)	Agreement to set up an energy services company in India to pursue energy efficiency and conservation opportunities in the metallurgical, textile, pulp paper, pharmaceutical, food processing and health care sectors	Salve visit - TBD
Thermax Ltd - R.D. Aga	Future Energy Resources Company (VT) - Milton C. Farris	Memorandum of Understanding for Training India interest in advanced Biomass Gasification with DOE-supported US projects	CII trip - NA
		TOTAL	$215.0M Note: Press release gives $1B total for all these projects

A-1
26

1
2
3
4

TAB E

PRESIDENTIAL MISSION ON ENERGY INVESTMENT

TO PAKISTAN

SEPTEMBER 21-24, 1994

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

September 21-24, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
	Agrilectric Power (LA)	2X5 MW pilot project biomass from rice hulls	$10.0M
Power Gencorp Ltd.	Synergies Energy Development Inc (MD)	75 MW hydropower at 3 sites	$150.0M
Power Gencorp Ltd.	ENTECH (TX)	Solar power projects	$40.0M
		SUBTOTAL	$200.00M
EFFICIENCY POD			
Greaves Cotton	Armstrong (FL)	Steam traps for industrial steam efficiency	$1.0M
SUI Northern Gas Pipeline	Solar Turbines (DC)	High efficiency gas compressor stations	$7.0M
		SUBTOTAL	$8.0M

A-1
28

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		OIL & GAS POD	
Government of Pakistan	Union Texas (TX)	Oil & gas exploration & production license	$175.0M
Government of Pakistan	Occidental Petroleum (CA)	Gas & petroleum development and production license	$100.0M
		SUBTOTAL	$275.0M
		ELECTRICITY POD	
Lal Pir project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
Sidhnai project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
	Enron (TX), Bechtel (CA), GE Capital (CT)	Implementation Agreement for a 760 MW natural gas combined cycle power plant	$740.0M
Sepco	GE Capital (CT)	310 MW natural gas combined cycle	$174.0M
Fauji Foundation	Intraq, Sceptre Power Company	Implementation Agreement for a 144 MW low Btu natural gas combined cycle power plant	$175.0M

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Habibullah Energy Ltd.	Ogden Power Systems, GE	Implementation Agreement to build a 104 MW natural gas combined cycle power plant	$105.0M
Hassan Associates	Tenaska (NE), Entergy (AR), GE Capital (CT)	Implementation Agreement for a 585 MW low Btu natural gas combined cycle power plant	$680.0M
Wakgas (Pvt) Ltd.	Orient Point (NY), Caterpillar (IL)	Implementation Agreement for a 800 Mw (16X50 MW) barge mounted diesel fired power plant	$800.0M
First Capital Securities	Smith Barney (NY)	Energy capital development fund	$100.0M
		SUBTOTAL	$3,454.0M
		TOTAL	$3,937.0M

01/03/96 WED 10:01 FAX 64931 --- INS ALB 005

TAB F

FOLLOW UP MISSION TO PAKISTAN

DEPUTY SECRETARY WHITE

DECEMBER 12-17, 1994

A-3

FOLLOW UP MISSION TO PAKISTAN ON ENERGY INVESTMENTS

LED BY DEPUTY SECRETARY WILLIAM WHITE

December 12-17, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
		RENEWABLE AND ENERGY EFFICIENCY POD	
	Synergics Hydro Asia (MD)	Memomadum of Understanding to develop a 97 MW hydropower project on the Punch River in Kashmir	$187.0M
	Kenetech Wind Power (CA)	Memorandum of Understanding to develop a 100 MW wind power project in Baluchistan	$100.0M
Karachi Power Company/ Omega Pvt Ltd	Omega Zond Wind Energy (CA)	Memorandum of Understanding to develop a 150 MW wind power project in Sindh	$138.0M
	Condyne Enercon Energy Efficiency	Agreement to conduct a pilot study of its energy efficiency technologies to reduce electricity consumption by refrigerators and air conditioners	$.4M
		SUBTOTAL	**$425.4M**

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
		ELECTRICITY POD	
Hong Pak/Defense Housing Authority	American United Machinery Co. (OH)	Memorandum of Understanding to supply equipment to develop a 1350 MW coal-fired power project in Sindh	$1700.0M
Sindh Coal Authority	BBI/Brooklyn Marine & Oil, Inc. (NY)	Memorandum of Understanding to develop a 200 MW coal-fired plant near Hyderbad in southern Sindh	$200.0M
Sindh Coal Electric Power Company	Leesburg Financial (DC)	Agreement to develop a 100 MW coal-fired power plant in Sindh	$100.0M
Model Town	Altern Energy (CO)	Memorandum of Understanding to develop a 20 MW thermal power project based on flared gas	$18.0M
		SUBTOTAL	**$2,018.0M**
		OIL & GAS POD	
	Union Texas Petroleum (TX)	Extension and Revision on Concession agreements in lower Sindh (Badin I and Badin II)	**
	Union Texas Petroleum (TX)	Concession agreement in eastern Sindh	$3.8M
	Occidental Petroleum (CA)	Zamurden concession agreement	$15.5M

01 03 96 WED 10:02 FAX 64931 --- INS ALB --- INSPECTIONS 010

A-1

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
	Occidental Petroleum (CA)	Shalwal concession agreement	$2.1M
	Occidental Petroleum (CA)	Kamalia concession agreement	$2.1M
	Occidental Petroleum (CA)	Bahawalnagar concession agreement	$2.1M
	Occidental Petroleum (CA)	Mehar concession agreement	$3.8M
Hydrocarbon Development Institute	Improved Petroleum Recovery International (TX)	Agreement to conduct dry hole study	$.4M
	Ferrell North American (TX)	Memorandum of Understanding to develop a LPG terminal at Port Qasim near Karachi	$25.0M
Pakistan State Oil	VECO (AK)	Pipeline service contract	$3.0M
Pak-Arab Refinery Ltd.	Willbros Group, Inc (OK)	Turnkey construction project of a pipeline, storage, pumping and terminal facilities	$79.0M
		SUBTOTAL	$136.8M
		TOTAL	$2580.2M

NOTE: ** = $175M included in Secretary O'Leary agreements

01/05/96 WED 10:04 FAX 64931 --- INS ALB

TAB G

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY AND TRADE

TO CHINA

FEBRUARY 15-24, 1995

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO CHINA

February 15-24, 1995

BUSINESS AGREEMENTS SIGNED BY POD

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
		RENEWABLE POD	
State Science & Technology Commission's Department of Industrial Technology - Shi Dinghuan	AMOCO (IL)/ENRON (TX) - Robert Kelly/Garry Mihaichuk	Letter of Intent to conduct a feasibility study for a 10 MW thin film photovoltaic manufacturing facility and a 150 MW solar electric generating facility	$290M
Inner Mongolian Provincial Electricity Board - Zhao Fengshan	FloWind Corporation (CA) - Harold Koegler	Agreement for Joint Venture for a 100 MW Wind Power Plant	$85M
Zhejiang Wind Energy - Zhang Bao Kang	FloWind Corporation (CA) - Harold Koegler	Letter of Intent to form a joint venture for a 30 MW Wind Power Plant	$29.5M
Inner Mongolian Electric Power Company - Zhao Feng Shan	ZOND Systems (CA) - Ken Karas	Letter of Intent to build one wind power plant	$110M
Guangdong Nanao Zhen Neng Wind Power Development Company - Zhang Zhen Gui	ZOND Systems (CA) - Ken Karas	Letter of Intent for the sale of 54 unit wind turbine generators for the Nanao Island Wind Power Project	$21M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Zhejiang Wind Power Development Company - Zhang Bao Kang	**ZOND Systems (CA)** - Ken Karas	Letter of Intent for the sale of 128 unit wind turbine generators for the Dachen Island Wind Power Project	$51M
China Chang Jiang Energy Corporation - Yu Zhian	**New World Power (CT)**- John Kuhns	Share Purchase Agreement with China Chang Jiang Energy Corporation to install a 39 MW wind farm for the Fujian Wind I project	$30M
China Chang Jiang Energy Corporation - Yu Zhian	**New World Power (CT)** - John Kuhns	Sustainable Development Agreement to annually conduct a series of official visits between Chinese and American officials to exchange information on renewable resources and technology	N/A
Beijing General Research Institute for Non-ferrous Metals, China Photovoltaic Electric Company - Lin Anzhong/ Mr. Chong	**Spire Corporation (MA)** - Roger Little	Memorandum of Understanding to construct a Polycrystalline Silicon PV production plant to be located in Hebei Province	$7-12M
Yunnan Semiconductor Device Factory - Zhang Weimin	**Spire Corporation (MA)** - Roger Little	Memorandum of Understanding to expand an existing photovoltaic manufacturing plant located in Yunnan Province	$1.5-2M
		SUBTOTAL	**$630.5M**

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
		EFFICIENCY POD	
Great Asia Industrial Development Company, Shanghai General Building Materials Group Corporation - Chung King Yan/Zhu Ge Tei Zhi	**Owens-Corning** - Ben Yau	Memorandum of Intent to build an insulation plant in Shanghai	$25M (plant) $30M/year (sales)
Yueyang General Petrochemical Works - Du Zu Gao	**Honeywell (MN)** - Mannie Jackson	Letter of Intent for the Yuehua SBS & BUT Distributed Control System Upgrade Project	$400M
Yangzi Petrochemical Company - Tang Min	**Honeywell (MN)** - Mannie Jackson	Commercial Sales Agreement	$3.8M
		SUBTOTAL	**$428.8M**
		OIL & GAS POD	
China National Offshore Oil Corporation - Wang Yan	**Chevron (CA)** - Richard Matzke	Offshore Oil & Gas Exploration, Development and Production sharing agreement for South China Sea Block 62/23	$30M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Liaohe Petroleum Exploration Bureau - Li Ming Yi	**Halliburton / Brown & Root (TX)** - Dale Jones	Agreement to form a joint venture company to manufacture high technology flow measurement products	$850,000
Daqing Petroleum Administration Bureau - Li Xaio Fang	**Halliburton/ Brown & Root (TX)** - Dale Jones	Contract to establish a perforating charge API facility	$638,000
		SUBTOTAL	**$31.5M**
		COAL POD	
Lu Mao Jiang Coal Mine Company, Hunan State Government - Li Jianzin	**EFH Coal (PA)** - Robert Eggleston	Memorandum of Understanding on a 50 MW coal-fired co-generation project	$50M
Shanghai Coking & Chemical Plant - Qui Guang Pei	**Institute of Gas Technology (IL)** - Bernard Lee	Memorandum of Understanding to install a gas turbine to produce 70 MW of power using clean gas from previously installed gasifiers	$70M US share $$35-46M
Huamei Coal Mixture Technology Center - Hao Feng Yin	**Ahlstrom Development Corporation (CA)** - Doug Wert	Memorandum of Understanding to build 2X125 MW power plants using Circulating Fluidized Bed combustion technology	$500M US share $100-200M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Guizhou Power Investment Company - Chen Shi	**Ahlstrom Development Corporation (CA)** - Doug Wert	Memorandum of Understanding to build 2X200 MW power plants using Circulating Fluidized Bed combustion technology	$280M
Ministry of Chemical Industry, SINOPEC - Wang Xinfang/Wang Xin Ming	**Texaco Inc. Alternative Energy Group (NY)** - David Crikelair	Multi-Plant License Agreement for 9 Texaco gasifiers	$500M
Beijing MinMetals & China Nuclear Industry REM Company - Pan Xu Dong	**Carbon Fuels Corporation (CO)** - Lee Meyer	Memorandum of Understanding to establish a joint venture for the exclusive development of the Charfuel coal refining process in China	$300M
		SUBTOTAL	**$1,750.0M**
		ELECTRICITY POD	
Shanghai Municipal Electric Power Bureau	**WING Group (CO)** - Larry Haab	Project Development Proposal to replace coal-fired power plant with first large scale LPG power plant (650 MW)	$700M US Share $560M
China National Aero-Engine Corporation, Wuxi New Energy Investment Company - Zhou Xiao Qing/Ye Yong Fu	**Coastal Corporation (TX)** - David Arledge	Letter of Intent to establish the Wuxi City Peaking Project Phase I and Phase II project	$25M US share $15M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Zheqian Thermal Power Plant - Dai Jun Sheng	**Enserch Development (TX) Corporation, East Wind Power Partners** - Frank Maier/Joel Mize	Cooperative Joint Venture and Articles of Association to develop a 3X12 MW coal-fired plant	$27M US share $18.8M
Zheqian Thermal Power Plant - Dai Jun Sheng	**Enserch Development (TX) Corporation, East Wind Power Partners** - Frank Maier/Joel Mize	Letter of Intent to jointly develop a 100 MW combined-cycle power plant near Shaoxing City	$80-100M
Shanghai Jinqiao Heat Power Corporation - Lin Jia Qiang	**Community Energy Alternatives Inc. (NJ)** - Colin Tam	Joint Venture Agreement to establish the Meiya Jinqiao Energy Company Ltd to provide a centralized steam, hot water and cooling system in the Jinqiao export Processing Zone in Pudong, Shanghai	$28M US share $16.8M
North China Power Group - Jiao Yi An	**ENTERGY (AR)**- Terry Ogletree	Long Term Cooperative Agreement	N/A
Sichuan Electric Power Authority - Ma Hual Xin	**InTeSol/Energy Initiatives (CA)** - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X600 MW coal-fired power plant	$1.2B US share $1B
Jilin Province Energy & Transportation Company, Jilin Province Power Company - Zhang Yan/Guo Xue Chong	**InTeSol/Energy Initiatives (CA)** - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X300 MW coal-fired plant	$300M US share $150M

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
China Nuclear Energy Industry Corporation - Liu Xue Hong	Westinghouse Electric Corporation (PA) - Nat Woodson	Sales Contract for components of two 600 MW turbine generator units	$24M
Shanghai Municipal Electric Power Corporation Company Ltd., Shenergy Company Ltd. - Yu Ping/Wu Jia Hua	Cogen Technologies (TX), AIG-Asian Infrastructure Fund - Bob Sherman/Richard Sun	Memorandum of Understanding to expand the Wu Jing Project (2X600 MW) in Shanghai	$1.2B US share $150M
Beijing District Heating Company - Chen Ming	Cogen Technologies (TX) - Bob Sherman	Agreement on the Eastern Heating Plant	$65M US share 45.5M
		SUBTOTAL	$3,669.0M
ENVIRONMENTAL POD			
National Environmental Protection Agency - Liu Yi	Energy Resources International (DC) - Jack Siegel	Joint Statement of Intent on controlling emissions from energy facilities in China	N/A
China International Engineering Consulting Corporation - Zhang Wang	CH2M Hill International - Raymond Yep	Association Agreement to form a new entity (CIECC/CH2M Hill Environmental Associates) to carry out projects identified in China's Agenda 21 plan	$20M
		SUBTOTAL	$20M
		TOTAL	$6,509.8M

TAB H

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY & EMPOWERMENT

TO SOUTH AFRICA

AUGUST 18-25, 1995

CLINTON ADMINSTRATION DELEGATION
SUSTAINABLE ENERGY AND EMPOWERMENT TO SOUTH AFRICA

August 18-25, 1995

BUSINESS AGREEMENTS SIGNED

SOUTH AFRICAN PARTNER	US PARTNER	TYPE OF DOCUMENT SIGNED	PROJECT DESCRIPTION	BENEFITS
SUNCORPS	SPIRE Corporation and ASE Corporation	Letter of agreement to build a photovoltaic manufacturing facility adjacent to Alexandra township	This manufacturing facility will produce 500 kw/yr, electrify 10,000 homes, 600 clinics and 1,000 schools. Fast track pilot project	This project will bring 200 jobs associated with manufacturing, sales, maintainance and installation of the products made at this facility. 15-30 jobs in US to support South African partner.
Lebowa Tribe Minerals Trust	Advanced Resources International	Letter of intent to evaluate potential Market for coal bed methane	Evaluation of potential market for coal-bed methane supply and utilization.	Program is designed to create utility partnerships and train people in coal plant operations, power system planning and design and other areas of management.

SOUTH AFRICAN PARTNER	US PARTNER	TYPE OF DOCUMENT SIGNED	PROJECT DESCRIPTION	BENEFITS
Township of Guguletu	Sandia Laboratory, private sector companies; Historically Black Colleges and Universities and the African Electrification Foundation	Memorandum of Understanding	Sandia Labs will develop a plan to bring an enterprise zone to the Township of Guguletu. This is an effort to incorporate the Township's strategic plan which seeks to transform itself into a suburb through the development of an economic infrastructure.	This plan will incorporate the idea of creating an enterprise zone with vocational training that will draw investors and create approximately 1,000 new jobs. The design will combine facility and manpower requirements that will form the basis of Guguletu vocational training programs. Types of industry considered for this zone include brick manufacturing, textiles, electronic controls, lumber mill work.
REFSA (Renewable Energy for Southern Africa)	USAID(Agency for International Development)	Letter of agreement to install PV pilot systems in 2500 homes	This pilot project will serve 2,500 homes and can open doors to broader electrication. Pilot program will evaluate financing, installation and suport mechanisms.	Potential access increasing market for rural electrification

A-1
45

SOUTH AFRICAN PARTNER	US PARTNER	TYPE OF DOCUMENT SIGNED	PROJECT DESCRIPTION	BENEFITS
ESKOM	EPRI	Establishment of an ESKOM/EPRI center for Essential Community Services	The center will act as a technology transfer mechanism for moving EPRI technology through ESKOM into Sub-Saharan Africa. The Center's work will also include project management, closely coordinated with government objectives initially focused on water purification, health care and the role of electricity in these efforts.	This community training center is expected to serve between 5,000 to 50,000 people.
The Group for Environmental Monitoring (GEM)	International Institute for Energy Conservation (IIEC)	Letter of Intent to conduct needs assesment for transportation sector.	IIEC will perform a joint study with GEM to determine opportunities in South Africa for Electric vehicles and manufacturing of component parts as well as opportunities for burning of ethanol from biomass.	The study results in opportunities for joint ventures in deployment of alternative fuels and vehicles in South Africa, thereby diversifying their energy base and establishing the infrastructure for more environmentally benign transportation options.

A-1
4b

1	2	3	4	5
SOUTH AFRICAN PARTNER	**US PARTNER**	**TYPE OF DOCUMENT SIGNED**	**PROJECT DESCRIPTION**	**BENEFITS**
ESKOM	Johnson Controls	Contract for Energy management and other services	Johnson Controls will contract with ESKOM to install with an energy efficient building management systems	This demonstrations will provide the knowledge to South Africans to understand the economic benefits of investing in energy efficiency.
Republic of South Africa National Electricity Regulator	Department of Energy	Agreement to conduct two workshops on development of regulatory policies necessary to attract investment. One workshop each in United States and Republic South Africa.	Announcement as part of the Binational Commission workplan	This program will assist South Africa in developing a regulatory system. It will also facilitate investment in electric power sector.
Provincial Government of Northern Cape	Department of Energy	Joint Statement of Intent on Renewable Technologies	This statement would create a cooperative relationship to promote increased economic interaction, facilitate technology transfer and accelerate commercialization of renewable energy based systems.	This agreement will help increase the level of energy policy expertise, encourage education and investment through technical personnel exchanges and seminars and promote private investment in energy projects.

SOUTH AFRICAN PARTNER	US PARTNER	TYPE OF DOCUMENT SIGNED	PROJECT DESCRIPTION	BENEFITS
Manong Construction, Mouke Industries	PEER Consultants, Advanced Panel Manufacturers	Community Development Project in Kimberly	This project is designed to evaluate and test holistic community development assumptions and should result in the development of an approach to community palnning and development which can be replicated in other communities.	This project will involve the community in the design of the project, and will offer training and skill building opportunities. This project conforms with the goals of the Reconstruction Development Programme outlined by the South African Government.

Document Number 44

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY & EMPOWERMENT TO SOUTH AFRICA --August 20-27, 1995

STRENGTHENED KINSHIP

TRIP REPORT

September 13, 1995

LED BY

HAZEL O'LEARY, U.S. SECRETARY OF ENERGY

C-6
2

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY AND EMPOWERMENT TO SOUTH AFRICA LED BY UNITED STATES SECRETARY OF ENERGY HAZEL O'LEARY

August 18-28, 1995

Table of Contents

I. Overview
   - Theme Paper

II. Commitment Matrix

III. Master Schedule

IV. Business Delegation

V. Government Agreements
   - Terms of Reference for Sustainable Energy Development Committee of the Binational Commission
   - Energy Information Exchange
   - Energy Policy, Science and Technology, and Development

VI. Signings Matrix

VII. POD Reports
   - Capacity Building
   - Electricity
   - Energy Efficiency
   - Finance
   - Oil and Gas
   - Renewables
   - Research and Development

VIII. U.S. Ambassador's Summary

IX. Selected Newsclips

C-6
3

OVERVIEW OF THE TRIP

Capitalizing on the unprecedented opportunities offered by the new democracy in South Africa, Secretary of Energy Hazel R. O'Leary led a delegation of some 80 energy companies, financiers, environmental groups and government specialists to Cape Town, Johannesburg and Kimberley during August 18-28. The mission's work fell into three broad categories--government to government initiatives that support the South African Reconstruction and Development Program's electrification goals and promote cooperation in other areas, education and empowerment programs designed to develop the human resources to support energy development in South Africa, and 14 private sector agreements between South African and U.S. companies that will create jobs while electrifying the nation. At least 1,800 U.S. and South African jobs will be created as a result of the mission.

The mission was conducted in response to a request by President Mandela to President Clinton and Secretary O'Leary, followed up by an invitation from Minister of Mineral and Energy Affairs R.F. "Pik" Botha. As President Clinton stated in his letter to the delegation, "the mission focuses on one of the significant concerns that President Mandela mentioned to me during his visit to Washington last fall--providing South Africans with access to power, a critical ingredient in building a strong economy based on shared prosperity." During the mission, the Secretary and delegation members got down to the hard work of realizing that goal by identifying areas where policies and regulations need to be altered to attract private investment and strengthen energy partnerships between the U.S. and South Africa. The first meeting of the Sustainable Energy Committee of the Gore-Mbeki Binational Commission, held at the end of the week, served as a vehicle for keeping the focus on realizing that and other goals. The next meeting of the Binational Commission Sustainable Energy Committee will be the week before the Gore Mbeki meeting, to be held December 4 in Pretoria.

Secretary O'Leary accomplished her aim in fielding a delegation that represented the best of America from a broad spectrum of energy companies, financiers, environmental groups and government specialists. The delegation was organized into six energy sector subgroups, each of which had a dynamic mix of technical, commercial, environmental, capacity building, regulatory and financial expertise suitable to address specific areas of South Africa's energy sector. These six "pods" covered the mission's focus areas which were: electricity, oil and gas, renewables, efficiency, research and development, and finance.

The pods engaged their South African and private sector counterparts in discussions on their energy policies, focussing on opportunities, concerns and "next steps" in the process of encouraging private investment to help South Africa's energy sector and its economy grow. The centerpiece event for these discussions was a conference held in Johannesburg on August 23. Each working group developed a list of policy recommendations that were presented at a closing plenary session. These recommendations were then used as the cornerstone of U.S. comments for the policy roundtable with senior South African energy policy-makers held on Thursday, August 24 and the Sustainable Energy Committee meeting of the U.S./South Africa Binational Committee meeting, Friday, August 25.

The mission gave delegates many opportunities to highlight the missions themes of promoting private investment, assisting in building capacity, facilitating economic and environmental equity and advancing the goals of the Sustainable Energy Committee of the Binational Commission. The mission was timed to fit fortuitously with recently begun efforts by the new South African government to change its policy and regulatory frameworks to encourage economic growth. Both the energy ministry and the trade and investment ministry were in the process of drafting policy "green papers" where the current energy and overall trade and investment strategies would be examined and opened to public comment, with an eye toward policies to encourage economic growth and more equitable distribution of electricity.

The mission focussed particularly on offering expert advice on the energy policy green paper, through meetings with the mission's host, Energy Minister Pik Botha, and round table sessions with the Parliamentary Energy Committee chaired by ANC leader Marcel Golding and the policy roundtable led by Minister Botha. Formal Departmental comments on the paper, focussing on lessons already learned in the U.S. context, will be sent to the South Africans on September 20.

The Secretary met with President Mandela, and Deputy Presidents Mbeki and DeKlerk. She met several times with her official host Minister Botha and also met with Minister of Public Enterprises Sigcau, whose ministry received approval to assemble a task team to determine whether the electricity monopoly ESKOM should continue in its present form. Secretary O'Leary also met with Environment Minister Dawie De Villiers, Trade and Industry Minister Trevor Manuel, the Chairman of ESKOM, and the Chairman of the Atomic Energy Corporation of South Africa -- with whom she signed an historic peaceful uses of nuclear energy agreement at the end of the week. Secretary O'Leary's access to the nation's leadership signified the importance of the Clinton Administration mission to South Africa and the attention that will be paid to the recommendations made by the mission.

The Clinton Administration Mission to South Africa serves as an important first step in encouraging policy and regulatory changes that will result in greater private sector linkages between the U.S. and South Africa. It also strengthens the focus of the Sustainable Energy Committee of the Gore-Mbeki Binational Commission and will form the basis of new energy partnerships and a redefined bilateral relationship based on the opportunities and challenges offered by South Africa's abundant resources, democratic principles and the renewed energy of its people.

Accomplishments

The most significant indication of the mission's success was demonstrated by the fact that at least 1800 jobs in the U.S. and South Africa (a nation with 45% unemployment) will be created as a direct result of this mission. In an August 25 signing ceremony presided over by Secretary O'Leary and Minister of Mineral And Energy Affairs Botha, 14 private sector agreements , two Government to Government Statements of Intent, a new Agreement for Cooperation in the Peaceful Uses of Nuclear Energy, and a workplan for the Sustainable Energy Committee of the Gore-Mbeki Binational Commission were signed.

The private sector signings included the signing of three fast-track projects that will serve as models to create future joint ventures between U.S. and South African businesses. One of the fast-track projects, a Memorandum of Understanding between DOE's Sandia Laboratory, African Electrification Foundation, several private sector companies, Historically Black Colleges and Universities and the Guguletu Township was a direct result of the delegation's visit to the township during the mission. The agreement, which envisions vocational training in an enterprise zone, will draw investment for the development of a light industrial park. New access to electricity will enable this industrial park to provide jobs in brick manufacturing, textiles, electronic controls and lumber mill operations. When fully implemented, this single project could result in 1000 jobs.

The government to government agreements included statements of intent in the areas of collaboration on energy policy, science and technology, and the exchange of energy information and forecast trends. The two nations also entered into a new Agreement for Cooperation in the Peaceful Uses of Nuclear Energy. The Agreement recognizes the many significant and positive steps taken by South Africa with regards to nuclear non-proliferation. President Clinton approved the agreement on August 14, 1995, and authorized Secretary O' Leary to sign on behalf of the United States.

The signing of the Terms of Reference and the establishment of a workplan for the Sustainable Energy Development Committee of the Gore-Mbeki Binational Commission were key outcomes of the mission. The Binational Commission with South Africa (one of two binational commissions at that level) will serve as an important forum for realizing our goals of creating an energy policy framework which will attract foreign capital to meet South Africa's energy needs, and support education and empowerment initiatives to develop South Africa's human resource base.

Recommendations/Follow-up Activities

Recommendations and follow up activities are specified in the individual pod reports and the overall commitments matrix.

THEME PAPER

With its combination of abundant natural resources, democratic principles, and the renewed energy of its people, South Africa's new democracy provides unprecedented opportunities and challenges. Its bold leaders are committed to a strong economy based on shared prosperity. The United States shares South Africa's vision of a new democratic and prosperous future. We are the world's leader in developing energy policy development to stimulate investment. We are also leaders in supporting advanced technologies that break the linkage between economic development and environmental degradation. In March, 1995, Deputy President Mbeki and Vice President Gore signed a Statement of Intent to form a U.S. South Africa Binational Commission, thereby, launching a new area of partnerships between the two democracies. It is in the spirit of partnership that this Presidential Trade Mission on Sustainable Development will:

Promote Private Investment -- In addition to providing access to new sources of capital private investment fosters improved quality of life, economic efficiency, innovation and accelerates the integration of South Africa into the worlds economy. Our strategy is to advance joint ventures in sustainable energy between South African and American firms by encouraging policy and regulatory frameworks that facilitate private investment. Integral to the success of these efforts is the sharing of information and experience on policies and analytical tools.

Assist in Building Capacity -- South Africa's Reconstruction and Development Program goal necessitate the development of its energy sector to supply power for equitable economic growth, and services while providing for macroeconomic stability. The two thirds of South Africans who exist outside the economic mainstream need access to energy to lead more productive lives. By assisting in transfer of management, technical and scientific expertise in energy technology and development, the United States can help fuel economic growth, build lasting relationships, and create more jobs and opportunity in both South Africa and the United States.

Facilitate Economic and Environmental Equity -- Providing energy so that all its citizens can lead economically productive lives is a top priority of South Africa's leaders. Power is needed to provide lights, communications, and clean water to rural homes, schools, and health clinics. As the world leader in development and deployment of advanced technologies, the United States can assist in creating pilot projects, helping build an infrastructure for sustainable development, and devising strategies for supplying power off-grid, through renewable energy systems grid extension, and increasing end-use efficiency. In the process, opportunities for South Africa/U.S. partnerships in all energy sectors will flourish.

Advance the Goals of the Sustainable Energy Committee of the Binational Commission -- International collaboration, both bilateral and multilateral, is an important component in meeting South Africa's social, political and economic challenges. The United States is a key partner in this collaboration, particularly in the critical area of sustainable energy development. We join with South Africa in an effort to enhance participation by the previously disenfranchised majority as an important cornerstone to successful cooperation and a strong, long-term relationship. Together, we will prepare an action plan for energy development with the Energy Commission of our Binational Commission that advances the goals of the Reconstruction and Development Program and the terms of cooperation established by Vice President Gore and Executive Deputy President Mbeki.

South Africa Commitment Matrix

All outcomes except the Non-proliferation conference are within the Binational commission.

POLICY/INFORMATION

Outcomes	Action	Milestones	Resources	DOE Owner
• Establish cooperation in energy data/information exchange	Undertake Program to exchange data and train Department of Mineral and Energy Affairs staff	Statement of Intent signed August, 1995. Requested data material has been sent to S.A. Further data exchange awaiting the establishment of an Internet connection at DMEA. In process of developing a training agenda with the Energy and Development Resource Center.	DOE and DMEA	Kilgore/Rodekohr
• Assist in development of a South African regulatory/energy policy.	U.S. comments on South Africa's Green Paper Form workshops/seminars /internships for NER, Parliament, and ESKOM to focus on policy actions and share U.S. experience on wide range of energy policy issues.	Completed by September 8, 1995 Initial Workshop Dec. 95	DOE DMEA/ESKOM	Jhirad/Meyer
• Conference in South Africa on Non-proliferation	Draft and coordinate agenda (objectives, theme, scope, target audience, etc.)	Fall of 1995	U.S. and S.A., DOE, AEC, DMEA	Ken Luongo

1	2	3	4	5
• **Establishment of Energy Efficiency Policy and Regulation**	Form workshops/seminars /internships for NER, Parliament, and ESKOM to focus on policy actions and share U.S. experience on wide range of energy policy issues.	Draft plan complete by November 1995 Review of plan complete by January 1996 Issue of final plan and begin implementation by February 1996	DOE	Salmon-Cox
• **South Africa Energy Research and Capacity Building Partnerships program**	Establish a program which support South Africa energy-related research at traditionally black and white universities, technical training institutions, and research laboratories; program will foster strong energy research collaborations and create an environment conducive to sustained excellence and open participation.	Dec 95 - US and SA teams identified Jan-Sept 96 - Conduct planning workshops July 96 - initial exchanges begin Nov. 96 - full implementation	DOE and DOE National Laboratories	McCraney/Maguire
• **Power Pooling in Southern Africa**	Establish seminar in integrated power pool operations and management	Feb 96	DOE ESKOM, DMEA	Meyer/Baldwin
• **Integrated household energy delivery pilot projects**	Joint pilot projects to demonstrate three models (shack settlement, and informal settlement upgrade scheme, and a greenfield housing development) for electrification of urban housing in South Africa.	Support Made in the USA Housing Project the week of October 1, 1995 Demonstrate 3 models: Shack settlement by Feb 1996, Informal settlement by August 1996, and Greenfield by December 1996	DOE	Baldwin

FAS_ 'RACK

• **Coal-bed methane project**	Identify partners to support South Africa's resource assessment	Progress by BNC Meeting, Dec. 1995	DOE	Baldwin
• **Successful Black Owned/Operated Renewable Energy Business**	Provide appropriate technical consultation to Suncorp	- Plant operational - System engineering capability January 1996	DOE, Sandia , NREL	Klimas/Arent
• **Gugulethu Township Industrial Park**	Conduct feasibility study to establish a light industrial park in the Gugulethu Township	Study Completed by December 1, 1995 Capital requirement by Dec 1, 1995 Industry/Skill requirements Dec 1 Vocational training initiated Feb 1, 1996	DOE, Sandia, Oak Ridge Lockheed/Martin, USAID, Southern African Enterprise Development Fund, Renaissance/ Monitor AEF and US industry	Klimas

RENEWABLE TECHNOLOGY

1	2	3	4	5
• **US PV Powered Clinic Dedicated by President Mandela**	Supply single PV clinic system and install in the Rosenkranz clinic	November 1, 1995	DOE, Sandia, NREL, Independent Development Trust	Arent
• **Model Clinics Program**	Qualify US PV power systems for installation in the 2000 clinics to be electrified by PV under the RDP	• Program defined • U.S. technical support initiated • Full implementation awaiting funding	DOE Sandia Laboratory Independent Development Trust, and US industry Funding for U.S. participation needed in FY 1996 $800K	Klimas
• **Renewable Energy Financial Infrastructure Development** (REFA)	Prepare an inventory of financing schemes for renewable energy based rural electrification and select pilot implementation.	Dec. 95	DOE Sandia, NREL, NRECA	Klimas/Arent
• **Provincial level initiation of renewable energy applications** (Northern Cape)	Prioritize renewable energy technology applications with Northern Cape government and select/field 2-3 demonstration projects	Prioritization by Dec. 1 Demonstration Selected Feb. 1, 1996	DOE Sandia NREC, DMEA, CSIR, and Northern Cape government	Arent/Klimas

FOSSIL FUELS

● **Analysis of Legal Constraints Project to institute a gas market**	Coordination of Institutions, Review Green Paper	Completion before December 1995	DMEA, U.S. DOE, Private Sector	Juckett/Browning
● **Seminar to review financial regimes, contract terms and conditions for natural gas**	U.S. institutions to assist in review; joint ventures to be established	Completion before December 1995	U.S. and S.A., DOE, DMEA, SOEKOR, CEF, SASOL	Juckett/Browning
● **Study involving an Integrated Analysis of Natural Gas Resources and Markets**	Compile necessary models on U.S./foreign gas markets; gather information from S.A. institutions (RSA, DMEA),	Completion by December 1996	U.S. and S.A., DOE, DMEA, Utilities, Electric Power Research Institute	Juckett/Browning

ENVIRONMENTAL/EFFICIENCY

• US/SA teams in the transportation, buildings, medium and small industry segment, and large industry segment to address action items identified in the Energy Summit	Establish public and private US/SA teams with identified team leaders to address identified action items in each of the four areas; establish US/SA coordinating committee to oversee these activities Complete action plan development Complete coordinating committee review; establish priorities and begin implementation	Completion by: October 24, 1995 November 17, 1995 December 4, 1995	U.S. industry, DOE and S.A. industry	Swink/Salmon-Cox
• A program for Jint Implementation with S.A. Dept. of Environmental Affairs and Tourism	Negotiate final Statement of Intent for signature in December 1995.	Draft statement by October 1995 Final Statement by November 1995 Define Program March 1996	U.S., DOE, State Interest, EPA S.A. Environmental Affairs and Tourism	Silverman
• Energy Efficiency Center	Await SA decision on energy efficiency center Prepare preliminary technology transfer plan Complete plan review by interested stakeholders Issue final technology transfer plan and begin implementation	-- 30 days after SA decision 60 days after SA decision 90 days after SA decision	DOE and others tbd	Swink/Salmon-Cox

C-2

• **Low-smoke fuels**	Develop workshop to investigate substitutes for high polluting fuels with environmentally superior fuels.	Feb. 96	DOE and others tbd	Baldwin/Meyer

CAPACITY BUILDING

• Capacity building in the field of manufacturing and business methods	Establish a manufacturing institute for 15 black South African business professionals at Oak Ridge.	Completion by November 1, 1995.	U.S. and Martin Marietta Energy Systems	McCraney
• Technical capacity building	Establish a technical exchange program for 100 black South Africans with U.S. utilities.	Completion by January 1, 1996.	African Electrification Foundation (AEF) and U.S. utility companies	McCraney
• Capacity Building in Oil and Gas Industry Project	Undertake Program to train South Africans, exchange of students and personnel	June 1997	U.S. and South Africa, Academic Institutions, Private Sector	Juckett/Browning
• Capacity building in renewable energy technology industry	Sponsor a 5-yr training program for Renewable Energy Technology with the Peninsula Technikon to involve 20 students and 12 educators.	Five year program 20-30 yearly graduates in summer	U.S. and S.A., REFAD and Pennisula Technikon	Klimas
• Professional capacity building	Establish a scientist exchange program with CSIR for exchanging 50 black South Africans with U.S. scientists	Dec. 95	DOE, CSIR, FRP, USAID, National Laboratories & HBCU Partnerships	McCraney/Maguire
	Establish a regulatory and policy exchange program for exchanging 15 senior analysts.	initiate in Jan. 96	U.S. and S.A., DOE other federal regulatory agencies, Dept. of Public Enterprises	McCraney/Jhirad

1	2	3	4	5
• **Educational capacity building**	Student/Professor Exchange program with the Technikon of Northern Transvaal -- 2 professors and 3 students	Sept. 96	U.S. and S.A., DOE HBCUs, Technikon	McCraney/Maguire
	Establish 50 internships for black South African science students at DOE labs	Summer 96	DOE laboratories and HBCU's	" "
	Identification of appropriate U.S. technical colleges and sponsor a program that shares materials, programs, and approaches	Jan. 96	U.S. and S.A., DOE, technical schools, and National Laboratories&U.S. HBCU's	" "

MASTER SCHEDULE

Friday, August 18

12:30-
1:30pm Delegation Meeting and Briefing
SITE: Signature Aviation, Dulles Airport

2:00pm Depart Washington, D.C. enroute Cape Town, South Africa
NOTE: Pod meetings on plane

Saturday, August 19 -- Cape Town

3:30pm Arrive Cape Town, South Africa
MET BY: Minister of Mineral and Energy Affairs Pik Botha
Ambassador Princeton Lyman
Steven Fried
NOTE: Arrival statement to media

5:30-
7:30pm **In-Country Briefing and Welcome reception hosted by Ambassador Lyman**
SITE: Ambassador's Residence
ATTENDEES: Official Delegation
ATTIRE: Casual

Sunday, August 20 -- Cape Town

7:00-
9:00am **Delegation breakfast**
SITE: Cape Sun Hotel, Tastevin Restaurant, 1st floor
NOTE: Briefing at 8:30am

8:30-
9:30am **Secretarial Staff meeting**
SITE: Secretary's Work Room

9:00am-
12:00pm **Oil and Gas Pod Geological site visit**
NOTE: Charles Brown to handle logistics

11:00am-
12:45pm **Visit to Renewable Energy for African Development training site**
SITE: Peninsular Technicon
NOTES: Reception and light lunch at conclusion of event
Casual attire
ATTENDEES: Secretary plus Renewables pod and interested Delegates

C-6

Sunday, August 20, Cont. -- Cape Town

1:00- 3:00pm **Visit to Guguletu Township**
SITE: Guguletu
NOTES: Computer and Book donation at school in Guguletu
ATTIRE: Casual
ATTENDEES: Secretary plus interested Delegates

5:00-
6:00pm **Secretarial Staff Meeting**
SITE: Secretary's Work Room

Monday, August 21 -- Cape Town

7:00-
8:30am **Secretarial Staff Meeting**
SITE: Secretary's Work Room

7:30-
8:30am **Delegation Breakfast and Meeting**
SITE: Cape Sun Hotel, Tastevin Restaurant, 1st floor

9:00-
10:00am **Bilateral meeting with Minister of Mineral and Energy Affairs Botha**
SITE: Waalburg Conference Center, 6th floor conference room
ATTENDEES: Secretary, Ambassador, notetaker plus 22

10:00-
10:30am **Media Availability**
SITE: Waalburg Conference Center, 6th floor conference room

9:30am-
1:30pm **Electricity Pod site visit to electrification project**

10:30-
11:30am **Efficiency Pod meeting with Dick Dutkiewicz**
SITE: Stellenbosch Room, 2nd floor

12:00-
1:30pm **Business Delegation Lunch with the Organization for Economic Development of the Western Cape (WESGRO)**
SITE: Cape Sun Hotel, VOC South, 3rd floor
NOTE: Mark Chupka to handle event

2:00-
4:00pm **Roundtable Meeting with Parliament Energy Committee**
SITE: Old Assembly Chamber
ATTENDEES: Entire Delegation, Ambassador plus 17 at the table

Monday, August 21, Cont. -- Cape Town

5:00-
6:00pm **Bilateral Meeting with Deputy President de Klerk**
SITE: Deputy President's Office
ATTENDEES: Secretary, Ambassador, notetaker plus 12

5:30-
6:00pm **Press briefing**
SITE: Cape Sun Hotel, Constansia room, 2nd floor

7:00-
8:30pm **Welcome cocktail reception hosted by Minister Botha**
SITE: Groot Constantia Estate
NOTE: Secretary O'Leary arriving at 7:30pm
ATTIRE: Business
ATTENDEES: Entire Delegation

9:00-
9:30pm **Delegation Meeting**
SITE: Cape Sun Hotel, VOC North, 3rd floor

10:00pm **DOE Trip Team meeting**
SITE: Staff room

Tuesday, August 22 -- Cape Town and Johannesburg

7:00am Charter plane departs enroute Johannesburg

7:00am Other Delegates depart enroute Johannesburg via commercial flight

9:00am Charter plane arrives Johannesburg Airport

10:00-
10:30am **Factory Ribbon Cutting and Tour of Photovoltaic Manufacturing Facility**
SITE: 55, 12th Rd, Kew, Wynberg
PARTICIPANTS: Secretary plus Renewables pod plus interested Delegates

11:00-
11:50am **Visit to Ipolokeng School**
SITE: Soweto
NOTES: Dedicate photovoltaic electricity system
Computer and Book donation at school.
Computer to be powered by newly-installed PV panels
ATTENDEES: Secretary plus Renewable pod plus interested Delegates

C-6
T9

Tuesday, August 22, Cont. -- Johannesburg

2:15-
3:15pm **Meeting with Deputy President Mbeki**
SITE: Sun City Palace Hotel, Royal Suite
PARTICIPANTS: Secretary O'Leary, Ambassador Lyman, Rich Rosenzweig, Johannah Dottori, Frank Stewart, Steven Fried

POD EVENTS

12:30-
2:00pm Electricity and Oil and Gas Pod meeting with Sasol

2:00-
3:30pm Efficiency Pod meeting with SAPPI paper producer

2:30-
4:30pm Electricity and Oil and Gas Pod meeting with Chamber of Mines

4:00-
4:45pm Efficiency Pod meeting with Chamber of Mines

4:30-
5:30pm Meeting with National Electricity Regulator Ian MacRae

5:00-
5:30pm Efficiency Pod meeting with Steel and Engineering Industries Federation

6:30-
7:00pm Press Briefing

Wednesday, August 23 -- Johannesburg

7:00-
8:15am **Delegation Meeting and Breakfast**
SITE: Carlton Hotel, Top of The Carlton, 30th Floor
NOTE: Briefing begins at 7:30am

7:30-
8:15am **Meeting of Summit Breakout Session Chairs and Coordinators**
SITE: Carlton Hotel, Boemfontein room, 4th floor

8:30-
10:00am **Energy Summit Opening Plenary Session**
SITE: Carlton Hotel, Cape room, function level
NOTE: Presentations by Secretary O'Leary and Minister Botha

Wednesday, August 23, Cont. -- Johannesburg

Secretary O'Leary's Agenda

10:30-
11:30am **Media Opportunities**
SITE: Carlton Hotel

2:45-
3:30pm **Meeting with Atomic Energy Corporation CEO Stumpf**
SITE: Carlton Hotel, room 905
NOTE: Minister Botha attending

3:45-
4:30pm **Meeting with Minister of Public Enterprises Sigcau**
SITE: Carlton Hotel, room 801
ATTENDEES: Secretary, Ambassador, notetaker plus 13

Delegation Agenda

10:15am-
12:45pm **Energy Summit Breakout session discussions**
Breakout sessions: Urban Household Energy Supply and Use
Rural Energy Supply and Use
Conventional Approaches to Electricity Supply
New Approaches to Energy Supply
Energy Efficiency
Gas Market Development and Liquid Fuels

12:45-
2:15pm **Energy Summit Lunch -- Topic: Capacity Building, Finance and Environment**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

2:30-
4:30pm **Energy Summit Breakout session discussions, conclusions**

Secretary and Delegation

4:45-
6:00pm **Energy Summit Reporting Session**
SITE: Carlton Hotel, Cape room, 4th floor

6:00-
6:30pm **Press Briefing**
SITE: Carlton Hotel, Boemfontein room, 4th floor

6:00-
8:00pm **Reception hosted by Secretary O'Leary**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor
ATTENDEES: Entire Delegation plus others

C-6
21

Thursday, August 24 -- Johannesburg

7:00-
7:30am **Secretarial Staff Meeting**
SITE: Secretary's Work Room

7:00-
7:30am **Delegation breakfast and Meeting**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

8:30-
9:30am **Secretary visits Technicon of the Northern Transvaal**
ATTENDEES: Secretary O'Leary
Rich Rosenzweig
Corlis Moody
Fredrick Humphries
Corlis Moody
Johannah Dottori
Mae Jemison

8:00-
10:00am **Financing Roundtable**
SITE: Carlton Hotel, Cape room, 4th floor
PARTICIPANTS: Entire Delegation invited, 10 at table

George Avery
David Benhke
Jude Kearney
Musheer Robinson
Ken Woodcock
Julie Belaga
Clarence James
Tine Poitevein
Pete Smith
Marc Chupka

8:30-
10:00am **Delegation Visit to Ipolokeng School**
PARTICIPANTS: Interested Delegates

11:15am **Meeting and Photograph with President Mandela**
SITE: Waterkloof Airforce Base
ATTENDEES: Entire Delegation

1:00-
2:30pm **Meeting with ESKOM Chairman and CEO**
SITE: Executive Board and Dining Rooms, ESKOM Building, Megawatt Park
ATTENDEES: Secretary O'Leary
Ambassador Lyman
Commissioner Hoecker
Larry Byrne, US AID
Robert Nordhaus, DOE
Rich Rosenzweig, DOE
Denise Swink, DOE
Dana Marshall, OVP
Ken Woodcock, AES
Clark Gellings, EPRI
George Avery, Shaw Pittman

Thursday, August 24, Cont. -- Johannesburg
Meeting with Eskom Chairman and CEO

Mary Boyd, Duke Power
Paul Koeppe, Superconductivity, Inc.
David Benhke, J.P. Morgan
Nari Hingorani, EPRI
John Bradburne, Fluor Daniel
David Jhirad, DOE
George Edwards, Amoco
Karl Butler, ICC
Pete Smith, NRECA
Larry Papay, Bechtel
Charles Condy, Proven Alternatives
Hank Keohane, Keohane & Keegan
Joel Bennett, Parsons Engineering
David Reichle, Oak Ridge
Musheer Robinson, Marsh & McLellan
Nancy Bacon, ECD
Mae Jemison, Jemison Group
Terri Tran, DOE
Art Baldwin, DOE

1:00-
2:30pm **Renewables Pod meeting with Center for Scientific and Industrial Research**

3:30-
5:30pm **Roundtable: Making Energy Policy**

SITE: Carlton Hotel, Loveld Room, 2nd floor
ATTENDEES: Entire Delegation
PARTICIPANTS: Secretary O'Leary
Ambassador Lyman
Rich Rosenzweig, DOE
Bob Nordhaus, DOE
Jane Wales, OSTP
Martha Krebs, DOE
Amb. Spearman, REFAD
Clark Gellings, EPRI
Vello Kuuskraa, ARI
Wendall Holland, Reed, Smith...
Mike Kammerer, Dresser
Charles Condy, Proven Alternatives
Dan Dudek, Environmental Defense Fund
Terry Thorn, Enron
Emmet George, Iowa Public Utilities
Cheryl Alexander, Alexander Companies
Mannie Jackson, Honeywell

C-6
23

Thursday, August 24, Cont. -- Johannesburg

6:00-
6:30pm **Press Briefing**
SITE: Carlton Hotel, Bloemfontein room, 4th floor

7:30-
9:30pm **Dinner hosted by American Chamber of Commerce**
SITE: Carlton Hotel, Highveld room, 2nd floor
NOTE: Presentations by Secretary O'Leary and Minister Botha
ATTENDEES: Entire Delegation

Friday, August 25 -- Johannesburg

7:00am **Delegation Meeting**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

9:00-
10:00am **Bilateral Meeting with Minister of Trade and Industry Manuel**
ATTENDEES: Secretary O'Leary
Ambassador Lyman
Rich Rosenzweig, DOE
Jude Kearney, Commerce
Larry Byrne, U.S. AID
Julie Belaga, Ex-Im
Ken Woodcock, AES
Andrea Lockwood, DOE
Mannie Jackson, Honeywell
Rodney Webb, Destec
Michael Clark, Atlantic Pacific Technology
Jerome Davis, Cummins
Dr. Fred Humphries, Florida A&M
Lilia Abron, PEER Consultants
Tina Poitevien, Washington, Hackett...
Dana Marshall, OVP

10:30-
11:30am **Meeting of Energy Committee of Binational Commission**
SITE: Union Buildings, Pretoria Room 259
ATTENDEES: Entire Delegation
PARTICIPANTS: Secretary O'Leary
Julie Belaga
Larry Byrne
Jude Kearney
Regina Brown
Frank Stewart
Jane Wales
Martha Krebs
Dana Marshall

Friday, August 25, Cont. -- Johannesburg

11:30am-
12:30pm **Signing Ceremony for Bilateral Agreements and Business Deals**
SITE: Union Buildings Courtyard, Pretoria
ATTENDEES: Entire Delegation

12:30-
1:00pm **Press Conference**
SITE: Union Buildings, Pretoria Room 259

1:00-
3:00pm **Renewable pod visit to Solar Homes**

Saturday, August 26 -- Johannesburg and Kimberley

9:00am Depart Johannesburg enroute Kimberley Airport

10:00am Arrive Kimberley Airport
Met by Premier Dipico, Premier of the Orange Free State, other VIPs
NOTE: Welcome statements and cultural program

10:30am Depart enroute Kimberley Museum

10:45am Arrive Kimberley Museum

10:45-
11:15am **Coffee and Reception**

11:15am-
12:45pm **Roundtable on Provincial Issues, Energy and Empowerment**
ATTENDEES: Entire Delegation
PROGRAM: Welcome by Premier Dipico
Welcome by Secretary O'Leary
South African presentation on specific needs, potential areas of cooperation
Empowerment and Capacity Building
Electricity
Renewables
Mining
Financing
U.S. response
Discussion
Conclusions

12:45-
1:15pm **Reception and informal discussion with provincial business leaders**

1:40-
3:00pm **Luncheon hosted by Premier Dipico**
SITE: Savoy Hotel
NOTE: Toast by Secretary

Saturday, August 26, Cont. -- Kimberley

4:00pm	Depart Kimberley Airport enroute Johannesburg for refueling
5:00pm	Arrive Airport
9:30pm	Depart enroute Cape Town
11:30pm	Arrive Cape Town
12:30am	Arrive Cape Sun Hotel

Sunday, August 27 -- Cape Town

11:30am	Depart enroute Washington, D.C.

Monday, August 28 -- Washington, D.C.

2:30am	Arrive Washington Dulles Airport

C-6
26

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Vello A. Kuuskraa
President
Advanced Resources International
1110 North Glebe Road, Suite 600
Arlington, VA 22201
(703) 528-8420 office
(703) 528-0439 fax
oil and gas

Mr. Ed Romero
Chairman
Advanced Sciences, Inc.
6739 Academy Road, NE
Albuquerque, NM 87109
(505) 828-0959 office
(505) 828-0173 fax
environment

Mr. Ken Woodcock
Senior Vice President
AES Corporation
1001 North 19th Street, Suite 2000
Arlington, VA 22209
(703) 522-1315 office
(703) 528-4510 fax
Electricity

Mr. John Butler
Vice President
African Electrification Foundation
5120 West Goldleaf Circle, Suite 280
Los Angeles, CA 90056
(213)298-1040 office
(213)298-4580 fax
electricity

Mr. C. Payne Lucas
Africare
440 R Street, NW
Washington, DC 20001
(202) 462-3614 office
(202) 387-1034
policy

Ms. Cheryl Alexander
CEO
Alexander Companies
3205 Casco Circle
Wayzata, MN 55391
(612) 471-0121 office
(612) 471-7434 fax
capacity buiilding

Mr. George Edwards
Vice President of International Negotiations
Amoco Exploration & Production Co.
P.O. Box 3092, Room 21188
Houston, TX 77253-2696
(713) 366-4543 office
(713) 366-5717 fax
oil and gas

Mr. Mark Sawyer
Vice President
ARCO International Oil and Gas
New Business Ventures
2300 West Plano Parkway
Plano, TX 75075
(214) 509-6684 office
(214) 509-3090 fax
oil & gas

C-6
27

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. D. Michael Clark
President
Atlantic-Pacific Technologies, Inc.
44853 Fremont Boulevard
Fremont, CA 94538
(510) 651-9995 office
(510) 651-9841 fax
renewables

Dr. Larry T. Papay
Senior Vice President
Bechtel Group, Inc.
50 Beale Street
Mail Stop 50/17/B36
San Francisco, CA 94105-1895
(415) 768-0275 office
(415) 768-0503 fax
energy efficiency

Mr. Ed Badolato
Bogart Environmental Services
2202 Kings Garden Way
Falls Church, VA 22043
(703) 821-7725 office
(703) 821-7789 fax
environment

Mr. Cordell Reed
Senior Vice President
Commonwealth Edison
1 First National Plaza, 10 Dearborn - 37th Floor
Chicago, IL 60603
(312) 394-3121 office
(312) 394-3110 fax
electricity

Mr. Jerome Davis
President
Cummins Power Generation
500 Jackson Street
Mail Code 60125, P.O. Box 3005
Columbus, IN 47202-3005
(812) 377-3743 office
(812) 377-4453 fax
renewables

Deputy Assistant Secretary Regina Brown
Bureau for African Affairs
Department of State
Room 6234-A
Washington, DC 20520
(202) 647-1818 office
(202) 647-6301 fax
Binational Commission

Mr. Jude Kearney
Deputy Assistant Secretary for Service Industries and Finance
Department of Commerce
Room 1128
14th Street & Constitution Avenue, NW
Washington, DC 20230
(202) 482-5261 office
(202) 482-4775 fax
Binational Commission

Mr. Rodney Webb
Senior Vice President
Destec Energy
2500 Citywest Blvd, Suite 150
Houston, TX 77042
(713) 735-4229 office
(713) 735-4059 fax
electricity

C-6
28

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Michael Kammerer
President
Dresser Valve & Control
10077 Grogans Mill Road, Suite 500
The Woodlands, TX 77380
(713) 367-5741 office
(713) 363-8244 fax
oil and gas

Ms. Mary T. Boyd
Vice President, Corporate Services
Duke Engineering & Services
230 South Tryon Street, Suite 400
Charlotte, NC 28202
(704) 382-8024 office
(704) 382-8389 fax
electricity

Mr. Jan Hartke
President
Earthkind International
2100 L Street, NW, Suite 500
Washington, DC 20037
(202) 778-6149 office
(202) 778-6134 fax
environment

Mr. Robert Eggleston
President and CEO
EFH Coal Company
89 Miller Street
West North End Station
Wilkes-Barre, PA 18705
(717) 823-7664 office
(717) 829-4515 fax
electricity

Ms. Nancy Bacon
Senior Vice President
Energy Conversion Devices, Inc
1675 West Maple Road
Troy, MI 48084
(810) 280-1900 office
(810) 280-1456 fax
renewables

Mr. Richard Guy
Vice President
Energy Initiatives, Inc.
1 Upper Pond Road
Parsippany, NJ 07054
(201) 263-6953 office
(201) 263-6977 fax
electricity

Mr. Terence Thorn
Senior Vice President
Government Affairs & Public Policy
Enron Corporation
P.O. Box 1188
1400 Smith Street
Houston, TX 77251-1188
(713) 853-6161 office
(713) 646-4831 fax
oil and gas

Mr. Dan Dudek
Senior Economist
Environmental Defense Fund
257 Park Avenue South
New York, NY 10010
(212) 505-2100 office
(212) 505-2375 fax
environment

C-6
29

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Clark Gellings
Vice President
EPRI
3412 Hillview Avenue
Palo Alto, CA 94303
(415) 865-2000
(415) 855-8501
electricity

Dr. Nori Hingorani
Vice President
EPRI
26480 Weston Drive
Los Altos Hills, CA 94022
(415) 941-4309 office
(415) 941-5240 fax
electricity

The Honorable Julie Belaga
Member of the Board
Export-Import Bank of the United States
811 Vermont Avenue, NW
Washington, DC 20571
(202) 565-3540 office
(202) 565-3548 fax
Binational Commission

The Honorable James Hoecker
Commissioner
Federal Energy Regulatory Commission
825 North Capital Street, NE
Room 9300
Washington, D.C. 20426
(202) 208-0383 office
(202) 208-0151 fax
electricity

Dr. Frederick S. Humphries
President
Florida A&M University
Administration Center, Room 301
Tallahassee, FL 32307
(904) 599-3225 office
(904) 561-2152 fax
research & development

Mr. John Bradburne
Vice President
Fluor Daniel
800 Connecticut Avenue, NW, Suite 600
Washington, DC 20006
(202) 955-9314 office
(202) 833-1630 fax

Mr. John Coors
President
Golden Photon, Inc.
4545 McIntyre Street
Golden, CO 80403
(303) 271-7177 office
(303) 271-7410 fax
renewables

Mr. Mannie Jackson
Senior Vice President, International Programs
Honeywell, Inc.
P.O. Box 524
Minneapolis, MN 55440-0524
(202) 857-9801 office
(202) 857-9858 fax
energy efficiency

C-6
30

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Karl Butler
President
ICC Energy Corporation
311 North Market Street
Dallas, TX 75202
(214) 744-2204 office
(214) 744-2206 fax
oil & gas

The Honorable Emmitt George
Commissioner
Iowa Public Utilities Board
Lucas State Office Building, 5th Floor
Des Moines, IA 50319
(515) 281-5325 office
(515) 281-8821 fax
policy

Mr. David Benhke
Managing Director
J.P. Morgan & Company
60 Wall Street
New York City, NY 10260
(212) 648-7675 office
(212) 648-5335 fax
finance

Dr. Mae Jemison
Executive Director
Jemison Group, Inc.
P.O. Box 591455
Houston, TX 77259-1455
(713) 486-7918 office
(713) 486-7522 fax
policy

Mr. Tom Gannon
Vice President
Johnson Controls
507 East Michigan Street
Milwaukee, WI 53202
(414) 272-6424 office
(414) 228-2077 fax
energy efficiency

Mr. Clarence L. James, Jr.
President and CEO
Keefe Company (The)
444 North Capitol Street, NW
Suite 517A
Washington, DC 20001
(202) 638-7030 office
(202) 638-6784 fax
finance

Mr. Harold J. "Hank" Keohane
Partner
Keohane & Keegan
21 Custom House Street
Boston, MA 02110
(617) 951-1400 office
(617) 951-1354 fax
electricity

Mr. Michael Hodge
Marketing
L.A.S. Energy Corporation of Florida
1265 South Semoran Blvd.
Suite 1250, Building #4
Winter Park, FL 32792-5506
(407) 678-2600 office
(407) 678-3099 fax
oil and gas

C-6
31

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Ernest L. Holloway
President
Langston University
Langston, OK 73050
(405) 466-3388 office
(405) 466-3461 fax
capacity building

Mr. Musheer Robinson
Senior Vice President
National CSG Public Sector - Practice Leader
Marsh & McLennan
10 South Broadway
St. Louis, MO 63102-1719
(314) 342-2653
(314) 241-0751
finance

Mr. Frank Russell
Global Power Strategic
Advisory Services
Merrill Lynch and Company
250 Vesey Street, 27th floor
New York City, NY 10281-1327
(212) 449-9793 office
(212) 449-8636 fax
finance

Ms. Kathy O'Reilly
Molten Metal Technology
1615 L Street, N.W., Suite 540
Washington, DC 20036
(202) 835-8940 office
(202) 835-8938 fax
electricity

Dr. Walter Massey
President
Morehouse College
830 Westview Drive, SW
Atlanta, GA 30314
(404) 215-2645 office
(404) 659-6536 fax
research & development

Mr. Granville "Pete" Smith
South African Program Director
National Rural Electric Cooperative
Association
1800 Massachusetts Avenue, NW
Washington, DC 20036-1883
(202) 857-9686 office
(202) 857-4863 fax
renewables

Dr. David Reichle
AssociateDirector
Oak Ridge National Laboratory
P.O. Box 2008
Oak Ridge, TN 37831
(615) 576-2900 office
(615) 241-2967 fax
research & development

Mr. Dana Marshall
Senior Advisor for International Economic
Affairs
Office of the Vice President
Old Executive Office Building
Washington, DC 20501
(202) 395-6013 office
(202) 395-6042 fax
Binational Commmission

C-6
32

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Ms. Jane Wales
Associate Director for National Security
and International Affairs
Office of Science and Technology Policy
Old Executive Office Building, Room 494
Washington, DC 20500
(202) 456-2894 office
(202) 456-6028 fax
Binational Commission

Mr. Joel Bennett
President
Parsons Engineering Science, Inc.
100 West Walnut Street
Pasadena, CA 99124
(818) 440-4412 office
(818) 440-6195 fax
environment

Dr. Lilia Abron
President
PEER Consultants
12300 Twinbrook Parkway,
Suite 410
Rockville, MD 20852
(301) 816-0700 office
(301) 816-9291 fax
environment

Mr. Jerome Foster
President and CEO
Pentech Energy
1250 24th Street, NW, Suite 350
Washington, DC 20037
(202)467-2797 office
(202)467-2796 fax
electricity

Mr. Charles Condy
President and CEO
Proven Alternatives, Inc.
601 California Street, #2200
San Francisco, CA 94108
(415) 781-2001 office
(415) 781-0552 fax
energy efficiency

Mr. Wendell F. Holland
Esquire of Counsel
Reed, Smith, Shaw, and McClay
2500 One Liberty Place
1650 Market Street
Philadelphia, PA 19103-7301
(215) 851-8100 office
(215) 851-1420 fax
electricity

Ambassador Leonard Spearman
Chairman of the Board
Renewable Energy for African Development
122 Street, NW, 4th floor
Washington, DC 20001-2109
(202) 383-2557 office
(202) 383-2555 fax
renewables

Ms. Jan Schori
General Manager
Sacremento Municipal Utility District
6201 S Street
Sacremento, CA 95817
(916) 732-5325 office
(916) 732-6562 fax
electricity

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Lindley DeGarmo
Director
Salomon Brothers
7 World Trade Center, 30th floor
New York City, NY 10048
(212) 783-5879 office
(212) 783-4164 fax
finance

Mr. George Avery
Shaw, Pittman, Potts, & Trowbridge
2300 N Street, NW
Washington, DC 20037-1128
(202) 663-8856 office
(202) 663-8007 fax
finance

Ms. Sharon Moore
Vice President - Business Development
Sithe Energies, Inc.
450 Lexington Avenue
New York, NY 10017
(212) 450-7345 office
(212) 450-9005 fax
electricity

Mr. John J. McAtee, Jr.
Vice Chairman
Smith Barney, Inc.
388 Greenwich Street, 34th floor
New York City, NY 10013-0060
(212) 816-6000 office
(212) 816-7029 fax
finance

Mr. Roger G. Little
President and CEO
Spire Corporation
One Patriots Park
Bedford, MA 01730-2396
(617) 275-6000 office
(617) 275-7470 fax
renewables

Mr. Paul Koeppe
President
Superconductivity, Inc.
2114 Eagle Drive
Middleton, WI 53582
(608) 828-9131 office
(608) 831-5793 fax
electricity

Mr. Larry Byrne
Assistant Administrator
Bureau for Management
U.S. Agency for International Development
320 21st Street, NW
Washington, DC 20523
(202) 647-8646 office
(202) 736-4147 fax
Binational Commission

Mr. Wilbur Thomas
Bureau for African Affairs
U.S. Agency for International Development
320 21st Street, NW
Washington, DC 20523
(202) 647-4344 office
(202) 736-4147 fax
Binational Commission

C-6
34

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Kneeland Youngblood
Director - Member of the Board
U.S. Enrichment Corporation
6903 Rockledge Drive
Betheda, MD 20817
(301) 564-3448 office
(301) 564-3202 fax
oil & gas

Ms. Tina Poitevien
Partner
Washington, Hackett, Poitevien & Co.
1500 Walnut Street, Suite 303
Philadelphia, PA 19102
(215) 772-1130 office
(215) 772-1416 fax
finance

Ms. Carol Earls-Franklin
Manager EEO/Employment
Western Resources
818 Kansas Avenue, P.O. Box 8890
Topeka, KS 66601
(913) 575-6511 office
(913) 575-6523 fax
capacity building/electricity

Mr. Kenneth C. Karas
President and CEO
Zond Systems, Inc.
1300 Jameson Road, P.O. Box 1910
Tehachapi, CA 93581
(805) 822-6835 office
(805) 822-7880 fax
renewables

C-6
35

OFFICIAL DELEGATION -- U.S. DEPARTMENT OF ENERGY

Secretary Hazel R. O'Leary
Richard Rosenzweig
Johannah Dottori
Bud Annan
Steven Fried
Corlis Moody
Janet Anderson
Bob Nordhaus
Christine Fletcher
Peter Salmon-Cox
Art Baldwin
David Meyer
David Jhirad
Mark Chupka
Dan Bouie
Joe Maguire
Barbara Semedo
Linda Silverman
Shirley Thomas
Terry Tran
Andrea Lockwood
Denise Swink
Frank Stewart
Joey Lucas
Percy McCraney
Marti Thomas
Ann Walls
Andrea Esquer
Dawn Shrepel
Martha Krebs
Reggie Spiller
Paul Klimas
Chris Sherring
Charles Brown

TERMS OF REFERENCE
OF THE SUSTAINABLE ENERGY DEVELOPMENT COMMITTEE OF THE UNITED STATES - SOUTH AFRICA BINATIONAL COMMISSION

Whereas, the Government of the United States of America and the Government of the Republic of South Africa established the United States-South Africa Binational Commission on March 1, 1995; and

Whereas, the Department of Energy of the United States of America and the Department of Mineral and Energy Affairs of the Republic of South Africa, referred to as the Participants, intend to facilitate cooperation in energy development, as follows:

Establishment of the Sustainable Energy Development Committee

I. The Participants hereby establish the Sustainable Energy Development Committee of the United States-South Africa Binational Commission, referred to as the Committee. The Committee will be co-chaired by the Secretary of Energy of the United States and the Minister of Mineral and Energy Affairs of the Republic of South Africa. The Committee will work on the basis of mutual agreement and adopt rules of procedure and work programs, as appropriate.

II. The membership of the Committee will consist of senior officials from appropriate departments and entities of the governments of the United States and South Africa. The Committee will meet regularly as mutually agreed by the Participants. Meetings will be held alternately in the United States and in South Africa.

III. As needed, the Committee will form ad hoc working groups to consider and report on specific activities. The Committee will determine the assignments of such working groups, which will conduct their work in accordance with these Terms of Reference.

Terms of Reference

IV. The Committee will facilitate the exchange of information and encourage bilateral discussions in order to provide advice and guidance to the Participants in the following areas:

A. Development and implementation of policies and programs relating to energy exploration, development, generation, transmission, distribution, use and management;

B. Development of secure supplies of energy resources that are economically competitive and environmentally acceptable, on a mutually beneficial basis;

C. Examination and implementation of activities required to develop a sustainable energy strategy for South Africa, including the development of infrastructure, as necessary to facilitate the efficient use of energy resources and the use of renewable energy resources and fossil energy technology;

D. Development of technology programs, including applied research and development and the promotion of a dialogue concerning current and future energy technology development in the United States, South Africa, the African continent, and the world, as appropriate;

E. Assistance in capacity building through energy-related training, development and transfer of skills and technology to support human resources development, policy development and institutional infrastructure, including the promotion of joint government-industry activities and faculty and student exchanges;

F. Establishing and facilitating cooperative activities in the fields of energy efficiency and renewable energy research, development and commercialization; fossil fuel technologies (including gas); clean coal and coal-bed methane recovery and utilization technologies; and energy technologies that enhance the environment, particularly technologies that mitigate the effects of greenhouse gases;

G. Facilitating the exchange of information and assessments on energy demand and supply forecasts and bilateral development of energy information systems; and

H. Promotion of private sector energy technology transfers between companies in the United States of America and in the Republic of South Africa.

General Provisions

V. All costs associated with participation in the Committee will be borne by the Participant that incurs them, unless otherwise agreed by the Participants.

VI. Activities under the Terms of Reference will be subject to the availability of appropriated funds and to the laws and regulations of the United States of America and the Republic of South Africa.

C-6
38

VII. The Participants may revise these Terms of Reference at any time, in writing.

Signed, in duplicate, at Pretoria, Republic of South Africa, this 25th day of August 1995.

FOR THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA:

HAZEL R. O'LEARY
SECRETARY OF ENERGY

FOR THE DEPARTMENT OF MINERAL AND ENERGY AFFAIRS OF THE REPUBLIC OF SOUTH AFRICA:

ROELOF FREDERIK BOTHA
MINISTER OF MINERAL AND ENERGY AFFAIRS

JOINT STATEMENT OF INTENT BETWEEN THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA AND THE DEPARTMENT OF MINERAL AND ENERGY AFFAIRS OF THE REPUBLIC OF SOUTH AFRICA ON AN ENERGY INFORMATION EXCHANGE

The Department of Energy of the United States of America and the Department of Mineral and Energy Affairs of the Republic of South Africa, hereafter referred to as the "Participants," intending to conduct an exchange of energy information, have reached the following understanding:

ARTICLE I

The Participants intend to establish a United States - South African sub-ministerial Working Group on Energy Information (hereafter referred to as the "Working Group") to facilitate and consult on the exchange of readily available energy statistics and other energy market information between the Participants.

The exchange of energy data and information will include, but not be limited to, the following:

(A) Annual energy market statistics (production, imports, exports, stocks, bunkers, transformation, demand, prices, and other data) for petroleum, natural gas, coal, electricity, fuelwood, and other forms of energy;

(B) Other related data and information concerning fuel characteristics, fossil fuel heat values, refining capacity, reserves, and other energy information;

(C) Information concerning statistical methods, analytic techniques, and system documentation;

(D) Information about electronic information dissemination; and

(E) Exchange of personnel for the purpose of training on energy information collection and analysis and the facilitation of electronic communication between the Participants.

ARTICLE II

For the purpose of promoting closer contacts and mutually beneficial consultations:

(A) The Working Group should consist of sub-ministerial officials and/or senior officials from the Participants. Participants, in consultations, may also include representatives from such other agencies as the Participants consider appropriate for the agenda of the consultations.

(B) The Energy Information Administration of the Department of Energy of the United States of America and the Chief Energy Directorate of the Department of Mineral and Energy Affairs of the Republic of South Africa jointly will coordinate cooperative activities contemplated by this Joint Statement of Intent. Each Participant will designate a Coordinator who will prepare for Working Group Meetings and who will be responsible for communications between the Participants.

ARTICLE III

The Working Group will be guided by the following procedures:

(A) In view of the significant distance between the two countries, electronic communication will be the preferred mode of communication between the Working Group members.

(B) Meetings of the Working Group or selected members from the Working Group may be held upon agreement of the Participants.

(C) The agendas for all meetings should be determined and agreed by the Participants. Minutes will be ratified and signed immediately after each meeting.

(D) Working Group members will be responsible for their own travel and lodging expenses. It is expected that the Participant hosting the Working Group meeting will pay the costs for arrangements associated with the meeting.

Signed, in duplicate, at Pretoria, Republic of South Africa, this 25th day of August, 1995.

**FOR THE
DEPARTMENT OF ENERGY
OF THE
UNITED STATES OF AMERICA:**

**HAZEL R. O'LEARY
SECRETARY OF ENERGY**

**FOR THE
DEPARTMENT OF MINERAL AND
ENERGY AFFAIRS OF THE
REPUBLIC OF SOUTH AFRICA:**

**ROELOF FREDERIK BOTHA
MINISTER OF MINERAL AND
ENERGY AFFAIRS**

C-6

JOINT STATEMENT OF INTENT
BETWEEN
THE DEPARTMENT OF ENERGY
OF THE UNITED STATES OF AMERICA
AND
THE DEPARTMENT OF MINERAL AND ENERGY AFFAIRS
OF THE REPUBLIC OF SOUTH AFRICA
ON ENERGY POLICY, SCIENCE AND TECHNOLOGY, AND DEVELOPMENT

The Department of Energy of the United States of America and the Department of Mineral and Energy Affairs of the Republic of South Africa, hereinafter referred to as the "Participants."

Having an interest in cooperating in the areas of energy policy, science and technology, and development;

Having a mutual interest in exchanging experience and views on opportunities for the utilization of energy and environmental technologies and in fostering collaboration between their two countries in these areas; and

Noting that energy security and the quality of life can be enhanced through the effective and environmentally-sound utilization of energy sources, including fossil fuels, renewable energy, and energy efficiency technologies, and that mutual cooperation to support such uses would promote increased economic interaction, facilitate technology transfer, accelerate the commercialization of certain energy systems and products, and expand opportunities for international trade between the United States and South Africa;

The Participants declare their intentions as follows:

1. The Participants intend to facilitate joint activities related to energy policy, science and technology, development, and commercialization in an environmentally and economically sound manner in areas of mutual interest. These intended joint activities may include, but are not limited to, the following:

   (A) Exchange of scientists, engineers and other specialists for participation in agreed research, development, analysis, design, and experimental activities conducted;

   (B) Organizing and participating in seminars and other fora on specific mutually agreed topics;

   (C) Providing training support to strengthen human resources and institutional infrastructure or capacity building (empowerment) in order to promote sustainability;

C-6
43

(D) Providing technical assistance to ensure the success of pilot projects to demonstrate the utilization viability of various energy technologies, including clean coal technologies and renewable energy in rural communities and in the residential and industrial sectors;

(E) Promoting private investments in energy projects and fostering the establishment of financing mechanisms that may enable end-users to purchase energy systems to foster entrepreneurship and to assist private entrepreneurs to build successful enterprises as part of the national energy program of the Participants;

(F) Providing for the exchange of scientific, technical, and energy market information and results and methods of research and development as mutually agreed by the Participants; and

(G) Encouraging efforts to foster the roles of previously disenfranchised individuals in the Republic of South Africa, including women, in the energy and environmental fields.

2. The Office of International Energy Policy of the United States Department of Energy and Chief Energy Directorate of the Department of Mineral and Energy Affairs of the Republic of South Africa jointly will coordinate the cooperative activities contemplated by this Joint Statement of Intent.

3. All costs associated with the cooperation contemplated herein, including payment of salaries, travel and subsistence expenses of personnel under exchanges, will be borne by the Participant that incurs them, unless otherwise determined by the Participants.

Signed, in duplicate, at Pretoria, Republic of South Africa, this 25th day of August, 1995.

FOR THE DEPARTMENT OF ENERGY OF THE UNITED STATES OF AMERICA:

HAZEL R. O'LEARY
SECRETARY OF ENERGY

FOR THE DEPARTMENT OF MINERAL AND ENERGY AFFAIRS OF THE REPUBLIC OF SOUTH AFRICA:

ROELOF FREDERIK BOTHA
MINISTER OF MINERAL AND ENERGY AFFAIRS

SOUTH AFRICA SIGNINGS ANNOUNCEMENTS AND INITIATIVES

GOVERNMENT-TO-GOVERNMENT AGREEMENTS

South Africa Partner	U.S. Partner	Type of Document to be Signed	Project Description	Benefits
Department of Minerals and Energy Affairs (DMEA)	Department of Energy	Terms of Reference	Formalize Official Energy Committee for the Binational Commission	The committee will promote closer coordination on energy issues with Mbeki-Gore Commission.
Republic of South Africa	Department of Energy	Agreement for Cooperation in the Peaceful Uses of Nuclear Energy	The terms of this government-to-government agreement transcends an earlier agreement predating radification of the Nuclear Non-proliferation treaty. The new agreement provides for the required non-proliferation safeguards and will permit the US to go forward with peaceful nuclear programs with South Africa.	Improvement of old agreement - promotes improved cooperation between US and RSA on important nuclear issues.
Department of Minerals and Energy Affairs (DMEA)	DOE	Statement of Intent to establish framework for cooperative relationship between DOE and DMEA.	Establishes a framework to facilitate energy policy.	This agreement will facilitate closer government-to-government coordination on energy policy. It is anticipated that this framework will create opportunities for US and South African industry as energy technology projects are undertaken.

South Africa Partner	U.S. Partner	Type of Document to be Signed	Project Description	Benefits
Department of Minerals and Energy Affairs (DMEA)	Energy Information Administration (DOE)	Statement of Intent to share energy information.	Data sharing arrangement to improve understanding of trends in energy markets.	Improved data will lead to the development of better energy policies. EIA has also agreed to the exchange of personnel to be trained on energy information collection.

POD Reports

SOUTH AFRICA SIGNINGS, ANNOUNCEMENTS AND INITIATIVES

EDUCATION AND EMPOWERMENT

C-6
47

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
I Can Foundation	Department of Energy, USAID and African Electrification Foundation	Announcement of Book and Computer donation	Donation of 5,000 pounds of books and 50 computers equipped with Wordperfect systems. Donations to Guguleto and Soweto townships and the Technikon of Northern Transvaal were made during the week of the Trade Mission.	Much needed books for schools and libraries. Students will now have access to basic essentials for learning. Students will become computer literate.
ESKOM	African Electrification Foundation, and US laboratories	Announcement to kick off Science and Technology Empowerment Program`	Teachers are trained to instruct students in science and math. Program to include 15 teachers spending a summer in a science research program at one of the DOE national labs. 50 South African students are identified to participate in science and technology training at DOE national labs.	Improved education and encouragement into science based careers. Students are also exposed to science and technology training which will increase opportunity for jobs.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
ESKOM	African Electrification Foundation and US Energy Industry.	Announcement of opportunities for South African professionals to enter established training programs in technical and management areas in the United States and in South Africa.	50 South African professionals to participate in existing training programs and internships with US companies and businesses.	Provides direct on the job training to professionals and provides students internships and visitations giving them hands-on experience in the market place.
Technikon of Northern Transvaal	Department of Energy, and African Electrification Foundation	Memorandum of Understanding will be signed to establish an HBU Energy/Environmental Development Educational Program	Three South African students will be offered full 4-year scholarships to attend four-year universities and earn bachelors' degrees in energy, environmental and science related fields. Two South African professors will be offered full 2-yr scholarships to attend US universities and earn master's degrees in science and energy related fields.	This program will allow the Technikon to cultivate leaders in science and energy related fields in South Africa. Professors with higher levels of education in turn will raise the educational attainment of their students as well as serve as role models for their communities.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Peninsula Technikon	Renewable Energy for African Development (REFAD), DOE	Letter of Intent to establish a five year training program.	Training center established to train technical educators, assist in curriculum development for renewable energy technology education. 20 Students to be involved in program	Develop South African renewable energy technicians, opens the door to multi-million dollar photovoltaic market.
Portfolio Business Holdings, LTD.	The Mitchell Group working in conjunction with Oak Ridge National Laboratory.	Announcement of scholarship certificates for 15 South African business owners to participate in Oak Ridge Manufacturing Technology Institute	This program provides training for business owners in agile manufacturing and industrial efficiency through computer training at the Oak Ridge program.	South African machine tool manufacturers will acquire the know-how to apply advanced computer techniques to produce precision, quality parts economically while reducing pollution and energy use. Parts produced will be used to help establish or revolutionize the South African high tech and materials processing industries.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Council for Scientific and Industrial Research	National Renewable Energy Laboratory and Sandia National Laboratory	Letter of Intent to create lab-to-lab cooperative agreements for research and scientific exchange on sustainable energy.	This letter will facilitate joint activities related to sustainable energy technologies. These activities will include human resource training, institutional infrastructure for sustainable energy technologies and technical assistance to ensure success of pilot projects demonstrating the viability of the technology option in rural areas.	S. African renewable market expected to be large, allowing great development of such technologies. 5-7 South Africans will be involved in this program.

SOUTH AFRICA SIGNINGS, ANNOUNCEMENTS AND INITIATIVE

POLICY DEVELOPMENT AND INVESTMENT

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
SUNCORPS	SPIRE Corporation and ASE Corporation	Letter of agreement to build a photovoltaic manufacturing facility adjacent to Alexandra township	This manufacturing facility will produce 500 kw/yr; electrify 10,000 homes, 600 clinics and 1,000 schools. Fast track pilot project	This project will bring 200 jobs associated with manufacturing, sales, maintainance and installation of the products made at this facility. 15-30 jobs in US to support South African partner.
Lebowa Tribe Minerals Trust	Advanced Resources International	Letter of intent to evaluate potential Market for coal bed methane	Evaluation of potential market for coal-bed methane supply and utilization.	Program is designed to create utility partnerships and train people in coal plant operations, power system planning and design and other areas of management.

3/5

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Township of Guguletu	Sandia Laboratory, private sector companies; Historically Black Colleges and Universities and the African Electrification Foundation	Memorandum of Understanding	Sandia Labs will develop a plan to bring an enterprise zone to the Township of Guguletu. This is an effort to incorporate the Township's strategic plan which seeks to transform itself into a suburb through the development of an economic infrastructure.	This plan will incorporate the idea of creating an enterprise zone with vocational training that will draw investors and create approximately 1,000 new jobs. The design will combine facility and manpower requirements that will form the basis of Guguletu vocational training programs. Types of industry considered for this zone include brick manufacturing, textiles, electronic controls, lumber mill work.
REFSA (Renewable Energy for Southern Africa)	USAID(Agency for International Development)	Letter of agreement to install PV pilot systems in 2500 homes	This pilot project will serve 2,500 homes and can open doors to broader electrication. Pilot program will evaluate financing, installation and suport mechanisms.	Potential access increasing market for rural electricfication

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
ESKOM	EPRI	Establishment of an ESKOM/EPRI center for Essential Community Services	The center will act as a technology transfer mechanism for moving EPRI technology through ESKOM into Sub-Saharan Africa. The Center's work will also include project management, closely coordinated with government objectives initially focused on water purification, health care and the role of electricity in these efforts.	This community training center is expected to serve between 5,000 to 50,000 people.
The Group for Environmental Monitoring (GEM)	International Institute for Energy Conservation (IIEC)	Letter of Intent to conduct needs assesment for transportation sector.	IIEC will perform a joint study with GEM to determine opportunities in South Africa for Electric vehicles and manufacturing of component parts as well as opportunities for burning of ethanol from biomass.	The study results in opportunities for joint ventures in deployment of alternative fuels and vehicles in South Africa, thereby diversifying their energy base and establishing the infrastructure for more environmentally benign transportation options.
ESKOM	Johnson Controls	Contract for Energy management and other services	Johnson Controls will contract with ESKOM to install with an energy efficient building management systems	This demonstrations will provide the knowledge to South Africans to understand the economic benefits of investing in energy efficiency.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Republic of South Africa National Electricity Regulator	Department of Energy	Agreement to conduct two workshops on development of regulatory policies necessary to attract investment. One workshop each in United States and Republic South Africa.	Announcement as part of the Binational Commission workplan	This program will assist South Africa in developing a regulatory system. It will also facilitate investment in electric power sector.
Provincial Government of Northern Cape	Department of Energy	Joint Statement of Intent on Renewable Technologies	This statement would create a cooperative relationship to promote increased economic interaction, facilitate technology transfer and accelerate commercialization of renewable energy based systems.	This agreement will help increase the level of energy policy expertise, encourage education and investment through technical personnel exchanges and seminars and promote private investment in energy projects.
Manong Construction, Mouke Industries	PEER Consultants, Advanced Panel Manufacturers	Community Development Project in Kimberly	This project is designed to evaluate and test holistic community development assumptions and should result in the development of an approach to community palnning and development which can be replicated in other communities.	This project will involve the community in the design of the project, and will offer training and skill building opportunities. This project conforms with the goals of the Reconstruction Development Programme outlined by the South African Government.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Sasol I and Sasol II and other South African government agencies	Fluor South African and other US companies, government and universitites	Training program Announcement	This program will be focused to meet the goals of the Reconstruction and Development Program with particular emphasis on providing electricity to township and rural areas without electric service	Fluor South Africa owns and operates a training center in Secunda, site of Sasol I and II. Over 10,000 craft and craft supervisors have been trained at this facility. This new program is being initiated to train at lower skill levels, people to building their own low-cost homes. Fluor South Africa will transport the trainees from their homes to the training center and back to their homes. The Secunda training center has the capacity for up to 200 people in the classroom and practical areas. Formal details will be concluded for the Mbeki-Gore Summit.

South African Partner	US Partner	Type of Document to be Signed	Project Description	Benefits
Wagner Systems Pty.	Atlantic-Pacific Technologies, Inc.	Letter of Intent	This project will develop a joint venture between the two companies take the principals outlined in the Reconstruction and Development Programme and implement them by providing jobs and the resources to develop energy sources in South Africa. The letter of intent announces the development of a manufacturing plant for Renewable Energy Hybrid Systems.	This project is participating with a majority owned business to develop this project and will create equal employment opportunities in South Africa in the terms outlined in the RDP.

POD Reports

POD REPORTS

Each POD identified specific findings and suggested follow-up actions to improve the climate for U.S. and South Africa cooperation in its area. The POD activities and these follow-up actions are summarized below. The Environment POD issues are cross-cutting and are addressed in each report.

CAPACITY BUILDING

Opportunities for Cooperation

The most significant challenge facing South Africa today is building the human resource capacity of the black majority.

The challenge of transition is well recognized by both the South African government and others in positions of economic power, and resolving it will provide hope for the country. An economically empowered black majority will result in improved productivity, more accountability, people taking responsibility for their futures, reduced crime and violence, better government and better lives for all South Africans. Success in this endeavor will also create a model of positive change for the entire African continent.

Although some principles of our strategy have emerged during this mission, a comprehensive plan on the United States' role needs development. Here are some preliminary guidelines:

- **We will be biased toward tangible action and results** - we will take action and measure results while simultaneously defining an overall strategy; ours is not a policy development or process initiative where we will be convening meetings and conferences simply for the sake of communication.

- **We will create partnerships of learning with South Africans**- our efforts will not be successful if our actions imply the image of successful Americans telling South Africans what to do; ours must be a dialogue of mutual learning, not a monologue of us telling them. We have much to learn from this forward-moving nation, that strives to advance its civilization without reprisals or recrimination, despite its terrible history.

- **We will serve needs identified by South Africans** -- we will focus our efforts not on what we define as important, but on what our South African colleagues deem critical. We will seek South African's input proactively and aggressively to find how best we can mobilize our resources.

South Africa has eight historically disadvantaged Technikons and five historically disadvantaged universities. Of these disadvantaged universities and Technikons, the South African Black Universities and Technikons are the most disadvantaged. There are very few South African Black PhD's and MS degree faculty members. Hardly any Black faculty members in the sciences, mathematics, and technical areas, including engineering.

Consequently, there is a great need to increase the mathematics, scientific, and technical SA Black personnel at the tertiary level.

During Apartheid, Black South Africans (BSA) were not allowed to study science and math at the elementary and secondary levels. Consequently, there are very few BSA math and science teachers and very few BSA students prepared to undertake the study of math, science and engineering.

Programs will have to be developed to produce math and science teachers, as well as to prepare BSA students at the pre-college level to undertake the study of math, science, and engineering.

Because there are very few BSA who are well versed in math, science, and engineering fields, very few are found in the technical areas of the SA economy and in particular, the energy related areas. In order to increase the BSA in energy-related areas, special efforts will have to be devised for BSA, to provide experience and knowledge in all facets of energy-related activities.

Concerns

The challenges set forth are daunting in many ways:

1. literacy is at a very low level
2. very few blacks enjoy positions of significant economic power
3. ownership of the vast majority of natural resources, economic assets, and corporations is held very tightly by the white minority; in fact a small subset of whites control the nation's wealth, and
4. whites also dominate the management of all major state owned enterprises and most major private and publicly traded firms.

This challenge may be daunting, but it is not impossible to address, since building human resource capacity is a matter of learning and doing.

Accomplishments

In light of these principals we have established a number of important initiatives to get into action. These initiatives should be considered the sparks of a future we are committed to creating. These initiatives are not the whole story, more needs to be done, more of our resources need to be mobilized, more leaders need to become committed, and our strategy needs to be developed.

We will be addressing both institutional as well as individual needs. We have committed to a number of specific initiatives that can organized by the type of individual they are geared towards. Specific accomplishments include:

- The Department, AEF and utility companies agreeing to train 50 (20 professors & 30

students) South African engineers and scientist, and create utility partnerships.

- The Department along with Martin Marietta Energy Systems agreement to provide 15 South African manufacturing business owners the opportunity to participate in the Oak Ridge Manufacturing Technology Institute.

- Establishment of the science and technology empowerment program to train 15 teachers and 50 students at DOE laboratories and HBCUs

- Agreement to initiate the Student/Professor Exchange program with the Technikon of Northern Transvaal which will allow 2 professors to come to the U.S. and attend an HBCU to receive their masters degree; and 3 students who would attend an HBCU and receive their bachelors degree.

- REFAD is sponsoring a 5-year training program for Renewable Energy Technology with the Peninsula Technikon, which would involve 20 students and dozens of educators.

- Sandia and AEF are sponsoring a trade school with apprenticeships.

- Provided 6,000 pounds of books and 50 computers to South Africans.

Commitments and Recommendations

In addition to the above accomplishments, DOE will be taking the lead to identify further specific opportunities to match US companies and institutions with South African needs. This will be a proactive program completed by December, 1995 where we will:

- identify RSA firms and institutions identifying their specific needs

- reach out to senior leaders at 500 US firms and institutions to create specific appropriate outreach programs

- establish direct linkages between firms and institutions, DOE will only have a monitoring/cheerleading role in these activities

- initiate a Capacity Building program for the Northern Cape will include:
  - Mining technology
  - Math and science teacher training
  - Providing renewable energy pilot programs in solar, wind and bio-gas to serve rural communities
  - Providing funding for a strategic economic development plan which can drive future activities to develop the Province's industrial and commercial base, thus reducing the current 65% unemployment rate and provide the revenues to support

rural water and electrification development after consultation with local authorities

- hold training workshops will be held in South Africa by U.S. experts for different aspects of education and training, and will involve hundreds of South Africans and

- bring to South Africa a review of experience in private and public sector organization models in a attempt to learn based on U.S. experience with discrimination

Also DOE will work with others to establish the overall strategy as well as programs to address the institutional barriers including: funding, ownership restructuring and others.

ELECTRICITY

Opportunities for Cooperation

At present only about 40 percent of the population of the Republic of South Africa have electric service in their homes, and large areas of the country are not electrified. A key element in the present government's Reconstruction and Development Program is to establish a swift and sustainable electrification program. The goal of the electrification effort will be to provide electric service to 72 percent of households by the year 2000, and to give high priority to electrification of schools and clinics.

The electrification program is expected to cost about twelve billion rand through the year 2000 ($3.3 billion, or $550 billion/year). Financing for the program is expected to be generated from within the electricity sector, perhaps through cross-subsidies from other electricity consumers. The existing electricity distribution sector is highly fragmented, the reliability and quality of service varies widely among localities, and there is no consistent system for setting retail electricity rates. Reorganization and professionalization of the distribution sector are high priorities because of their close linkages to the electrification program.

Additional efforts are needed to formalize South Africa's institutions for governance in the energy sector. Although an agency known as the National Electricity Regulator was created recently important questions need resolution concerning the Regulator's overall role--such as the Regulator's sources of policy guidance (e.g., statute, advisory bodies), whether the Regulator is to respond to policy direction from the Minister of Mineral and Energy Affairs, and whether provincial or local government entities will have regulatory responsibilities in the electricity sector.

Many parts of South Africa's electricity infrastructure need assistance in strengthening the capabilities of their staff, through training in regulatory procedure and economics, integrated resource planning, power pool design and operations, domestic energy efficiency and demandside management for the house hold sector as a whole, and the economics of resource development.
South Africa's bulk power supply system is dominated by ESKOM, a government corporation that owns and operates virtually all of the country's generation and transmission facilities. Many parties have expressed interest in introducing competition into South Africa's generation sector, but no procedure or timetable has been set. A South African Power Pool has been approved in concept, but is not yet operational. Officials from the South African government and ESKOM are also very interested in the eventual establishment of an international transmission grid across the Southern African region that would benefit all parties through more efficient use of generation resources.

Concerns

- The South African government's top priority in the electricity sector is to move forward swiftly with the electrification program, both to improve living standards directly and to

support economic expansion. Electrification of rural areas is considered especially important in order to help stem the migration of rural job-seekers into urban areas.

- The electricity distribution sector needs to be restructured and professionalized in order to support the electrification program and deliver reliable, high-quality electric services.

- The institutions and procedures for electricity governance need to be clarified.

- Mechanisms for financing the electrification program need to be agreed upon. Rural electrification presents special challenges and may have to be financed separately from urban electrification programs.

- Seminars, workshops, and internships are needed to aid all parts of South Africa's electricity infrastructure in strengthening the capabilities of their staff.

- Many companies from the U.S. and elsewhere that are active in international electricity-related businesses regard South Africa (and Southern Africa generally) as a promising long-term market. Accordingly, they would like to have some clarification on the prospects for privatization of some of ESKOM's assets, and on possible opportunities for the development of non-ESKOM generation or transmission facilities.

- Institutional mechanisms are needed in lSouth Africa to promote greater efficiency of electricity usage, and to stimulate and guide the development and implementation of new technologies in the electricity sector. South Africa's abundant coal and solar resources and scarce water supplies along with its regional natural gas and coal bed methane potential create special needs and opportunities in the area of technology development and deployment.

Accomplishments

The Mission resulted in mutual agreement on the following actions to address South Africa's concerns and needs in the electricity sector and to aid U.S. companies in exploring opportunities to participate in South Africa's expanding electricity market:

* A series of seminars, workshops, and internships to share U.S. experience on a wide range of electric regulatory and policy issues.

* A Seminar on Power Pooling in Southern Africa, focusing electrical power alternative resource selection, and integrated power pool operations and management.

* Integrated household energy delivery Joint pilot projects to demonstrate three models (shack settlement, shack settlement upgrade, and greenfield housing settlement) of electrification, housing, and urban fuels (e.g. low smoke fuels) for South Africa.

* A low-smoke fuels (fuels which are used in South African homes synergistically with electricity) workshop to investigate substitutes for high polluting fuels with environmental superior fuels in conjunction with appropriate clean coal combustion technology.

ENERGY EFFICIENCY

Background

Coal forms the base of the energy sector comprising over 80 percent of the primary energy needs. By international standards energy prices are low. About 95 percent of the electrical energy is generated from coal. Almost all electricity is produced by state-owned ESKOM with a capacity of almost 40,000 MW. ESKOM's capacity exceeds requirements by about 25 percent.

In 1991, industry (44%) and mining (8%) accounted for more than half of the energy consumption; transportation (24%), domestic (19%), commerce (5%), and agriculture (4%) account for the remainder. Base metals, with a large steel and ferro-alloy component, consume 44% of the industrial energy; other significant components are: food (14%), non-metals (13%), paper (10%), chemicals (9%), and textiles and clothing (3%).

The mining industry consumes 82% of its energy in the form of electricity (mostly motors) equivalent to 24% of ESKOM's output; gold mining is the dominant energy consumer.

The domestic area uses about 19% of total consumption, 60% of which comes from non-commercial sources. Much of the housing is energy inefficient, especially the component constructed of corrugated iron. The Reconstruction and Development Program (RAP) aims to support the building of 1 million new homes over the next five years.

Energy intensity (energy use per unit of economic output) is high according to 1990 World Development report; a survey of 111 countries indicated that only ten countries have higher industrial primary energy intensities than South Africa. The reasons for this are several fold and include (1) the infrastructure of the economy with its large primary industry component; (2) the use of coal for production of electricity and liquid fuels, both of which are relatively inefficient; and (3) energy efficiency is not a priority in South Africa.

Process

In order to gain an understanding of the energy efficiency issues in South Africa, the U.S. energy efficiency delegates held a series of meetings with representatives of the energy intensive industries. U.S. representatives met with Sappi, the largest fine paper producer in the world, with the Chamber of Mines to discuss mining with emphasis on gold and with the Steel and Engineering Industries Federation (SEIFSA) to discuss energy usage in the steel, aluminum and ferro-alloy industries; meetings were also held with the South African breakout session counterparts prior to the Energy Summit on held in Johannesburg on August 23, 1995.

The energy efficiency breakout session of the Energy Summit, a group of 30 to 40 people first heard prepared presentations from the South African and American sides followed by a period of discussion on issues prepared by the South African Co-Chair Professor Dutkiewicz. After lunch the group broke up into four groups covering the following sectorial areas - buildings, transportation, small and medium industrial businesses and large industrial businesses. Each

group was charged with formulating barriers to energy efficiency and the action steps needed to overcome those barriers. Each group then reported back with the lead in each case being taken by S.A. A summary of these barriers and action items was then formulated.

Accomplishments

At the Energy Summit, barriers to energy efficiency and the action items need to overcome these barriers were identified:

Barriers to Energy Efficiency: lack of a long term policy and commitment; lack of a general understanding and awareness of energy efficiency benefits; skill shortage from technicians to energy efficient engineers; absence of standards and labeling for industrial equipment and appliances; a complicated tariff structure; a low cost of energy production; high cost of capital; a tax structure that favors energy inefficiency; and the fact that environmental factors are not internalized.

Recommended Actions: open a dialogue within all sectors of South Africa on energy efficiency that would result in development of an energy policy that includes development of an appropriate structure to implement that policy; develop and implement integrated energy planning; build capacity by educating and training the general public in both energy conservation and energy efficiency starting with school children in grades 1 and 2; develop financial stimuli that include access to foreign capital at acceptable interest rates, energy tariff structures that are simple without multiple players and a tax policy that includes incentives and the absence of disincentives; and lastly formulate implement standards, codes and labels.

Based on discussion of these recommendations at the Energy Summit and at the Energy Policy Roundtable, two energy efficiency priorities were identified:

- Establishment of an Energy Effieiency Center.
- Establishment of Energy Efficiency Policy and Regulation.

Agreement to establish US/SA teams in the transportation, buildings, medium and small industry segment, and large industry segment to address action items identified.

In Summary, the major accomplishment is that energy efficiency is now a high priority area in South Africa.

Deals and Agreements Signed

Five agreements and deals were signed that support the goals of the mission and augment the conclusions reached:

- Letter of Intent between the International Institute for Energy Conservation and the Group for Environmental Monitoring to conduct a needs assessment for electric vehicles, including manufacture of the component parts, and opportunities for the production of ethanol from biomass.

- Contract between Johnson Controls and ESKOM to install energy efficiency building management and other systems.

- Technology Transfer Agreement between Superconductivity, Inc and ESKOM to transfer superconductivity technology to the electrification of rural homes.

- Community Development Project between the Housing Development Corporation of South Africa and Grassroots Technology Associates to construct energy efficient houses in South Africa.

- Sustainable Development Resource Center for South Africa sponsored by Department of Energy, USAID and the World Wildlife Fund to demonstrate job creation in South Africa without damaging the environment.

Milestones

Establishment of an Energy Efficiency Center:
- decision on energy efficiency center (SA)
- 30 days after SA decision, prepare preliminary technology transfer plan (Swink/Salmon-Cox working with SA)
- 60 days after SA decision, complete plan review by interested stakeholders (SA and Swink/Salmon-Cox)
- 90 days after SA decision, issue final technology transfer plan and begin implementation (SA and Swink/Salmon-Cox)

Establishment of Energy Efficiency Policy and Regulation:
- December 1995; following the DOE comments on the "Green Paper",and outcomes of the SA Energy Summit to be held in November, prepare a draft plan for a series of workshops, seminars and internships (Swink/Salmon-Cox working with SA)
- January 1996; complete plan review by interested stakeholders (SA and Swink/Salmon-Cox)
- February 1996; issue final plan and begin implementation

Agreement to establish US/SA teams in the transportation, buildings, medium and small industry segment, and large industry segment to address action items identified in the Energy Summit Breakout Session:
- October 24, 1995; Establish public and private US/SA teams with identified team leaders to address identified action items in each of the above four areas; establish US/SA coordinating committee to oversee these activities (SA and Swink/Salmon-Cox)
- November 17, 1995; complete action plan development (Us and SA teams)
- December 4, 1995: complete coordinating committee review; establish priorities and begin implementation

C-6
69

FINANCE

Opportunities for Cooperation

South Africa needs foreign capital to expand the economy, increase employment, and raise living standards. International sanctions and the domestic policies of the Apartheid regime stifled both foreign investment and trade. The Government of National Unity (GNU), led by the African National Congress, has indicated a strong desire to attract foreign investment. However, the process of liberalizing the South African economy is still in the early stages.

Portfolio investments in South African companies have been fairly strong, but lingering doubts about labor costs, political stability, and competitiveness in a more open international market setting has made foreign investors wary of committing more resources. Direct investment has not met expectations, however. Although investors generally recognize South Africa as a long-term strategic market, concerns regarding the overall political situation, the near-term growth potential and remaining exchange controls, have limited direct investment from U.S. sources.

Finance and investment issues in the South African energy sector are imbedded in a host of other policy issues including evolving regulatory structures, privatization decisions, implementation of the Reconstruction and Development Plan (RDP), regional energy trade, and environmental rules. The uncertainty surrounding the resolution of other issues has impaired the attractiveness of direct investment.

The Clinton Administration Mission provided the U.S. financial community with an opportunity to conduct a dialogue with senior government officials as well as representatives of the South African business and financial communities.

Concerns

- A host of policy decisions need to be made for South Africa's energy sector before potential investors can effectively gauge the prospects for risks and returns. For example, the prospects for international investment in the electrification initiative will not be known until the eventual industry structure and the role of the National Electricity Regulator are firmly established.

- Remaining exchange controls that restrict the ability of foreign investors to access South African debt financing limits the ability of potential investors to structure mutually beneficial investment packages. These controls impair the flow of needed capital into the South African energy sector.

- Relatively high tax rates on earned income reduces investor interest in South Africa

- Liberalization of banking regulations has only recently made it possible for U.S. commercial and investment banks to establish effective branches in South Africa.

Summary

- The tightly interlocked ownership of conglomerates that dominate the Johannesburg Stock Exchange makes it difficult for foreign investors to link up with South African partners for joint ventures and other business arrangements.

Accomplishments

- The Financial Roundtable held on Thursday August 24, offered a unique forum to exchange views regarding appropriate policy to help attract foreign investment. Representatives from a variety of segments of the South African investment and energy business community, as well as the government, discussed the barriers and opportunities for foreign investment.

  Some of the issues discussed include:

  -- The role of credit enhancement as a way to increase investment in sub-national and parastatal entities was explored.

  -- The Ministry of Finance indicated its strong regard for fiscal discipline and indicated that they were unlikely to support infrastructure investment through financial incentives or subsidies.

  -- Methods of educating U.S. institutional investors on the strong economic prospects for South Africa were discussed, and participants agreed that despite many overtures from investment institutions, U.S. investors remain unaware of the potential of the country and the region. General lack of familiarity with South Africa was a by-product of the sanctions era.

  -- Issues of public sector restructuring, privatization, and the overall role of the government in the economy need to be resolved, but resolution will take into account many factors, such as employment and empowerment, and the resulting outcomes may not be optimal from a foreign investment perspective.

  -- European and Asian investors are more aggressive now and are less concerned about policy issues. South African government needs to put projects on the table for international investors to evaluate, instead of considering these issues in the abstract.

  -- Private sector investors have criteria by which they assess relative opportunities among different emerging markets. They examine a matrix of issues that include: tariff structure, tax regime, convertability of currency, repatriation of profits, development of domestic capital markets to increase available funds, regulatory environment of certainty and stability, legal system, available guarantees, allowed returns, future liquidity of investment, history of market path, and creditworthiness of offtakers.

-- There is no shortage of capital for energy projects per see: there are too few really good projects are out there. South Africa has to develop policies that attract foreign investors. For example, rural electrification projects can attract capital if they are developed by a creditworthy entity.

- The perspectives of U.S. financial interests were offered by selected members of the finance pod during the meetings with the Deputy President DeKlerk, Energy Committee of Parliament, ESKOM, bilaterals with Minister Botha, Minister Sigcau, and Minister Manuel.

Commitments and Recommendations

- The business delegation urged South African government to further ease exchange controls as a way to encourage foreign direct investment in the South African energy sector, and to create a more favorable climate for foreign investors.

- The U.S. government should facilitate the continuing education of U.S. institutional investors to gain understanding of the South African market.

- Ongoing policy dialogue between the Department and the South African government should include the perspectives of the U.S. financial community.

- The Administration should coordinate the activities of the various agencies involved with U.S.-South African investment and trade to promote a more unified approach on behalf of the business community.

OIL AND GAS

Opportunities for Cooperation

The most significant issue in the South African liquid fuels market involves the manufacture of synthetic fuels. Synthetic fuels made from coal and gas have been a strategic priority for past South African governments and provide a substantial percentage of liquid fuels consumed in South Africa. The main components of the liquid fuels industry, crude oil refining and synthetic fuel production, account for about 35 percent of commercial energy consumption. As South Africa makes its transition to a more open, market-based economy, it seeks to further bolster its domestic oil and gas supply capacity and reserve base by attracting U.S. (and other western) petroleum companies to invest in both onshore and offshore exploration and development projects.

Two issues are of particular importance with respect to the South African natural gas market. The first is whether or not this potential market exists. Current gas production accounts for only one percent of the final energy used. The presence of large fields in neighboring countries, and significant domestic production potential using coal-bed methane, could provide significant gas supplies should a future demand be generated. The second issue is related to the demand issue: there is no national gas policy, law, infrastructure or regulation. The lack of regulation has not been a significant issue in an environment of low gas utilization. It becomes important if there are plans to expand this system and introduce long-term gas transmission.

South African ministerial organizations and companies including the Department for Mineral and Energy Affairs (DMEA), Sasol, Soekor, Eskom, and CEF participated in discussions with U.S. government and industry participants resulting in the exchange of significant information and agreement to structure continued cooperative activities.

Concerns

- A perceived oil and gas reserve base.
- A clear and concise analysis of the reserve base for natural gas needs to be developed in the near future. This would allow companies to make sound investment decisions and possibly expand or help to develop a natural gas market.
- Exploration and Production terms: Incentives are needed to let South Africa compete with other countries seeking investment capital. The terms allowed for exploration and production in South Africa must be flexible enough to allow companies to compete on a worldwide portfolio basis, since the field size may be smaller than average.
- Lack of a natural gas market is perceived. Since Eskom has perceived an over-abundance of electricity, there is no perceived market for natural gas. This is not essentially true.

- Involvement of independent power producers regarding baseload and cycle time/ decisions have been clarified. Independent power generation has few restrictions, but licensing must be obtained. The cost of coal is distorted, along with Eskom's over-abundance issue, and this distorts the competitiveness of independent power generation from natural gas. Millions of households, however, need electricity.

- Calculation of the full cost of generating future energy is inexact; coal based power is burdened with environmental costs, and high costs infrastructure costs versus natural gas. The exclusion of environmental costs for the use of coal creates the price disparity between the two fuels.

- Opportunities exist in markets for natural gas. There are markets for natural gas that are competitive when thermal heating is considered:

  (1) Mineral beneficiation/mining
  (2) Industrial/electrical utility
  (3) Domestic use: Propane, Butane, Fuel Cells, Fertilizer

  There is a great need for natural gas when the rural and smaller areas are evaluated on a need basis. The full costs of thermal generation is much more competitive on this basis. Coal-bed methane (CBM) is definitely a vast resource and can be widely exploited in the future. One of the limiting variables of CBM is the ownership issue. Questions to considered include: How can the rights of CBM be actually allocated? Ownership issues; who owns? Is the title vested with someone else? Is the ownership concept a good one for the production and development of such resources?

- Incentives are needed by South Africa for both domestic and foreign investment to attract and retain business; for example, equal treatment of companies in the market place. The parastatal companies have a unique advantage in the market-place when protectionist policies are considered. All protection and subsidies should be phased out and companies should be allowed to operate on a free-flowing, competitive basis. Foreign investors are not willing to invest in new projects with the subsidy issue unresolved.

- Government incentives to stimulate black empowerment is required in U.S. and South Africa. The future of South Africa relies on the fact that black South Africans will be brought into the mainstream. This will boost the economy, make government more stable, and create needed jobs in the black communities. This makes training on-the-job experience or formal education in petroleum areas desirable.

- The full impact of undefined environmental emissions is being analyzed. The nature of future regulations make it difficult for anyone to make rational investment decisions; i.e. cost for clean-up: SOx, CO2, NOx, and particulate matter.

  The cost of environmental cleanup and/or prevention is large. Many areas in South

Africa already have air pollution problems relating to coal burning or other processes. The true cost of power plants and projects in relation to coal as a fuel source is not clear. The piles of coal waste may have an opportunity for other uses. These avenues must be pursued before both water (possibly acid rain) and air pollution have reached irreversible or unwanted states.

Accomplishments

- Positive discussion and understanding on the part of the South African government on the urgency for the Republic of South Africa (RSA) government in developing a clear policy and regulatory framework to encourage new development.

- Positive discussion and understanding on the part of the bi-national commission to look at ways of resourcing this activity and building capacity in energy policy and analysis and development --e.g., by partnering appropriate institutions in the United States and the Republic of South Africa.

- A clear and concise plan for employing and empowering the vast majority of Black South Africans in the townships and other communities. There are no other means for South Africa to move forward if the concerns of the majority are not met.

- Positive discussion and understanding by the RSA of the need to blueprint an energy strategy revolving around the following themes:

  1) Reserve base definition
  2) Natural gas market analysis
  3) Generation of electric power and needs
  4) A competitive price for natural gas
  5) Full cost of environmental preservation and cleanup related to cost use
  6) Market opportunities and other uses
  7) Coal-bed methane and opportunities
  8) Incentives for oil and gas exploration and production
  9) Dispelling of perceptions about natural gas as a fuel source
  10) Employment and training of black South Africans
  11) Subsidies or protection that limit open and free competition

Commitments and Recommendations

- A project on Capacity Building in the Oil and Gas Industry to be undertaken to train South Africans, and to exchange students and personnel to be developed by June 1997. Participants to include academic institutions and the private sector.

- An analysis of Legal Constraints with regard to Coal-Bed methane development to be completed by December 1995. Participants to include DMEA, DOE and the private sector.

- A project involving the analysis of Financial Regimes - Contract Terms and Conditions to be completed by December 1995. Participants to include DOE, DMEA, Soekor, CEF, and Sasol.

- A project involving an integrated analysis of Natural Gas Resources and Markets to be completed by December 1996. Participants to include DOE, DMEA, Utilities, Electric Power Research Institute.

C-6
76

RENEWABLES

Opportunities for Cooperation

Significant opportunities for cooperation between the US and South Africa in the area of renewable energy technology appeared with the election of the government of national unity in April, 1994. The Reconstruction and Development Programme (RDP) authored by this government is designed to improve the quality of life of the previously disenfranchised portion of the population. Major elements of the program involve energy supplies, both electrical and otherwise, health care and education. Since much of the population is located in the rural areas far from the current and anticipated electrical grid connections, this implies an extensive use of renewable energy technologies.

To put this into perspective, the government estimates that 2000 clinics need to be electrified through photovoltaics by the end of 1996, 16,800 schools will be similarly powered by the end of the decade, and approximately 2 million homes and small businesses can only be economically electrified using renewables. This does not include the use of wind and photovoltaics in delivering potable water. The US has positioned itself to take advantage of these opportunities.

In order to facilitate these opportunities for US renewable energy technology goods and services, the Department has developed quality working relationships with relevant ministries and agencies. These include the Department of Mineral and Energy Affairs (DMEA), the Independent Development Trust (IDT), the Energy for Development Research Center (EDRC), and ESKOM, the national parastatal electrical utility.

Concerns

- Inadequate numbers of trained personnel in government required to plan and implement programs designed to reach the renewable energy-related goals of the RDP.
- Lack of a sufficiently large and robust indigenous renewable energy industry capable of addressing the RDP needs.
- Low levels of technical background among members of the majority population.
- Lack of a national program, including financial mechanisms, for sustainable rural off-grid electrification.
- Immature provincial infrastructure, implying lack of essential emphasis on regional energy issues.
- Urgent need for economic development among the majority population, and related energy requirements.
- Lack of basic commercial business skills among the majority population.

C-6
7

Accomplishments

- Dedicated a Renewable Energy Technology Training Center at Peninsula Technikon near Cape Town. This center was the site of a 4-week long "training the trainers" session sponsored in large part by the Department. It is expected that this center will be replicated a other technikons, thus providing the capacity building capability to facilitate renewable energy applications for the rural population.

- Formally opened a photovoltaic module manufacturing facility. The equipment for the facility was provided by the Department. The business entity, named Suncorp, was orchestrated by Renaissance, a Black empowerment venture capital group with origins in the US's Monitor Group. Suncorp will have a preferred position when it comes to supplying hardware for rural electrification projects.

- Partially electrified the Ipolokeng Primary School in the Diepkloof section of Soweto. This school had been internally wired for grid power in 1985, but never connected by the utility, ESKOM.

- Installed photovoltaic lighting to a public washing station in the Alexandra River Community, a squatter camp immediately adjacent to the Alexandra Township. The station serves more than 1000 people, and the lighting will allow usage to continue into the evening hours. This will free time for women to pursue other, likely revenue producing, activities.

- Signed a memorandum of understanding with USAID to provide $1.1M of AID resources to the REFSA pilot program. REFSA is the Department of Mineral and Energy Affairs program to electrify, in a self-supporting manner, the approximately 2 million rural homes and 100,000 business not expected to be reached by the utility grid within the next 20 years. The pilot will electrify 2400 homes and 100 businesses while prototyping the greater REFSA program.

- Signed (through the national laboratories) a statement of intent to address renewable energy technology applications in the context of the Northern Cape Province.

- Announced a study of the feasibility of developing an industrial park in the Gugulethu Township near Cape Town leading to the creation of 1000 new jobs.

- Signed (through the national laboratories) a memorandum of understanding with the IDT to initiate US involvement in rural clinic electrification.

- Signed (through the national laboratories) a memorandum of understanding with the Center for Scientific and Industrial Research (CSIR) to channel US renewable energy technologies to South African communities.

Commitments and Recommendations

- Continued support of the establishment of renewable energy training centers at South African technikons will build the infrastructure needed to apply renewable energy technologies in the rural environment at a rate consistent with the RDP. The US direct cost for this support is estimated to be $200k annually for five years to REFAD. This activity supports the goals of the Gore/Mbeki Commission.

- The success of the Black managed Suncorp needs to be maximized to the greatest extent possible. Technical consultation through the national laboratories needs to be provided as Suncorp grows through its formative stages over the next several years. This activity supports the goals of the Gore/Mbeki Commission.

- The electrification of the Ipolokeng Primary School needs to be viewed as a long-term success. Through Suncorp, assure that the project provides long-term customer satisfaction.

- The performance of the Alexandra River Community public washing area lighting needs to be viewed as a long-term success. Through Suncorp, assure that the project provides long-term customer satisfaction. This takes on added significance when one realizes that Alexandra is now a part of Sandton, one of the most affluent suburbs of Johannesburg.

- Support for REFSA is needed to carry this effort forward. Technical consultation, participation on the pilot and full projects' advisory boards, and support of NRECA participation is highly advisable. The cost of this support is estimated to be $500k per annum. This activity supports the goals of the Gore/Mbeki Commission.

- Ensure that the Rosenkrantz clinic is properly electrified in time for its dedication by President Mandela.

- Secure funding ($860K) to finance US participation in IDT's model clinic program.

- Prioritize candidate renewable energy projects suggested by the government of the Northern Cape, and subsequently implement a subset.

- Complete feasibility study for the light industrial park in Gugulethu.

RESEARCH AND DEVELOPMENT

Opportunities for Cooperation

As a result of visits to the National Accelerator Center, University of Capetown, University of Witwatersrand, North Cape Provence, and the Northern Transvaal Technikon it is clear that an opportunity exists for the Department to take a lead role in building an open system of research universities and professional technical training institutions and research laboratories that will meet the needs of the Republic of South Africa and utilize the capacity of all its citizens. Such a system must rise from primary and secondary schools that instill excitement and competence in science, engineering and mathematics. This system will serve as a broad resource for science and technology innovation for southern Africa. It will be a primary source of creating and utilizing new energy production and end-use technologies for Southern Africa.

Presently, not many Black South African students pursue training in the sciences, engineering and mathematics. It is not altogether clear exactly how many of those who are engaged in study in these areas actually graduate from the Technikons or the Universities. Additionally, very few blacks hold faculty positions in either the Historically Disadvantaged Institutions or the Historically White Institutions. A solution to this inequity must be found before improvements can be realized. Improving the number of Black South Africans with masters and doctorates in these fields will require a major effort.

The R&D Pod noted that there are many parallels to R&D programs at many of our National Laboratories and the Universities and research institutions in South Africa. In particular, many research programs appear to overlap in some important areas, such as energy efficiency in buildings and industry, materials science, power electronics, environmental sciences, and advanced computing. Officials from these South African institutions are very interested in establishing collaborative programs with the National Laboratories and Historically Black Colleges and Universities.

Concerns

- The South African government's top priority is to move forward with its electrification program. Unfortunately, this adversely impacts funding for education and research.
- Graduates of South African Universities and Technikons are lured away from obtaining advanced degrees or teaching by industry's promise of high salaries.

Long Range Goals

- Establish centers of excellence in energy-related research at traditionally black and white universities and research laboratories.

- Foster strong energy research collaborations among traditionally black and white universities and laboratories.

- Increase the number of black graduate students in energy-related science, engineering and mathematics disciplines.

- Increase the number of Bachelors degrees in science, engineering and mathematics from traditionally black universities through energy-related research experiences.

- Improve science, engineering and mathematics curricula at traditionally black universities.

- Establish high quality science and mathematics education in townships.

- Create an environment conducive to sustained excellence and open participation at traditionally white universities and research laboratories.

Accomplishments

The Mission resulted in mutual agreement that the following actions should be pursued if the goals are to be accomplished:

- Conduct research planning workshops

- Establish collaborative energy research projects and programs with DOE National Laboratories and HBCUs

- Provide for faculty and teacher research and teaching participation at DOE National Laboratories and HBCUs

- Facilitate student research participation and exchange at DOE National Laboratories and HBCUs

- Create faculty-student research teams at DOE National Laboratories and HBCUs

Milestones

Notional milestones have been establish which will result in achievement of the goals:

- October 95 - Establish US teams for each area composed of appropriate DOE program managers, National Lab scientists, and HBCU investigators;

- October 95 - Establish South Africa teams composed of appropriate participants from DMEA,CSIR,FRD, Traditionally Black Universities and Traditionally White Universities

- November 95 - Send US teams (Energy Efficiency, Computational Science, Nuclear Physics) to identify opportunities for collaborations more fully
- January 96 - Return visits to US by South Africa teams to assess opportunities and to plan workshops
- January-September 96 - Remaining US-South Africa teams undertake visits and undertake planning workshops
- June-September 96 - Initial Exchanges/ Research Participation begin
- September 96 and beyond - Full implementation begins

C-6
82

U.S. AMBASSADOR'S SUMMARY

Energy Secretary Hazel O' Leary was warmly received in South Africa during her August 19-26 visit to promote U.S. -South African energy cooperation and formalize the Sustainable Energy Development (SED)committee of the Gore-Mbeki Binational Commission. Secretary O'Leary's emphasis on outcomes produced an exceptional set of achievements: in township economic opportunity, renewable energy, joint research and policy review. Her success in bringing Parliament into the discussion strengthened linkages with an increasingly active institution in South Africa's new democracy. Signing the nuclear cooperation agreement, among others, signalled close U.S.- South African cooperation in the safeguarding of nuclear material and our shared commitment to non-proliferation.

Her host, Minister of Energy and Mineral Affairs Pik Botha, described the visit as a resounding success in the critical areas of energy cooperation and business development. During her visit, O'Leary discussed on-going and future opportunities for cooperative activities with President Mandela, Deputy Presidents Mbeki and De Klerk, and a wide range of senior government and business officials. The event-packed visit focused on creating private investment opportunities between Americans and South Africans; promoting discussion among parliamentarians, business and community representatives, government officials and U.S. interlocutors on energy topics, and assisting in development of appropriate policy and economic structures in South Africa.

During O'Leary's visit, DOE sponsored a one-day energy summit for over 300 South African and U.S. Government and business representatives. Break-out sessions organized by sector and technical area produced substantive recommendations for future cooperative projects among U.S. and South African participants which were adopted by the first meeting of the sustainable energy development committee of the Binational Committee on August 25.

O'Leary signed Government-to-Government Agreements on the Terms of Reference (TOR) for the SED committee of the Mbeki-Gore Binational Commission and Peaceful Uses of Nuclear Energy. She also signed two Statements of Intent covering energy policy, science and technology, development cooperation, and energy information exchange. Private sector members of the O'Leary delegation signed an additional twenty-three agreements, Memorandum of Understanding's and Letters of Intent in the areas of education and empowerment, policy development and investment initiatives. The visit demonstrated clearly the potential of the Binational Commission in developing relationships and programs of mutual benefit to both countries. The array of expertise, the can-do approach of the entire mission, and the leadership of the Secretary made a profound impact on the full complement of interlocutors.

The Washington Post
Circ: 1,132,800
AUG 26 1995

C-6
53

U.S. to Help S. Africa Boost Energy, Create Jobs

By Lynne Duke
Washington Post Foreign Service

A 16

PRETORIA, South Africa, Aug. 25—U.S. Energy Secretary Hazel R. O'Leary and her South African counterpart signed agreements today to bolster South Africa's energy capacity, create energy-related jobs and electrify the millions of South African homes where candles still light the night.

In what South African Mineral and Energy Affairs Minister Roelof F. Botha called a "milestone" in U.S.-South Africa relations, the two governments also agreed to cooperate in the peaceful uses of nuclear power. In addition to being ostracized for its past policies of racial oppression, South Africa long had been isolated internationally for secretly developing nuclear weapons, which it has since destroyed, and for refusing, until last year, to sign the nuclear Non-Proliferation Treaty.

Despite some recent disagreements between the two countries, especially over South Africa's decision to store Iranian oil, the Clinton administration delegation headed by O'Leary represented a strengthening of U.S.-South African ties.

The relationship is focusing far more on private sector investment than government aid. Most members of O'Leary's delegation represented corporations, investment houses, utilities foundations and universities.

The joint ventures announced today between U.S. and South African companies are expected to create nearly 2,000 jobs. The projects include a photovoltaic manufacturing plant near the Alexandra township north of Johannesburg that will, with solar power, electrify 10,000 homes, 600 clinics and 1,000 schools. The first of its solar panels was delivered this week, during O'Leary's visit, to a primary school in the township of Soweto that has no electricity. Also initiated this week was a private-sector plan to develop a light industrial park in Guguletu township, near Cape Town.

Energy had been subject to the racial whims of South Africa's white-minority rulers, who kept the quality of life for blacks far lower than for whites. As a result, the South Africa inherited by the black-led government of President Nelson Mandela provides electricity to barely half of its 8.5 million homes.

Since last year's elections, the state electric utility, Eskom, has electrified 325,000 homes. Many people still live in tiny zinc shacks, but the power poles and high-voltage wiring overhead show signs of partial progress. Still, some 4 million homes do not have power, and the slow rate of electrification—along with the snail's pace of most other quality-of-life reforms promised by Mandela—may emerge as a political liability for the new government.

Under apartheid, the manipulation of energy along racial lines extended into the field of education, where black teachers were not allowed to teach the mathematics and scientific skills required to prepare students for high-technology work. Among the beneficiaries of today's agreements will be scores of teachers and students who will receive basic U.S. training in energy-related fields.

O'Leary presided over the donation of 5,000 pounds of math and science books, collected by the U.S. group Blacks in Government, as well as 50 computers. "Things that we take for granted can so enrich the educational opportunities for these youngsters," O'Leary said.

Most South African power is fueled by coal-burning stations; there is one nuclear power station and a couple of hydroelectric plants along the Orange River. South Africa has begun looking to the Cahora Bassa Dam on the Zambezi River in Mozambique as a future source of hydroelectric power, once hundreds of power pylons connected to the dam are repaired from the damage they sustained in Mozambique's 16-year civil war, which ended two years ago.

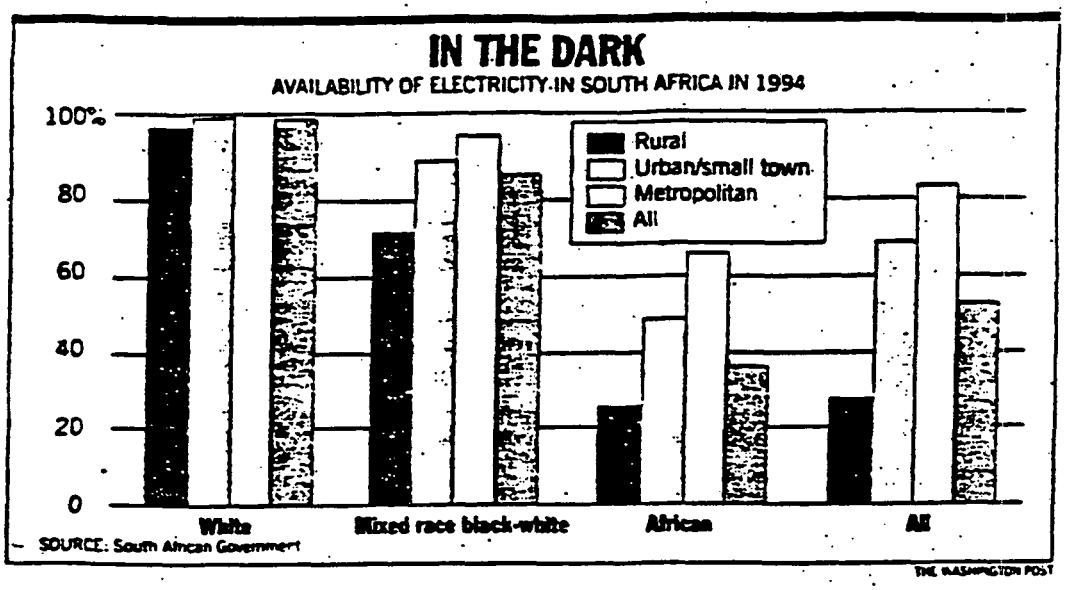
Regional power sharing will be a major topic of a Southern African Development Community summit in Johannesburg. Heads of state from the region who will meet Monday are expected to sign an agreement to seek power from as far north as the Inga Dam on the Zaire River, whose power production capacity is greater than that of all the 11 southern African countries combined.

CONTINUED

CONTINUED

The Washington Post
Circ: 1,132,800
AUG 26 1995

C-6
84



Document Number 45

TO PT

BUSINESS AGREEMENT DESCRIPTIONS

BY

TRADE MISSION

(Note: the attached is a representative listing of the types of business agreements signed during trade missions to India, Pakistan, China, and South Africa. Not all project descriptions were available.)

A-4
2

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY AND TRADE TO INDIA

JULY 1994

(Note: Not all project descriptions available for this mission)

COAL WASHING CONSORTIUM MEMORANDUM OF UNDERSTANDING

Spectrum Technologies and Jaya Foods **Elgin National Industries**

An ongoing interagency program between US DOE and US AID has resulted in a "flagship" project involving the first advanced U.S. coal washing technology applied to Indian high-ash coals (ash levels in the range of 40%). This project is significant as the Indian Ministry of Coal during the meetings this week has repeated identified coal washing as a priority industry. The Government of India needs to be applauded for its bold initiative to promote private sector owned and operated coal washing plants for steam coal. Elgin National Industries, Spectrum Technologies and Jaya Foods signed a Memorandum of Understanding with a total estimated value of US $100 million

SPECTRUM POWER PURCHASE AGREEMENT

Andhra Pradesh State Electricity Board **Spectrum Power Generation**

Spectrum project in Andhra Pradesh is a 200 MW combined-cycle gas-fired power plant. It is projected to cost $245 million and is the first joint venture project with National Thermal Power Corporation (NTPC) in India. The Andhra Pradesh State Electricity Board and the Chief Minister of Andhra Pradesh should bc commended on their progressive ideas and practices in the utility sector. The U.S. power plant developers in India are hopeful that the Government of India will expedite the signing of counter-guarantees for this and other power plant projects.

JOINT VENTURE AGREEMENT

Pentafour **Solec International, Inc.**

The Solec/Solec-Pentafour joint venture calls for assembly in India of PV module components manufactured in the U.S. by Solec. The value of the venture is $6.5 million initially, with expansion plans currently under discussion. An estimated 150 jobs will be created in the near term in California as a result of this joint venture. Jobs will be created in India also.

MANUFACTURING AGREEMENT

Siemens India **Siemens Solar Industries**

A large number (100,000 by GOI estimates) of villages are not services by the electrical grid. Many will not receive line extensions in the foreseeable future due to the high capital cost of the extensions. Siemens' efforts involve the manufacture, in India, of solar powered lanterns for rural electrification. To accomplish this, Siemens has teamed with Siemens India. This activity will result in US $30 million in equipment sales, and $10 million annually in U.S. component sales. An estimated 880 near term jobs will be created in California. Quality manufacturing jobs will also be created in India.

This approach to rural electrification will provide more reliable, better quality basic lighting than

the currently used kerosene lamps. Additionally, fossil fuels will not be burned in the enclosed areas of the homes, and, the need to import kerosene will be diminished.

SALE OF PHOTOVOLTAIC MANUFACTURING EQUIPMENT
Bharat Electronics **Spire Corporation**

Spire Corporation and Bharat Electronics signed a Memorandum of Understanding for the purchase of Spire PV cell processing equipment. The agreement signed at the MNPS Solar Energy Center will result in the purchase of Spire module manufacturing equipment by Bharat Electronics. The value of this agreement is approximately US $2 million.

In order for India to meet the demand of their own projected market for photovoltaic, increased indigenous manufacturing capabilities will be required. The investment in state-of-the-art manufacturing equipment that will produce reliable products will be critical if the commercialization of the technology is to be sustained.

This type of interaction creates economic development for both countries through the manufacture of the equipment in Mass., and the subsequent manufacture of the PV in India, and represents an ideal example of the direct linkage between environmental technologies and economic growth.

SALE OF PRODUCTION EQUIPMENT
Delton Cable **Energy Conversion Devices**
Ovonic Battery Company

The challenge to meet India's enormous transportation needs in an environmentally sustainable fashion is critical. Promotion of strategic business partnerships between India and the U.S. can create significant opportunities for the U.S. to play a positive role in this effort. Because manufacturing equipment for Ovonics batteries will be built in the U.S. and deployed by Delton Cables in India, it would create U.S. jobs, and economic development for both countries.

This agreement will accelerate opportunities for environmentally benign transportation including electric cars and scooters, as well as rural electrification technologies. The total value of the project is estimated to be US $9 million.

MEMORANDUM OF UNDERSTANDING
Emgee Solar **Martin Marietta International**

The Martin Marietta/Emgee Solar MOU address two areas vital to the sustainable introduction of photovoltaic into India's energy mix - photovoltaic systems development, and, photovoltaic manufacturing. Implementation of the terms of the MOU will result in US $16 million of systems development, and up to $50 million for manufacturing equipment. Projections call for 350 near

term jobs to be created, and, 1,100 medium term jobs in Colorado.

Potential applications is possible under this MOU include grid-connected and central generation photovoltaic systems development, which are a critical aspect of large-scale photovoltaic commercialization. Also addressed are distributed renewable energy generating facilities for grid support and rural electrification, which are potentially the largest future markets for renewable.

WIND FARM AGREEMENT

Bangor Group **Cannon Power Corporation**

Cannon Power and the Bangor Group of India signed an agreement to to construct a 25 MW wind farm. India has a potential for approximately 20,000 MW of wind energy capacity, making it one of the world's largest wind resources. The total value of the project is estimated to be US $75 million.

Cannon is the first U.S. wind energy company to open a permanent office in India. The office will initially have three permanent staff members but is expected to grow to 10 staff within the next 12 months. The opening of the office is a direct result of the Dumber of opportunities for wind energy in India. Showcasing the opening by the Secretary will illustrate the commitment of U.S. companies work directly with the Indians to develop their wind energy potential. Cannon is the first U.S. wind energy company to open a permanent office in India.

EFFICIENCY AND DEMAND SIDE MANAGEMENT CONTRACT

Bhoruka **SRC International**

Energy efficiency and demand side management efforts are important and cost effective methods to reduce capacity requirements in the industrial scctor. The markets for efficiency and DSM technologies in regions of rapid economic development and hence rapid increases in electricity demands is projected to be enormous. The Indian market for these technologies represents an excellent opportunity to demonstrate the substantial economic benefits to environmental technologies.

The SRC agreement will implement these technologies in the Bombay Dyeing Company's facilities. The annual energy bill at Bombay Dyeing's textile facilities is $12 million. For a $3.7 million investment, annual savings of $1.8 million will be realized leading to a pay-back period of 2.1 years.

After the short pay-back period, the saving equate to an additional $1.8 million in earning, making the company more competitive. More competitive companies lead to growing economies, which make better trading partners for the U.S. Efficiency and DSM projects address global climate change issues while increasing environmental technology exports for U.S. firms.

BIOMASS MEMORANDUM OF UNDERSTANDING

Tata Energy Research Institute

Econergy International Corporation,
Lockheed Environmental Systems and Technologies Co.
Duke Engineering and Services, Inc.
Niagara Mohawk Power Corporation
TransAlta Corporation

A consortium of U.S., Indian, and Canadian organizations today signed a Memorandum of Understanding with two Indian sugar mills to pursue the continued development of biomass cogeneration projects in India, which will supply electricity to the national grid and steam to sugar mills. The cogeneration projects will be financed by private sector loans and equity. The consortium consists of energy and technology companies, NGOs and U.S. Department of Energy Laboratories.

The commercial partners include four U.S. and one Canadian company: Econergy International Corporation (US), Lockheed Environmental Systems and Technologies Co. (US), Duke Engineering and Services, Inc. (US), Niagara Mohawk Power Corporation (US), and TransAlta Corporation (Canada).

Technical and management assistance partners in the projects include Tata Energy Research Institute, Oak Ridge National Laboratory, Winrock International, Environmental Defense Fund, Los Alamos National Laboratory, and the Utility Biomass Energy Commercialization Association.

The MOU among the partners will initiate the first phases of developing a biomass cogeneration project at the sugar mills, the Simbhaoli Sugar Mills, Ltd. and Willard India, Ltd. The initial work will focus on selecting a sugar mill for the project, and several candidate sites will be examined. A detailed feasibility analysis will commence immediately after the project site has been selected.

The primary objective of the project is to develop, build, and operate a technically and financially viable cogeneration plant, financed by private sector equity and commercial bank debt. In addition, the project will attempt to demonstrate the technical viability of operating the cogeneration plant year-round utilizing other biomass fuels during the off-season.

A-4
7

1 **RETURN TRIP TO INDIA**

2 **FEBRUARY 1995**

BHILANGANA HYDROELECTRIC POWER PROJECTS
Swasti Power Engineering **Acres International**

Acres International Corporation of New York State signed a Memorandum of Understanding with Swasti Power Engineering Ltd. to form a joint venture for development of a series of small hydroelectric power projects in the Bhilangana River Valley of Uttar Pradesh state. A total of about 27 megawatts will be developed, with an investment of about $40 million. The project will generate 189 million kilowatt-hours of electrical energy with minimal environmental impact to the host waterway and its surrounding region. Funding for the projects will come mainly from outside investors, with both Acres and Swasti holding an equity interest. Once this agreement is signed, the joint venture entity will be in place to begin development of these projects. The next step will be for Acres-Swasti to initiate project design work, and begin the process of lining up financing necessary for subsequent project construction and procurement activities.

RENEWABLES COMMERCIALIZATION CENTER
Indian Renewable Energy Development Agency
KEI Energy Ltd. **Bechtel Corporation**

Bechtel Corporation of California signed a Memorandum of Understanding with KEI Energy, Ltd. and the Indian Renewable Energy Development Agency to form a joint venture to create a facility to accelerate commercial use of renewable energy technologies in India. The goal is to develop up to 1,000 megawatts of renewable energy generation capacity in India by the year 2000.

SMALL HYDROELECTRIC POWER DEVELOPMENT
Madhya Pradesh Sate Electricity Board **Dodson-Lindblom International**

Dodson-Lindblom International, Inc. of Ohio (through its India-based subsidiary, Ascent Hydro Projects Ltd.) signed a Memorandum of Understanding with the Madhya Pradesh State Electricity Board to develop five small hydroelectric projects. A total of about 5 megawatts will be developed, involving an investment of $9 million. Potential benefits include additional electrical generation capacity with minimal environmental impact to the host waterways and surrounding region. Funding for the projects will come from Dodson-Lindblom in large part. However, the United States Overseas Private Investment Corporation (OPIC) has agreed to provide $100,000 for pre-investment analysis and development of a business plan. (Note: OPIC has a separate signing with Dodson-Lindblom) Once these agreements are signed, the next step will be to initiate project design activities, and develop the business plan for the project's financial management.

FIRST SALES TRANSACTION WITH INDIAN CUSTOMER
BHEL **Donaldson**

Donaldson Company, Inc. of Minnesota has formed a joint venture with Munradtech Services Private Ltd. to manufacture U.S. technology-based air filtration subsystems for gas turbine electricity generating units. This project will create about 50 new jobs in the manufacturing sector. The joint venture (D.I. Filter Systems Private Ltd.) has already obtained start-up funding ($500,000, in the form of a low-interest loan) from the U.S. Agency for International Development (USAID) that will enable construction of its manufacturing facility in India. This sales contract with BHEL (worth $115,000) represents the joint venture's first sales transaction in India.

DELHI COMMUNITY DEVELOPMENT PROJECT
Mokul International Private Ltd. **EFH Coal Co.**

EFH Coal Company of Pennsylvania signed a Memorandum of Understanding with Mokul International Private Ltd. to form a joint venture for developing an integrated energy production/community development project involving solar thermal energy, a coal preparation facility, and a fluidized bed coal combustion power generating unit, with associated coal ash processing facility to make fertilizer and building materials, and a waste water treatment facility. The project will also include construction of greenhouses and a fish farm to efficiently utilize what would otherwise be waste heat from the project. The power production portion of the project will generate a total of about 100 megawatts, serving a population of about 100,000 (including industry). Benefits include the generation of much-needed electrical power and an integrated, sustainable approach to power generation and community development. The total investment is estimated at about $750 million. Funding will come from outside investors, with EFH and Mokul retaining significant equity interest. Once this agreement is signed, the joint venture entity will be in place, and project activities can be initiated.

ELECTRICITY TRANSMISSION/DISPATCH TECHNOLOGIES EVALUATION
Bombay Suburban Electric Supply Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with the Bombay Suburban Electric Supply Ltd. to establish a partnership to evaluate the applicability of EPRI's electricity transmission and distribution (T&D) technologies in India. Potential benefits include improved electricity transmission, which cuts transmission losses and lowers power costs. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAICS DEMONSTRATION PROJECT
Renewable Energy Systems Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of

Understanding with Renewable Energy Systems Ltd. to establish a partnership for design, installation, and evaluation of a 2 megawatt photovoltaic power project. Benefits will include development of a cost-effective renewable energy production technology for use in isolated areas of India. Once this agreement is signed, the next step will be conceptual design and a joint search for additional sources of project funding.

RENEWABLE ENERGY COOPERATIVE ACTIVITIES
Ministry of Nonconventional Energy Sources **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with the Government of India's Ministry of Nonconventional Energy Sources to establish a partnership for evaluating renewable energy sources within India, including wind energy, photovoltaics, biomass energy, and hydroelectric power. The potential benefits to India include the identification of new and efficient sources of energy, and institutional training. Cooperative activities will begin once this agreement is signed.

ELECTROTECHNOLGIES FOR INDUSTRIAL APPLICATIONS
Thermax, Ltd. **EPRI**

The Electric Power Research Institute, based in California, signed a Memorandum of Understanding with Thermax Ltd. to establish a partnership for development within India of electricity-utilizing applications such as water purification, medical waste sterilization, and food processing. This project will contribute to more efficient use of electricity. Cooperative activities will begin once this agreement is signed.

STATE-OF-THE-ART POWER PLANT SERVICES
L&T - Sargent & Lundy, Ltd. **EPRI**

The Electricity Power Research Institute (through its SEPRIL Inc. U.S.A. joint venture with Sargent & Lundy, Inc.) signed a Memorandum of Agreement with India-based L&T-Sargent & Lundy Ltd. This agreement will set out the basis of a joint marketing/working arrangement providing technical and financial evaluation services in support of the "State-of-the-Art Power Plant" computer program and related products developed by Sargent & Lundy/SEPRIL and sponsored by EPRI. Potential benefits to India include the introduction of advanced software to facilitate design and retrofit of power plants, resulting in savings to consumers. This agreement represents the first commercial use of an EPRI-developed technology within India.

RENEWABLE ENERGY COLLABORATIVE ACTIVITIES
Indian Renewable Energy Development Agency **EPRI**

The Electric Power Research Institute, headquartered in California, signed a Memorandum of

Understanding with the Indian Renewable Energy Development Agency (IREDA) to establish a partnership for evaluation and technology transfer in the area of renewable energy. The potential benefits accrue from the widespread introduction of new technologies, and the establishment of a renewable energy training center in India. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAIC ENERGY POWER PLANT

Solaris Systems, Ltd. **Intech Global Resources, Inc.**

Intech Global Resources, Inc. of Texas signed a Memorandum of Understanding with Solaris Systems, Ltd. to develop a 2 megawatt photovoltaic energy power plant in Kerala state. The overall value of the project is $10 million.

Udhaya Semiconductors Pvt. Ltd. **Intech Global Resources, Inc.**

Intech Global Resources, Inc. of Texas signed a Memorandum of Understanding with Udhaya Semiconductors Pvt. Ltd, to develop inverters and allied hardware for grid interaction of non-renewable energy schemes with the conventional grid.

COMMERCIAL SALES TRANSACTION

ABAN Lloyd Chiles Offshore, Ltd. **Kentech**

Kenetech Windpower Inc. of California signed a sales contract with ABAN Lloyd Chiles Offshore Ltd. for delivery of 600 advanced technology wind turbines valued a $150 million that will be used to generate 200 megawatts of electrical energy. This project offers a substantial increase in the generating capacity available in India of clean, sustainable windpower.

BIOMASS-FUELED COGENERATION PROJECTS

TERI/OPIC **Lockheed Environmental Services**

Lockheed Environmental Systems and Technologies (LESAT) of Texas, along with partner Econergy International Corporation (EIC) of Colorado have formed a partnership with Tata Energy Research Institute (TERI) to develop two 50 megawatt bagasse-fuel power plants in Uttar Pradesh state valued a $50 million each. This consortium signed a financial assistance contract with the United States Overseas Private Investment Corporation (OPIC). Potential benefits include increased power generation using inexpensive, widely-available bagasse. OPIC has agreed to provide $120,000 in financial assistance that will fund a necessary feasibility study for these projects.

A-4

ADVANCED POWER AND ENERGY EFFICIENCY CENTER PROJECT

Energy Management Centre **J.Makowski Co., Apollo Hospital Group**

Bechtel and the Apollo Hospital Group of India signed a Memorandum with the Energy Management Centre of the Government of India's Ministry of Power to develop an advanced technology 200 megawatt power generating facility in Delhi state. 50 megawatts of this capacity will be derived from a renewable energy sources, and the facility will also have an exhibit area that will showcase different energy efficiency technologies that are appropriate for India. The overall value of the project is $300 million.

ENERGY EFFICIENCY COOPERATIVE ACTIVITIES

Energy Management Centre **Oak Ridge National Laboratory**

The Oak Ridge National Laboratory (ORNL) located in Tennessee signed a Memorandum of Understanding with the Energy Management Centre of the Government of India's Ministry of Power to promote scientific and technological cooperation between India and the U.S. in the area of energy efficiency. Projected cooperative activities include exchanges of personnel and non-proprietary technical information, joint testing of equipment. and co-sponsorship of seminars and conferences in the area of energy efficiency. Funding for these activities will be the joint responsibility of ORNL and India's Ministry of Power. Cooperative activities will begin once this agreement is signed.

PHOTOVOLTAIC POWER DEVELOPMENT

NEPC Micron, Ltd. **Omnion Power Engineering Company**

Omnion Power Engineering Corporation of Wisconsin signed a contract with NEPC Micron Ltd. for the supply and installation of a 100 kilowatt grid-interactive photovoltaic power plant in Tamil Nadu state, on the site of one of NEPC's existing wind farms. It is anticipated that the innovative combination of photovoltaics and wind power, when proved successful, will lead to widespread adoption of this approach on existing wind farm sites across India.

INDUSTRIAL AND COMMERCIAL ENERGY EFFICIENCY PROGRAM

First Custodian Fund (India), Ltd. **Oxford Consultants**

Oxford Consultants International Inc. of Maryland signed a Memorandum of Understanding with First Custodian Fund (India) Ltd. to establish a joint venture (First Oxford Technologies India Ltd.) aimed at improving industrial and commercial energy efficiency in India. This project will accelerate the introduction of energy saving technologies in India, by means of identification and implementation of appropriate cogeneration and energy conservation projects. Once this agreement is signed, the next step will be to initiate energy efficiency audits in the industrial and commercial sectors that will result in significant energy savings.

EFFICIENCY IN ENERGY PRODUCTION AND USE
Energy Consultants Private, Ltd. **TENSA**

TENSA Inc. of Texas signed a Memorandum of Understanding with Energy Consultants Private Ltd. (ENCON) to establish a joint venture (TENSA-ENCON) Private Ltd.) aimed at improving efficiency in the areas of energy production and use within India. Fields of expertise include energy conservation, process integration, cogeneration, and renewable energy. This joint venture will speed the introduction of energy saving technologies in India. Once this agreement is signed, the next step will be to initiate energy efficiency audits in the industrial and commercial sectors that will identify windows of investment opportunity for energy efficient projects.

SPECIALTY POWER PLANT SERVICES
Thermax, Ltd. **Tennessee Valley Authority**

The Tennessee Valley Authority (TVA) signed a Memorandum of Understanding with Thermax Ltd. to establish a joint venture that will provide specialty welding services based on technology not previously utilized in India. Benefits will include improved plant performance and lower operating costs for power plants. Additional benefits are employment and training for a significant number of skilled crafts people. The joint venture is also planning to offer these special services in other emerging world markets.

WIND ENERGY DEVELOPMENT PROJECT
Pentafour Solec Technology, Ltd. **Zond International Development. Corp.**

Zond International Development Corporation of California, along with partner Blue Chip Technologies, signed a Memorandum of Understanding with Pentafour Solec Technology Ltd. to establish a joint venture specializing in wind energy. The first identified project will be a wind energy farm in Tamil Nadu state. A total of 60 megawatts will be developed, with a total investment of about $15 million. Once this agreement is signed, the partners will initiate project design activities, and develop the business plan for the project's financial management.

1

2

CII REVERSE TRADE MISSION
FOLLOW UP AGREEMENT

3

(Note: project descriptions were not available for Salve and Kumar visits)

A-4
15

MEMORANDUM OF UNDERSTANDING FOR TWINNING INDIA INTEREST IN ADVANCED BIOMASS GASIFICATION

Thermax **Future Energy Resources Corporation**

Future Energy Resources Corporation and Thermax signed a Memorandum of Understanding to establish twin gasification projects in India utilizing biomass feedstocks with DOE supported United States projects. The parties understand and agree that the FERCO will, on terms and conditions to be agreed between the parties: provide access to construction, design and operational expertise required for the commercial development of such plants; and provide the opportunity for Thermax to test feedstocks in existing facilities in the United States for the purpose of establishing operating characteristics necessary for the design and operation of proposed projects.

In exchange, Thermax will provide appropriate documentation with regard to proposed plant needs, benefits and operating characteristics/requirements, including operational and financial parameters judged necessary for project development and, will utilize the services of FERCO for the provision of gasifier technology meeting those needs on terms and conditions to be negotiated between the parties.

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

SEPTEMBER 1994

IMPLEMENTATION AGREEMENTS
Ministry of Water and Power
WAPDA **AES Corporation**

AES and the Ministry of Water and Power and the WAPDA signed Implementation Agreements for the AES Lal Pir I power project, a 362 MW furnace, oil-fired power station to be located in the District of Muzaffargarh, in the Punjab province and the AES LalPir II power project is a 360 MW furnace, oil-powered power station to be located in the District of Khanewal, in the Punjab province.

The LalPir I power plant is based on conventional oil-fired boiler and steam turbine generator using state of the art equipment and is due for commissioning December 31, 1996. The total project value is estimated to be $350 million. The LalPir II plant is using the power generation technology similar to the Lal Pir plant and is due for commissioning in December 1997. The estimated cost of the project is $350 million.

MEMORANDUM OF UNDERSTANDING
Ministry of Water and Power **Agrilectric**

Agrilectric Power Inc., of Louisiana, a member of The Power Group, has proposed to construct a set of 10 MW power generation plant using rice hull as fuel at Larkana District in the Sindh province. This will be the first renewable project outside the U.S. using proven technology. The Agrilectric project is also unique in that it will provide opportunity for Pakistani citizens to own the projects themselves.

With the existing theme of the Memorandum of Understanding, Agrilectric plans to break ground on 8-10 power plants throughout Pakistan, with a total estimated value of $150 million. Typically, these power plants will be sized to the supply of rice hulls in any given vicinity in order that these plants might run 24 hours a day, 365 days a year for maximum efficiency.

IMPLEMENTATION AGREEMENT
Ministry of Water and Power **Enron Power Development**

ENRON Power and the Ministry of Water and Power signed an Implementation Agreement for the development of a 760 MW combined cycle power station using NAPTHA as fuel, which ENRON will import exclusively for this project. The project is to be located in Multan District of the Punjab province and is due for commissioning in October, 1997. The estimated value of the project is $850 million.

DISTRIBUTION AGREEMENT
Greaves Cotton Ltd. **Armstrong Corporation**

Armstrong International, a steam energy management company, providing steam traps, condensate

return systems, pressure reducing valves and engineering services for efficient steam utilization has negotiated an exclusive participation agreement with Greaves Cotton Pakistan Ltd. for the distribution of steam traps and other products. Greaves is one of the largest distributors of engineering products in Pakistan. The value of the project is estimated to be in the range of $750K to $1million.

IMPLEMENTATION AGREEMENT - KABIRWALA POWER PROJECT
Fauji Foundation and Ministry of Water and Power **Sceptre Power**

Kabirwala power project is 144 MW combined cycle power station, using natural gas of low BTU and pipeline gas as fuel, located in District Khanewal, Punjab province. The project is due to be commissioned by October, 1997 and has an estimated value of US $175 million.

This project is sponsored by Fauji Foundation, Sceptre and Intrag Inc. Fauji Foundation is a well renowned organization involved in a wide variety of industrial and commercial activities throughout Pakistan. Sceptre power company is a U.S. based development company, involved in a wide variety of power projects in North America and other international locations. Intrag is also an American based power company.

OIL & GAS DEVELOPMENT AND PRODUCTION LICENSE
Government of Pakistan **Occidental Petroleum**

Occidental Petroleum has been operating in Ratana Concession since 1991. The gas and condensate has since been declared commercial and put on production. It is currently producing about 800 barrels/day and of condensate and 18 million metric cubic feet of gas per day.

The grant of the lease will enable Occidental Petroleum to undertake the development of the field which will cost over $100 million. This will cover drilling of an additional four wells and surface facilities.

IMPLEMENTATION AGREEMENT - HABIBULLAH POWER PROJECT AT QUETTA
Ministry of Water and Power **Habibullah Energy Ltd.**

The Habibullah power project is a 104 MW combined cycle power station l sing natural gas supplied by Sui Southern Gas Company. The project is due to be commissioned in January, 1997 and has an estimated value of $109 million.

The lead project developer is Habibullah Energy Ltd., of Tucson, Arizona and Karachi, Pakistan, joined by ABB energy Ventures of Princeton, New Jersey and Ogden Projects, Inc. of Fairfield, New Jersey. The owners engineer and consultants for the project are Parsons Main of Boston, Massachusetts and the environment engineer is KBN of Gainesville, Florida. The letter of support was

issued in July, 1994.

MEMORANDUM OF UNDERSTANDING FOR THE PAKISTAN ENERGY AND POWER DEVELOPMENT FUND
First Capital Securities Corporation Ltd.
Ministry of Water and Power **Smith Barney**

Smith Barney and First Capital Securities are exploring the formation of a $100 million Pakistan Energy and Power Development Fund which is intended to provide a portion of the senior debt financing required by a pre-identified package of projects. The Government will also lend its full support for the Fund and appropriate officials will participated in the marketing as well.

Smith Barney is one of the leading American merchant banks and has one of the most experienced corporate finance teams in Asia. In Pakistan, Smith Barney's investment banking business is in conjunction with First Capital Securities, a publicly quoted company.

TURNKEY AGREEMENT EXTENSION
Security Electric Power Company Ltd. **General Electric, Morgan Stanley**
(SEPCO)

An extension of the turnkey agreement was signed between SEPCO and General Electric. SEPCO is in the process of implementing an electric power generation project, with a capacity of 310 MW (210 MW simple and 100 MW combined cycle) with a total value of US $174 million.

The project is being co-sponsored by Yunus Brothers and Saifullah Group. Yunus Brothers are the largest textile exporters of Pakistan having interest in textile, cement and power sectors. Saifullah Group is one of the leading industrial groups in Pakistan, having an interest in textiles, communications, cement and power sectors.

The equipment is being purchased from General Electric, with whom a Memorandum of Understanding has been signed for the supply of equipment and to implement the project on a turnkey basis.

A-4
20

HIGH EFFICIENCY GAS COMPRESSOR AGREEMENT
Sui Northern Gas Pipelines, Ltd **Solar Turbines**

Sui Northern Gas Pipelines, Ltd. of Punjab, is buying four compressor gas sets from Solar Turbines, a subsidiary of Caterpillar Inc. The estimated value of the transaction is US $7 million.

Sui Northern has currently embarked upon a major pipeline expansion program and has already placed order for four additional compression packages on Solar. Another five compressor packages are being purchased against competitive bidding where they expect Solar will be participating.

The sale will be financed by the Export-Import Bank, who broke new ground by agreeing to support the loan request without sovereign guarantee. Typically, with a public, non sovereign obligor, the Bank requires either a guarantee of the Ministry of Finance, or an acceptable financial institution. However, in keeping with the Bank's new initiative to be more flexible in its financing decision, the loan was approved on the credit worthiness of Sui Northern.

IMPLEMENTATION AGREEMENT -UCH POWER PROJECT
WAPDA **Tenaska Inc, Hawkins Oil and Gas**

The Uch Power Project is a 584 MW combined cycle power station, using low BTU gas from the Uch gas field, to be located in the District Nasirabad, in Balochistan province. It is due for commissioning in October, 1997 and has an estimated total value of $600 million.

The project is sponsored by Tenaska, Inc. Hawkins Oil and Gas, Inc., Hassan Associates Ltd., and Central Power Holdings Ltd. Tenaska Inc., a U.S. based company, has a vast experience of carrying out power projects in North America. Central Power is of subsidiary of Midland electricity PLC, U.K. Midland Electricity is carrying on several power generation projects worldwide Hawkins Oil and Gas has vast expertise in power generation projects and Hassan Associates are the local sponsors, based in Karachi. Design and construction of the facility will be performed by an international consortium led by General Electric Industrial and Power Systems.

Upon completion in 1997, the Uch Power Project will provide WAPDA and its customers a significant new source of electrical capacity, electricity to promote economic growth and increased prosperity for people of Pakistan.

OIL & GAS EXPLORATION AND PRODUCTION LICENSE
Government of Pakistan **Union Texas**

Union Texas led joint venture comprising Occidental and the Oil and Gas Development Corporation of Pakistan is operating in the Badin area since 1977. The joint venture is currently producing 18,000 barrels of oil per day and 17 million metric cubic feet of gas per day from the area. The existing license is expiring in January, 1995. The government of

A-4
2

Pakistan has approved the grant of license for another three years. The joint venture will drill a minimum of five wells at a cost of $3.75 million during the three year period. The overall investment as a result of this extension during the period 1994-96 on exploration and production activities in the area, will be $175 million.

IMPLEMENTATION AGREEMENT -WAKGAS
Wak Ltd, Karachi Electric Supply Corporation **Orient Point, Caterpillar Co**

The Wakgas Power Project is a 800 MW barge mounted power station based on heavy-fuel oil fired diesel engines. The project is located at Port Qasim, West Wharf, Sindh province, and is due for commissioning in September, 1996. The total estimated value of the project is $880 million.

Wak Ltd and Orient Point Inc., the sponsors of this project, are using the capabilities of Bender Shipbuilding and Repair Co., Inc., Caterpillar Inc., and Energy Transportation Group. Caterpillar's worldwide product support and Bender's reputation for solidly built vessels makes the Bender Power Barge a most dependable power source. Energy Transportation Corporation specializes in the ocean transportation of bulk commodities, particularly those which are energy related. They operate vessels under U.S. registry as well as under flags of other countries.

HYDROPOWER PROJECT AGREEMENT
Power Gencorp Ltd. **Synergics Energy Development, Inc**

Synergics Energy Development, Inc., of Maryland, U.S. and Power Gencorp Ltd., of Lahore, Pakistan will agree to jointly develop, finance, design and construct and operate three hydroelectric US power plants In the province of PunJab, totalling 75 MW in capacity at total value US $15 million. The projects are expected to come on line in December, 1997.

SOLAR POWER AGREEMENT
Power Gencorp Ltd. **ENTECH, Inc**

ENTECH, Inc. of Dallas, TX and Power Gencorp Ltd. of Lahore, Pakistan will sign a agree to jointly develop solar power projects in Pakistan, including an initial project valued at more than US $40 million.

A-4
22

1 **FOLLOW UP MISSION TO PAKISTAN**

2 **DECEMBER 1994**

A-4
23

CONCESSION AGREEMENTS

Union Texas Petroleum

Union Texas Petroleum (UTP), a Houston, Texas, based company, signed an extension and revision of concession agreements on its principle properties in lower Sindh (Badin I and Badin II) where it will continue production and exploration under the basic terms of its 1977 agreement. UTP also signed an entirely new concession agreement valued at $3.8 million for the eastern Sindh block, which will be governed by the 1994 Petroleum Policy. Details of the new concession agreement will include geological and geophysical work, including 150 KM of new seismic data and a 10,000 test well.

CONCESSION AGREEMENTS

Occidental Petroleum

Occidental Petroleum, based out of California, Oxy signed concession agreements valued at $25.6 million for oil and gas exploration in five blocks in the Punjab, completing a rapid transformation of its focus from production to exploration. Details of the concession include:

- Occidental Zamurden Concession - will include a 400 km of new seismic data and three exploratory wells
- Occidental Shaiwal Concession - geological and geophysical work
- Occidental Kamalia Concession - geological and geophysical work including an aeromagnetic gravity survey
- Occidental Bahawalnagar Concession - geological and geophysical work including an aeromagnetic gravity survey ,
- Occidental Mehar Concession - geological and geophysical work including seismic data processing

DRY HOLE STUDY

Hydrocarbon Development Institute of Pakistan
Oil and Gas Development Corp

Improved Petroleum Recovery International

Improved Petroleum Recovery International, a Fort Worth, Texas based R&D Service company, IPRI signed an agreement with the Hydrocarbon Development Institute of Pakistan and the Oil and Gas Development Corp. for $400,000 study of dry holes.

LPG TERMINAL MEMORANDUM OF UNDERSTANDING

Ferrell North American

Ferrell North American - A Houston, Texas, based company, Ferrell North American is the second largest retail marketer of propane in the United States. Ferrell North American signed a Memorandum of Understanding concerning the development of a $25 million LPG terminal at

Pon Qasim near Karachi.

PIPELINE SERVICE CONTRACT
Pakistan State Oil, **VECO**

VECO, an Anchorage, Alaska, based oil and gas service contractor, VECO signed a $3 million pipeline service contract with Pakistan State Oil, the first public/private sector pipeline service contract in Pakistan.

TURNKEY CONSTRUCTION AGREEMENT
Pak-Arab Refinery, Ltd **Wilbros Group, Inc**

Willbros Group, Inc., a Tulsa, Oklahoma, based oil and gas pipeline construction company, Willbros signed a $79 million contract (or the turnkey construction of some 364 kilometers of 16 /18 pipeline, storage, pumping and terminal facilities for Pak-Arab Refinery Limited (PARCO).

MEMORANDUM OF UNDERSTANDING
Hong Pak **American United Machinery Company**

American United Machinery Co., a Columbus, Ohio, based machinery and-power operational procurement and sales company, American United Machinery signed an agreement to supply equipment to HongPak to develop a 1350 MW coal-fired power project in Sindh. The total value of the project is estimated to be US $1.7 billion.

MEMORANDUM OF UNDERSTANDING
Sindha Coal Authority **BBI/Brooklyn Marine & Oil**

BBI\Brooklyn Marine and Oil, Inc., a U.S. partnership consisting of Besicoys Group, Inc., a New York based independent power developer, Brooklyn Marine & Oil, Inc., a New York based shipping and transportation company, BBI signed agreement with the Sindh Coal Authority to develop a 200-MW coal-fired power plant near Hyderbad in southern Sindh. The total value of the project is estimated to be US $200 million.

100 MW POWER PLANT AGREEMENT
Sindh Coal Electric Power Co **Leesburg Financial**

Leesburg Financial, a Washington, D.C. based energy development investment fund, Leesburg Financial signed an agreement to develop a 100 MW coal-fired power plant in Sindh. The total estimated value of the project is US $100 million.

P-21
25

20 MW THERMAL POWER PLANT MEMORANDUM OF UNDERSTANDING
Model Town **Altern Energy**

Altern - A Colorado based company that specializes in private power generation, Altern is one of the leading firms studying the potential of geothermal resources in Pakistan, and is one of the first American companies to explore private power opportunities in Pakistan. Altern signed an agreement to develop a 20 MW thermal power project based on flared gas.

MEMORANDUM OF UNDERSTANDING- HYDROPOWER PROJECT
Synergics, Inc

Synergics, Inc, an Annapolis, Maryland, based company specializing in private power generation, Synergics has developed, owns and is currently operating 13 hydro, gas and oil-fired plants in the United States. Synergics signed an agreement for a 97 MW hydropower project on the Punch River in Kashmir. The power project has an estimated cost of $180 million and project sponsors hope to bring it on line by the end of 1998.

MEMORANDUM OF UNDERSTANDING - WIND PROJECT
Kenetech Wind Power

Kenetech, a San Francisco, California based wind power company, Kenetech is the world's leading developer of wind energy and has installed more wind turbines than any other company in the world. Kenetech signed an agreement for a 100 MW wind power project in Baluchistan. The total value of the project is estimated to be US $100 million.

MEMORANDUM OF UNDERSTANDING - WIND PROJECT
Karachi Power Company
Omega Pvt, Ltd **Omega Zond**

Omega Zond, a California based company that specializes in wind power generation, Zond has installed and currently operates more than 2500 wind-- turbines ranging in size from 65 kilowatts to 500 kilowatts. Omega Zond signed an agreement for a 150 MW wind power project in Sindh. The total estimated value of the project is US $138 million.

PILOT STUDY AGREEMENT
Condyne

Condyne, a company from Longwood, Florida, which has developed and patented unique energy efficiency technology, Condyne signed an agreement to conduct a pilot study of its energy efficient technologies to reduce electricity consumption by refrigerators and air conditioners in Pakistan. The total value of the project is estimated to be US $400 thousand.

26

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY AND TRADE TO CHINA

FEBRUARY 1995

A-U
27

TRIGERNERATION PHASE II
Shanghai Coking
and Chemical Plant — **The Institute of Gas Technology**

The Institute of Gas Technology and the Shanghai Coking and Chemical Plant will signed a Memorandum of Understanding to install a gas turbine which will produce 70 MW of power. IGT previously established a joint venture with the Shanghai Coking and Chemical Plant to market their gasification technology to China. Eight IGT gasifiers, installed during Phase I of this project, produce clean gas from coal which will fuel the new turbine. IGT's gasifiers yield significantly lower emissions producing cleaner energy benefitting the residents of Shanghai and its environs. The total Project is expected to result in a capital investment of U.S. $70 million and IGT expects their share to be between U.S. $35 to $46 million.

MEMORANDUM OF INTENT
Great Asia Industrial Development Company
Shanghai General Building Material
Group Corporation — **Owens-Corning**

Owens-Corning and the Great Asia Industrial Development Company and the Shanghai General Building Material Group Corporation signed a Memorandum of Intent to establish a joint venture to construct a fiber glass insulation plant. Owens-Corning is a leading supplier of residential and commercial glass fibre blanket insulation. The proposed plant is of U.S. design and technology and will produce significant energy conservation and environmental benefits as these materials are introduced to the Chinese market. Owens-Corning estimates that the total capital investment by all partners will be approximately U.S. $25 million over the next two years. The plant will employ approximately 120 people and is expected to commence production in the second quarter of 1996 if the joint venture is successfully signed by April, 1995 as planned.

WU JING EXPANSION PROJECT EIGHTH PHASE
Shanghai Municipal Electric Power — **Cogen Technologies**
Corp & Shenergy Company — **Aig-Asian Infrastructure Fund**

Cogen Technologies & Aig-Asian Infrastructure Fund and their partners, the Shanghai Municipal Electric Power Corporation and Shenergy Company Limited signed a Memorandum of Understanding to expand the Wujing Project in Shanghai. The project will consist of 2 X 600 MW coal-fired units and will result in reduced SO2 emissions in Shanghai. The total cost of this project is expected to be U.S. $1.2 billion with the American partners share estimated at up to $U.S. 150 million.

A-4
28

JOINT VENTURE CONTRACT
Meiya Jinqiao Energy Company Ltd. **Community Energy Alternatives**

Community Energy Alternatives Inc. and the Shanghai Jinqiao Heat Power Corporation signed a joint venture contract to establish the Meiya Jinqiao Energy Company Ltd. The project will provide a centralized steam, hot water and cooling system in the Jinqiao Export Processing Zone in Pudong, Shanghai. The Joint Venture Company will employ foreign control equipment and systems in its operation as well as in servicing its customers during Phase I. The Jingiao Project will eliminate the need for individual boilers, thus enhancing overall energy efficiency. Phase I of the Joint Venture is expected to result in a U.S. $28 million investment with CEA's share estimated to be $16.8 million.

LU MAO JIANG PROJECT
Lu Mao Jiang Coal Mine Company **EFH Coal Company**

The EFH Coal Company and the Lu Mao Jiang Coal Mine Company and signed a Memorandum of Understanding to conduct a feasibility study for a 50 MW coal-fired co-generation project. The project will be located in Hunan Province and will employ the latest environmental technologies. The project is estimated to be valued at U.S. $50 million.

ZHEJL NG YONG-KE THERMAL POWER PROJECT
EDC Shaoxing Power Ltd. **Enserch Development Corporation**
East Wind Power Partners

Enserch Development Corporation and the Zhequian Xiao-Xiao Enterprise General Company and East Wind Power Partners signed cooperative joint venture and articles of association to develop a 3 X 12 MW coal-fired power plant. The developers estimate that the project will generate electricity sales of 180 to 260 GWH and annual steam production of 1.3 to 3.1 million GJ. The total project is valued at U.S. $27 million and Enserch estimates their share of the project to be U.S. $18.8 million. This plant is an efficient co-generating plant which will serve about 30 local enterprises and the developers believe it will be among the first Sino-U.S. joint venture to generate power in the People's Republic of China.

The parties also announce that a separate letter of intent has been signed to jointly develop an additional 100 MW power plant near Shaoxing City. This new plant will use efficient, clean, combined-cycle technology. Feasibility studies and cost estimates are not yet complete but a total investment on the order of U.S. $80-100 million is indicated.

WUXI CITY PEAKING PROJECT
China National Aero-Engine Corporation and Wuxi New Energy Investment Company — **The Coastal Corporation**

Coastal Corporation, and the China National Aero-Engine Corporation and the Wuxi New Energy Investment Company signed a Letter of Intent to establish the Wuxi City Peaking Project Phase I and Phase II. Phase I of the Wuxi City Peaking Project will provide Peaking capacity to alleviate peak capacity demand in Wuxi City using clean and efficient gas turbines. The project is expected to result in an investment of U.S. $25 million with Coastal's share expected to be U.S. $15 million.

PRODUCTION SHARING CONTRACT
China National Offshore Oil Corporation — **Chevron**

China National Offshore Oil Corporation (CNOOC) and Chevron Overseas Petroleum Corporation signed a Production Sharing Contract to jointly explore, develop, and produce natural gas in the offshore block 62/23 in the South China Sea.

This exploration joint venture between CNOOC and Chevron will benefit the growing industry base in southern China by supplying energy in an environmentally sensitive way. The agreement will add to Chevron's already significant presence in China. The joint venture will commence immediately beginning with a joint exploration study in 1995. The total project value is estimated to be US $30 million.

MULTIPLANT LICENSE AGREEMENT
MINISTRY OF CHEMICAL INDUSTRY AND SINOPEC — **TEXACO**

The Ministry of Chemical Industry, the China Petro-Chemical Corporation (SINOPEC) and Texaco signed an agreement for the Ministry of Chemical Industry and SINOPEC to build nine plants using Texaco's gasification technology. The nine plants will convert coal into clean synthetic gas for the production of chemical fertilizer. Texaco is the world leader in gasification technology, considered to be the cleanest, most efficient technology for the conversion of coal and other hydrocarbons into useful products including electric power, fuels, chemicals and fertilizer.

The nine plants to be built under this agreement represent a capital investment in excess of $500 million by the Ministry of Chemical Industry and SINOPEC and will increase domestic fertilizer production using the best available technology. By utilizing the Texaco Gasification Process, these plants will contribute to a significant improvement in environmental quality, reducing emissions by as much as 20 million metric tons per year.

EASTERN HEATING PLANT
Beijing District Heating Company **Cogen Technologies**

Cogen Technologies Capital Company and the Beijing District Heating Company signed an agreement for the Eastern Heating Plant to be located in an eastern suburb of Beijing. This facility will provide hot water to commercial, industrial and residential customers in the area through the existing and an expanded, district heating system. The partners estimate the total cost of the facility to be U.S. $65 million. Cogen's portion of the equity investment will be 70%.

COOPERATION AGREEMENT
State Science and Technology Commission **AMOCO/ENRON SOLAR**

Amoco/Enron Solar and the Department of Industrial Technology of the State Science and Technology Commission signed an agreement to jointly conduct a feasibility study which should lead to the construction of a thin-film photovoltaic manufacturing facility and a solar electric generating facility in the People's Republic of China.

The proposed manufacturing facility would produce a new generation of solar cells which would enable solar power to be competitively priced in China. When the project receives final government approval, it will represent an investment of U.S. $300-400 million and will set a model for environmentally friendly energy production in China. The two facilities would employ an estimated 200 people at full production and are expected to commence production within two years from a successful completion of the feasibility study and related contracts.

MEMORANDUM OF UNDERSTANDING
China Photovoltaic Electronic Company
And Beijing General Research Institute **Spire Corporation**

Spire Corporation and China Photovoltaic Electronic Company and the Beijing General Research Institute signed a Memorandum of Understanding to establish a new photovoltaic module manufacturing factory in China.

The new factory will nearly double China's manufacturing capacity for photovoltaic modules. These modules are used throughout China for village electrification. Spire estimates that the total investment by all parties will be between U.S. $7 - 12 million over the next two years. The plant will employ approximately 400 people and is expected to begin production in late 1996 if the contract is successful signed by October 1995.

A-4
31

MEMORANDUM OF UNDERSTANDING
Yunnan Semiconductor Device
Factory **Spire Corporation**

Spire Corporation and the Yunnan Semiconductor Device Factory signed Memorandum of Understanding to expand the production of photovoltaic manufacturing in Yunnan. The module production resulting from the expanded capacity at the Yunnan Plant will be used throughout China for telecommunications, lighting, refrigerating and other applicators. Spire estimates that the investment will be approximately U.S. $1 million over the next year. The expanded factory will employ approximately 200 people in full production in 1996, if the contract is successfully signed by October 1995.

JOINT VENTURE FOR WIND POWER PLANT
Inner Mongolian Electric Power Company **Flowind**

FloWind Corporation and the Inner Mongolian Electric Power Company signed an agreement to form a joint venture to build, install and operate a 110MW wind power plant using FloWind's advanced wind turbine technology.

FloWind offers two advanced utility-class wind turbines, developed in collaboration with the U.S. Department of Energy's national laboratories. The FloWind-Inner Mongolian joint venture, valued at approximately $85 million will be a major source of reliable, pollution free power for the consumers of the Inner Mongolian Electric Power Company.

JOINT VENTURE FOR WIND POWER PLANT
Zhejiang Wind Energy Company **Flowind**

FloWind Corporation and the Zhejiang Wind Energy signed a Letter of Intent to form a joint venture to build, install and operate a 30MW wind power plant using FloWind's advanced wind turbine technology.

FloWind offers two advanced utility-class wind turbines, developed in collaboration with the U. S. Department of Energy's national laboratories. The FloWind-Zhejiang Wind Energy joint venture, valued at approximately U.S. $29.5 million, will be a major source of reliable, pollution-free power for the consumers of the Zhejiang Power Electric Company.

JOINT VENTURE AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCIEC), one of the largest power development and equipment companies in China signed a joint venture agreement to develop five contiguous hydropower sites on the Upper Ming River in the Fujian

Province of China. The "Fujian Nan Ping Hydro Power Company," a 39 MW project is now under construction and scheduled to come on line by the end of this year.

New World is today contracting to purchase a forty (40) percent interest in this first Fujian hydroelectric project. New World and CCJEC will be negotiating for their relative ownership interests in the remaining four projects over the next several months.

New World and CCJEC plan to develop renewable power projects throughout China and the Pacific Rim. They have previously executed a joint venture agreement to develop two wind farms, in Shenzhen and Nanao Island, Guangdong Province, respectively, and have also executed a letter of intent calling for the manufacture, assembly and distribution of wind and solar power products. The total value of the project is estimated to be US $30 million.

SUSTAINABLE DEVELOPMENT AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCIEC), one of the largest power development and equipment companies in China have agreed to an annual series of official visits between Chinese and American officials in order to educate leaders on the advantages of renewable resources as solutions to electric power needs, and to inaugurate a series of academic exchanges between universities in the United States, including Georgetown University, where New World has begun the process of sponsoring a course on renewable energy applications, and universities in China selected by CCJEC.

As a first step in the implementation of this agreement, New World, CCJEC and the Government of the State of Hawaii have invited a delegation from Fujian Province, headed by Vice Governor Tong Wan Heng, to visit hydroelectric, wind, and solar technology sites in the United States, this Spring.

LETTER OF INTENT
Inner Mongolia Electric
Power Company **Zond Energy Systems**

Zond Energy Systems, Inc. and the Inner Mongolia Electric Power Company (IMEPA)signed a Letter of Intent to build a 100 MW wind power plant using 182 of Zond's Z40 wind turbine generators. Zond is a leading company in wind turbine manufacturing and wind power project development, construction and operation. IMEPA is a large electric utility serving the Chinese autonomous region of Inner Mongolia. The total project value is estimated to be US $110 million.

LETTER OF INTENT
Zhejiang Wind Power Development Company — **Zond Energy Systems, Inc.**

Zond Energy Systems, Inc. and Zhejiang Wind Power Development Company (ZWE)signed a Letter of Intent to purchase 128 of Zonds Z40'm wind turbine generators to be used in a 70MW wind power plant to be constructed by ZWE on Dachen Island. The Zond-Z40 is a 550kW, 40 meter rotor advanced wind turbine. Zond, is a leading company in wind turbine manufacturing and wind power project development, construction and operation. ZWE is a subsidiary of Zhejiang Provincial Electric Power Company, a large electric utility serving the Chinese province of Zhejiang. The total value of the project is estimated to be US $51 million.

LETTER OF INTENT
Guangdong Nanao Zhen Neng Wind Power Development — **Zond Energy Systems, Inc.**

Zond Energy Systems, Inc. and Guangdong Nanao Zhen Neng Wind Power Development Company signed a Letter of Intent to purchase 54 of Zond's Z-40 wind turbine generators for use in a 30 MW wind power plant to be constructed on Nanao Island. The Zond Z-40 is a 550 KW, 40 meter rotor advanced wind turbine. The total value of the project is estimated to be US $21 million.

JOINT VENTURE AGREEMENT
China Chang Jiang Energy Corporation — **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCJEC) signed a joint venture agreement to develop five contiguous hydropower sites on the Upper Ming River in the Fujian Province of China. The "Fujian Nan Ping Hydro Power Company," a 39 MW project is now under construction and scheduled to come on line by the end of this year.

New World is today contracting to purchase a forty (40) percent interest in this first Fujian hydroelectric power. New World and CCJEC will be negotiating for their relative ownership interests in the remaining four projects over the next several months.

New World and CCJEC plan to develop renewable power projects throughout China and the Pacific Rim. They have previously executed a joint venture agreement to develop two wind farms, in Shenzhen and Nanao Island, Guangdong Province, respectively and have also executed a letter of intent calling for the manufacture, assembly and distribution of wind and solar power products. The total value of the project is estimated to be US $ 30 million.

34

SUSTAINABLE DEVELOPMENT AGREEMENT
China Chang Jiang Energy Corporation **New World Power**

The New World Power Corporation and the China Chang Jiang Energy Corporation (CCJEC) have agreed to an annual series of official visits between Chinese and American officials in order to educate leaders on the advantages of renewable resources as solutions to electric power needs, and to inaugurate a series of academic exchanges between universities in the United States, including Georgetown University, where New World has begun the process of sponsoring a course on renewable energy applications, and universities in China selected by CCJEC.

As a first step in the implementation of this agreement, New World, CCJEC and the Government of the State of Hawaii have invited a delegation from Fujian Province, headed by Vice Governor Tong Wan Heng, to visit hydroelectric, wind, and solar technology sites in the United States, this Spring.

COMMERCIAL SALES AGREEMENT
Yangzi Petrochemical Company **Honeywell**

Honeywell, Inc. and Yangzi Petrochemical Company signed a U.S. $3.8 million sales contract.

Under this contract, Sinopec Honeywell (Tianjin) Ltd., is to replace the existing Foxboro analog instrumentation with Honeywell State-of-the-art TDC 3000x Distributed Control system (DCS) as Yangzi expands its Purified Terephathalic Acid (PTA) production capacity from 450 kton/y to 600 kton/y. The DCS will provide tighter control of the plant to reduce process upsets and product variation, both of which will result in reduced energy consumption. Also included in the contract is a safety management system to safeguard the environment and to provide a safer work environment for plant personnel.

LETTER OF INTENT
Yueyang General Petrochemical Works **Honeywell**

Honeywell, Inc. and the Yueyang General Petrochemical Works signed a Letter of Intent to replace the existing Fuji distributed control system, installed in Yueyang SBS & BUT Plants, with state-of-the-art TDC 3000x technology.

The initial phase of the contract is U.S. $400,000 and represents the first of a series of projects to modernize Yueyang's production facilities.

PURCHASE CONTRACT
Daqing Petroleum Administrative Bureau **Halliburton International, Inc.**

Halliburton and the Far-East International Trading Corporation of the Daqing Petroleum

Administrative Bureau, signed a contract to establish a perforating charge API test facility. The perforating charge API test facility will have significant impact on the China National Petroleum Corporation (CNPC) by enhancing oil recovery in their oil fields throughout China through the use of Halliburton's charges. The total value of the contract is estimated to be $638,000.

JOINT VENTURE AND TECHNOLOGY TRANSFER AGREEMENT
Liaohe Petroleum Exploration Bureau **Halliburton International, Inc.**

Halliburton and Liaohe Petroleum Exploration Bureau signed a contract to form a Chinese-American Joint Venture Company to manufacture and market flow measurement equipment. The Joint Venture will produce high technology turbine flow meter and flow measurement products for oil field service application in the People's Republic of China and throughout the world. The total amount of capital investment by the joint venture parties will be U.S. $850,000 with generated revenue projections of up to $40 million over the next ten years.

MEMORANDUM OF UNDERSTANDING
Guizhou Power Investment Company
Huamei Coal Water Mixture Technology Center **Ahlstrom Development Corp.**

Huamei Coal Water Mixture Technology Center and Ahlstrom Development Corporation signed a Memorandum of Understanding to build three power plants in Chinese coal mines introducing Ahlstrom's Circulating Fluidized Bed Combustion technology to produce inexpensive, environmentally clean electric power from waste coal and coal washery rejects. These projects may use dry cooling technology to save water and will demonstrate United States Clean Coal Technology which could produce up to 20,000 MW of electric power from coal mining waste using advanced environmental controls to limit acid rain and other emissions. The total cost of these projects will be approximately U.S. $500 million with U.S. $100 to 200 million provided by United States lenders and investors.

Guizhou Power Investment Company and Ahlstrom Development Corporation also signed a Memorandum of Understanding to building two 200 MW power plants in Zunyi, Guizhou Province using Ahlstrom Pyropower's Circulating Fluidized Bed Combustion technology to produce clean electric power from high sulphur coal. This project will be the largest circulating fluidized bed power plants in Asia and will use advanced environmental controls to remove over 95% of the SO2 emissions that cause acid rain simultaneously lowering other atmospheric pollution. This project will be built in two phases at a total cost of approximately U.S. $280 million with approximately U.S. $50 million to be supplied by U.S. lenders and investors.

MEMORANDUM OF UNDERSTANDING
Beijing Min Metals **Carbon Fuels Corporation**

Beijing Min Metals and China Nuclear Industry Rem Co. and Carbon Fuels Corporation signed a

Memorandum of Understanding to establish a joint venture for the exclusive development of the Charfuel coal refining process in the People's Republic of China.

Beijing MinMetals is a large industrial trading company in China. The joint venture will own and operate its own refineries and cogeneration facilities and will license third parties to practice the Carbon Fuels' Charfuel process in China. The Chinese Academy of Sciences, the Government of Shanxi Province and the Municipality of Taiyuan, Shanxi will also join in the venture.

The venture intends to develop engineering design criteria using Chinese coal and to construct a showcase plant near Taiyuan Chanxi Provice. The plant will employ 150 people to operate and maintain the facility and construction is expected to commence in 1997 if a joint venture contract is signed by April 1995. The cost of the showcase project is expected to be about $300 million.

COOPERATION AGREEMENT
North China Power Group **Entergy**

The North China Power Group and Entergy Power Group signed a Long Term Friendly Cooperation Agreement to cooperate in international projects and develop strategic plans on domestic and international business. Specifically, the agreement calls for Entergy to assist North China Power Group in establishing management and control systems and in developing personnel and technical training. Both parties will begin exchanging managerial experiences in the power industry and science and technology achievements and information.

LETTER OF INTENT
Sichuan Electric Power Company **Energy Initiatives, Intesol Int.**

Energy Initiatives (a subsidiary of General Public Utilities) and InTeSol International, Ltd. and the Sichuan Electric Power Company signed a Letter of Intent to establish a joint venture to construct, own and operate a 2x600MW coal-fired power plant in Sichuan Province. The power plant is an expansion of an existing power plant site and will provide over 6 billion kilowatt-hours of electricity per year to the Sichuan Province power grid. The proposed power plant is estimated to require a capital investment of greater than U.S. $1.2 billion with the United States share of financing estimated to be greater than U.S. $1 billion. The power plant will provide significant air pollution benefits due to displacement of local small boilers, use of low sulfur coal, and use of more effective particulate emission controls. The power plant is scheduled to begin operation in the late 1990's.

LETTER OF INTENT
Jilin Province Energy and Transportation Company
Jilin Province Power Company **Energy Initiatives, Intesol Int.**

Energy Initiatives (a subsidiary of General Public Utilities), InTeSol International, Ltd., Jilin

A-4
37

Province Energy and Transportation Company, and the Jilin Province Power Company signed a Letter of Intent to establish a joint venture to construct, own and operate a 2x300 MW coal-fired power plant in Jilin Province. The proposed project will expand on an existing power plant site and will provide over 3 billion kilowatt-hours of electricity per year to the port city's development zone. The proposed power plant is estimated to require a capital investment of almost U.S. $300 million with the U.S. share of financing estimated to be nearly U.S. $150 million. The power plant will provide significant air pollution benefits due to displacement of small local boilers, use of low sulfur coal, and use of more effective particulate emission controls. The power plant is scheduled to start construction in early 1996 and begin operation in 1999.

SALES CONTRACT

Qinshan Nuclear Power Station **Westinghouse Electric Corp.**

The China Nuclear Energy Industry Corporation, on behalf of the Harbin Turbine Works and Westinghouse Electric Corporation signed a contract for components of two 600 MW turbine generator units for the conventional island of Phase II of the Qinshan Nuclear Power Station. The contract is for joint design of the turbine and for major components including rotating parts, valves and control systems from the United States. The Qinshan Nuclear Power Station is China's first nuclear power plant. The total value of the contract is estimated to be US $24 million.

JOINT STATEMENT OF INTENT

China National Environmental Protection Agency **Energy Resources International**

Energy Resources International, Inc. and the Foreign Economic Cooperation Office of the National Environmental Protection Agency of the People's Republic of China signed a Joint Statement of Intent to establish a long-term cooperation program aimed at controlling emissions from existing and future energy facilities in China. The proposed program will be conducted in two steps. First ERI and FECO will conduct an Environmental Study Tour of China to introduce foreign companies to the environmental problems facing China, actions being taken to address the problems, and methods of undertake joint business partnerships to support the actions. In the second step, ERI and FECO will work toward the creation of partnerships to carry out the programs and projects for the control and prevention of pollution from energy facilities in China. It is the intent of both parties that the Joint Statement of Intent lead to a venture that will create significant environmental and economic benefits.

ASSOCIATION AGREEMENT

China International Engineering Consulting Corp. **CH2M Hill**

CH2M-Hill International Ltd. (USA), and CIECC (PRC) signed an Association Agreement to provide environmental consulting services in China and other countries. This association of these two leading firms will help to protect and improve the quality of the environment by their activities in the area of pollution prevention, renewable resources and essential infrastructure.

Advanced technology will be utilized on projects and many opportunities for training and technical exchange will result. Contracts of up to U.S. $20 million (equating to over U.S. $200 million of construction project) are expected in the first two years. Opportunities will be opened for the export of United States technology, pollution control equipment and operating services. Significant opportunities for export of U.S. technologies, pollution control equipment and operating services will result from this association.

A-U
39

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY AND EMPOWERMENT

AUGUST 1995

40

LETTER OF AGREEMENT
SUNCORPS **SPIRE and AES**

Letter of Agreement to build a PV manufacturing facility adjacent to Alexandra township. This facility will produce 500 kw/year; electrify 10,000 homes, 600 clinics and 1,000 schools. This is considered a fast track pilot project. This program will bring 200 jobs associated with manufacturing, sales, maintenance, and installation of the products made at this facility. 15-30 jobs in the United States are needed to support the South Africa partner.

MEMORANDUM OF UNDERSTANDING TO STUDY OF COAL BED METHANE POTENTIAL ON LEBOWA MINERALS TRUST LANDS
Lebowa Minerals Trust and RED **Advanced Resources International, Inc.**

Letter of Intent to evaluate potential market for coal bed methane supply and utilization. In addition, the project is designed to create utility partnerships and train people in field operations, power plant operations and other areas of management. Fifty (50) engineers would be identified and trained in technical, managerial, operations, energy research and environmental technologies. A fast track project. Once geological appraisal work is complete, hopefully South Africa will pursue development and utilization of natural gas which is estimated to be worth $50 million. U.S. companies would be the primary recipients of the materials and supply contracts. This project would create 200 jobs.

MEMORANDUM OF UNDERSTANDING
Township of Guguletu **Sandia National Laboratory**
African Electrification Foundation
Historically Black Colleges and Universities

Memorandum of Understanding to design a to bring an enterprise zone to the Township of Guguletu. Sandia Labs will draft a plant to bring an enterprise zone to the Township of Guguletu, in the Western Cape. This is an effort to implement the Township's strategic plan to develop an economic infrastructure. This plan will incorporate the idea of creating an enterprise zone with vocational training that will draw investors and create approximately 1,000 new jobs over time. The design will combine facility and manpower requirements that will form the basis of a Guguletu vocational training program. Types of industry considered for this zone include brick manufacturing, textiles, electronic controls, and lumber mill work.

MEMORANDUM OF UNDERSTANDING
Renewable Energy for Southern Africa **US Agency for International Development**
US Department of Energy

Memorandum of Understanding to promote renewable energy for rural housing in South Africa. This pilot program will electrify 2,500 rural homes through use of photovoltaic systems. It will

introduce the use of alternate energy sources for home heating, cooking, and other purposes. In addition, the pilot system will evaluate financing, installation, and support mechanisms. This program will lead to a project that will benefit approximately 10 million rural citizens over the next 20 years.

Potential access to billion dollar market for rural domestic business electrification.

MEMORANDUM OF UNDERSTANDING
ESKOM **Electric Power Research Institute**

Center for Essential Community Services. The primary role of the Center for Essential Community Services will be to act as a technology transfer mechanism for moving EPRI technology through ESKOM into Sub-Saharan Africa. The Centre's work will also include project management, closely coordinated with government objectives, initially focused on water purification, health care and the role of electricity in these efforts. EPRI and ESKOM are working to align its mission with the South African Government's Reconstruction and Development Program which focuses on water and electricity supplies and health care issues.

The Center will function as a satellite of EPRI's Customer Systems Group Community Environmental Center in St. Louis, Missouri, and will become a part EPRI's center and office network. Official ties and support from EPRI will include technology transfer, shared projects and project management.

The Community Training Center is expected to serve between 5,000 to 50,000 people at each community impacted growing to assist 500,000 people within five years. Impact on jobs could ultimately range up to several thousand.

The host site for the CECS, most likely a major South African University, will be selected by the request for proposal process, now underway. Selection criteria include technical capabilities, community presence, ties to key South African industries and resource contributions. The site selection is expected to be made this fall and the Center to open thereafter.

LETTER OF INTENT
Group for Environmental Monitoring **International Institute for Energy Conservation**

Letter of Intent for a needs assessment for U.S. efficient transport industry in South Africa. IIEC will be funded by DOE to perform a joint study with GEM to determine opportunities in South Africa for electric vehicles and manufacturing component parts as well as opportunities for production of ethanol from biomass.

The project will identify areas of opportunities for U.S. efficient and sustainable transportation technologies. If the needs assessment indicates opportunities for electric vehicles or production of ethanol, job creation will be significant.

A-4
42

CONTRACT FOR BUILDING MANAGEMENT SYSTEMS INSTALLATION
ESKOM **Johnson Controls**

Contract for energy management and other services. Johnson Controls will contract with ESKOM to install energy efficient building management systems, fire detection access controls and audio evacuation systems at the Technical Research Institute. Johnson Controls will also train operators to maintain the systems once installed and operational.

This project will showcase management control systems that are energy efficient. It will provide an opportunity to learn about the economic benefits of energy efficiency.

Products will be made and shipped from the United States. This project will create 4-5 jobs in South Africa.

MEMORANDUM OF AGREEMENT
South Africa National Electricity Regulator **Department of Energy**

Agreement to conduct two regulatory workshop. One workshop will be held in the United States and the other in the Republic of South Africa. This Agreement discusses the intent to conduct two (2) workshops on regulatory system to facilitate investment in electric power systems.

This program will assist South Africa in the development of a regulatory system necessary to facilitate investment in the electric power sector and other energy sectors.

LETTER OF UNDERSTANDING
Manong Construction, Mouke Industries,
Luthuli Lewis and Associates **PEER Consultants**
Advanced Panel Manufacturers

Community Development Project (Kimberley). This project is designed to evaluate and test holistic community development assumptions and should result in the development of an approach to community planning and development which can be replicated in other communities.

This project will utilize low-cost, energy efficient housing piloted by the US Department of Energy, and bring electrification to urban and rural areas through the use of conventional and alternative renewable energy sources, energy efficient and high combustion appliances and where applicable, low smoke fuels. The community design includes schools, police station, health clinics and small business centers.

This project will involve the community in the design of the community , and will offer training and skill building opportunities. This project fits into the goals of Reconstruction Development Programme of South Africa.

A-4
43

JOINT STATEMENT OF INTENT

The Provincial Government of Northern Cape **The Department of Energy**

Joint Statement of Intent on Renewable Technologies. This Joint Statement of Intent would create a cooperative relationship to promote increased economic interaction, facilitate technology transfer and accelerate commercialization of renewable energy based systems and products.

This agreement will help foster relationships between the Department of Energy and the provincial government of the Northern Cape. This agreement will help:

- increase the level of energy policy expertise,
- encourage education and investment though technical personnel exchanges and seminars,
- promote private investment in energy projects, and
- educate the rural communities in the use of alternate energy sources for electrification.

This agreement will also facilitate closer government-to-government coordination on energy policy.

Document Number 46

TO ES

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Vello A. Kuuskraa
President
Advanced Resources International
1110 North Glebe Road, Suite 600
Arlington, VA 22201
(703) 528-8420 office
(703) 528-0439 fax
oil and gas

Mr. Ed Romero
Chairman
Advanced Sciences, Inc.
6739 Academy Road, NE
Albuquerque, NM 87109
(505) 828-0959 office
(505) 828-0173 fax
environment

Mr. Ken Woodcock
Senior Vice President
AES Corporation
1001 North 19th Street, Suite 2000
Arlington, VA 22209
(703) 522-1315 office
(703) 528-4510 fax
Electricity

Mr. John Butler
Vice President
African Electrification Foundation
5120 West Goldleaf Circle, Suite 280
Los Angeles, CA 90056
(213)298-1040 office
(213)298-4580 fax
electricity

Mr. C. Payne Lucas
Africare
440 R Street, NW
Washington, DC 20001
(202) 462-3614 office
(202) 387-1034
policy

Ms. Cheryl Alexander
CEO
Alexander Companies
3205 Casco Circle
Wayzata, MN 55391
(612) 471-0121 office
(612) 471-7434 fax
capacity buiilding

Mr. George Edwards
Vice President of International Negotiations
Amoco Exploration & Production Co.
P.O. Box 3092, Room 21188
Houston, TX 77253-2696
(713) 366-4543 office
(713) 366-5717 fax
oil and gas

Mr. Mark Sawyer
Vice President
ARCO International Oil and Gas
New Business Ventures
2300 West Plano Parkway
Plano, TX 75075
(214) 509-6684 office
(214) 509-3090 fax
oil & gas

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. D. Michael Clark
President
Atlantic-Pacific Technologies, Inc.
44853 Fremont Boulevard
Fremont, CA 94538
(510) 651-9995 office
(510) 651-9841 fax
renewables

Dr. Larry T. Papay
Senior Vice President
Bechtel Group, Inc.
50 Beale Street
Mail Stop 50/17/B36
San Francisco, CA 94105-1895
(415) 768-0275 office
(415) 768-0503 fax
energy efficiency

Mr. Ed Badolato
Bogart Environmental Services
2202 Kings Garden Way
Falls Church, VA 22043
(703) 821-7725 office
(703) 821-7789 fax
environment

Mr. Cordell Reed
Senior Vice President
Commonwealth Edison
1 First National Plaza, 10 Dearborn - 37th Floor
Chicago, IL 60603
(312) 394-3121 office
(312) 394-3110 fax
electricity

Mr. Jerome Davis
President
Cummins Power Generation
500 Jackson Street
Mail Code 60125, P.O. Box 3005
Columbus, IN 47202-3005
(812) 377-3743 office
(812) 377-4453 fax
renewables

Deputy Assistant Secretary Regina Brown
Bureau for African Affairs
Department of State
Room 6234-A
Washington, DC 20520
(202) 647-1818 office
(202) 647-6301 fax
Binational Commission

Mr. Jude Kearney
Deputy Assistant Secretary for Service Industries and Finance
Department of Commerce
Room 1128
14th Street & Constitution Avenue, NW
Washington, DC 20230
(202) 482-5261 office
(202) 482-4775 fax
Binational Commission

Mr. Rodney Webb
Senior Vice President
Destec Energy
2500 Citywest Blvd, Suite 150
Houston, TX 77042
(713) 735-4229 office
(713) 735-4059 fax
electricity

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Michael Kammerer
President
Dresser Valve & Control
10077 Grogans Mill Road, Suite 500
The Woodlands, TX 77380
(713) 367-5741 office
(713) 363-8244 fax
oil and gas

Ms. Mary T. Boyd
Vice President, Corporate Services
Duke Engineering & Services
230 South Tryon Street, Suite 400
Charlotte, NC 28202
(704) 382-8024 office
(704) 382-8389 fax
electricity

Mr. Jan Hartke
President
Earthkind International
2100 L Street, NW, Suite 500
Washington, DC 20037
(202) 778-6149 office
(202) 778-6134 fax
environment

Mr. Robert Eggleston
President and CEO
EFH Coal Company
89 Miller Street
West North End Station
Wilkes-Barre, PA 18705
(717) 823-7664 office
(717) 829-4515 fax
electricity

Ms. Nancy Bacon
Senior Vice President
Energy Conversion Devices, Inc
1675 West Maple Road
Troy, MI 48084
(810) 280-1900 office
(810) 280-1456 fax
renewables

Mr. Richard Guy
Vice President
Energy Initiatives, Inc.
1 Upper Pond Road
Parsippany, NJ 07054
(201) 263-6953 office
(201) 263-6977 fax
electricity

Mr. Terence Thorn
Senior Vice President
Government Affairs & Public Policy
Enron Corporation
P.O. Box 1188
1400 Smith Street
Houston, TX 77251-1188
(713) 853-6161 office
(713) 646-4831 fax
oil and gas

Mr. Dan Dudek
Senior Economist
Environmental Defense Fund
257 Park Avenue South
New York, NY 10010
(212) 505-2100 office
(212) 505-2375 fax
environment

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Clark Gellings
Vice President
EPRI
3412 Hillview Avenue
Palo Alto, CA 94303
(415) 865-2000
(415) 855-8501
electricity

Dr. Nori Hingorani
Vice President
EPRI
26480 Weston Drive
Los Altos Hills, CA 94022
(415) 941-4309 office
(415) 941-5240 fax
electricity

The Honorable Julie Belaga
Member of the Board
Export-Import Bank of the United States
811 Vermont Avenue, NW
Washington, DC 20571
(202) 565-3540 office
(202) 565-3548 fax
Binational Commission

The Honorable James Hoecker
Commissioner
Federal Energy Regulatory Commission
825 North Capital Street, NE
Room 9300
Washington, D.C. 20426
(202) 208-0383 office
(202) 208-0151 fax
electricity

Dr. Frederick S. Humphries
President
Florida A&M University
Administration Center, Room 301
Tallahassee, FL 32307
(904) 599-3225 office
(904) 561-2152 fax
research & development

Mr. John Bradburne
Vice President
Fluor Daniel
800 Connecticut Avenue, NW, Suite 600
Washington, DC 20006
(202) 955-9314 office
(202) 833-1630 fax

Mr. John Coors
President
Golden Photon, Inc.
4545 McIntyre Street
Golden, CO 80403
(303) 271-7177 office
(303) 271-7410 fax
renewables

Mr. Mannie Jackson
Senior Vice President, International Programs
Honeywell, Inc.
P.O. Box 524
Minneapolis, MN 55440-0524
(202) 857-9801 office
(202) 857-9858 fax
energy efficiency

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Karl Butler
President
ICC Energy Corporation
311 North Market Street
Dallas, TX 75202
(214) 744-2204 office
(214) 744-2206 fax
oil & gas

The Honorable Emmitt George
Commissioner
Iowa Public Utilities Board
Lucas State Office Building, 5th Floor
Des Moines, IA 50319
(515) 281-5325 office
(515) 281-8821 fax
policy

Mr. David Benhke
Managing Director
J.P. Morgan & Company
60 Wall Street
New York City, NY 10260
(212) 648-7675 office
(212) 648-5335 fax
finance

Dr. Mae Jemison
Executive Director
Jemison Group, Inc.
P.O. Box 591455
Houston, TX 77259-1455
(713) 486-7918 office
(713) 486-7522 fax
policy

Mr. Tom Gannon
Vice President
Johnson Controls
507 East Michigan Street
Milwaukee, WI 53202
(414) 272-6424 office
(414) 228-2077 fax
energy efficiency

Mr. Clarence L. James, Jr.
President and CEO
Keefe Company (The)
444 North Capitol Street, NW
Suite 517A
Washington, DC 20001
(202) 638-7030 office
(202) 638-6784 fax
finance

Mr. Harold J. "Hank" Keohane
Partner
Keohane & Keegan
21 Custom House Street
Boston, MA 02110
(617) 951-1400 office
(617) 951-1354 fax
electricity

Mr. Michael Hodge
Marketing
L.A.S. Energy Corporation of Florida
1265 South Semoran Blvd.
Suite 1250, Building #4
Winter Park, FL 32792-5506
(407) 678-2600 office
(407) 678-3099 fax
oil and gas

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Ernest L. Holloway
President
Langston University
Langston, OK 73050
(405) 466-3388 office
(405) 466-3461 fax
capacity building

Mr. Musheer Robinson
Senior Vice President
National CSG Public Sector - Practice Leader
Marsh & McLennan
10 South Broadway
St. Louis, MO 63102-1719
(314) 342-2653
(314) 241-0751
finance

Mr. Frank Russell
Global Power Strategic
Advisory Services
Merrill Lynch and Company
250 Vesey Street, 27th floor
New York City, NY 10281-1327
(212) 449-9793 office
(212) 449-8636 fax
finance

Ms. Kathy O'Reilly
Molten Metal Technology
1615 L Street, N.W., Suite 540
Washington, DC 20036
(202) 835-8940 office
(202) 835-8938 fax
electricity

Dr. Walter Massey
President
Morehouse College
830 Westview Drive, SW
Atlanta, GA 30314
(404) 215-2645 office
(404) 659-6536 fax
research & development

Mr. Granville "Pete" Smith
South African Program Director
National Rural Electric Cooperative
Association
1800 Massachusetts Avenue, NW
Washington, DC 20036-1883
(202) 857-9686 office
(202) 857-4863 fax
renewables

Dr. David Reichle
AssociateDirector
Oak Ridge National Laboratory
P.O. Box 2008
Oak Ridge, TN 37831
(615) 576-2900 office
(615) 241-2967 fax
research & development

Mr. Dana Marshall
Senior Advisor for International Economic
Affairs
Office of the Vice President
Old Executive Office Building
Washington, DC 20501
(202) 395-6013 office
(202) 395-6042 fax
Binational Commmission

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Ms. Jane Wales
Associate Director for National Security
and International Affairs
Office of Science and Technology Policy
Old Executive Office Building, Room 494
Washington, DC 20500
(202) 456-2894 office
(202) 456-6028 fax
Binational Commission

Mr. Joel Bennett
President
Parsons Engineering Science, Inc.
100 West Walnut Street
Pasadena, CA 99124
(818) 440-4412 office
(818) 440-6195 fax
environment

Dr. Lilia Abron
President
PEER Consultants
12300 Twinbrook Parkway,
Suite 410
Rockville, MD 20852
(301) 816-0700 office
(301) 816-9291 fax
environment

Mr. Jerome Foster
President and CEO
Pentech Energy
1250 24th Street, NW, Suite 350
Washington, DC 20037
(202)467-2797 office
(202)467-2796 fax
electricity

Mr. Charles Condy
President and CEO
Proven Alternatives, Inc.
601 California Street, #2200
San Francisco, CA 94108
(415) 781-2001 office
(415) 781-0552 fax
energy efficiency

Mr. Wendell F. Holland
Esquire of Counsel
Reed, Smith, Shaw, and McClay
2500 One Liberty Place
1650 Market Street
Philadelphia, PA 19103-7301
(215) 851-8100 office
(215) 851-1420 fax
electricity

Ambassador Leonard Spearman
Chairman of the Board
Renewable Energy for African Development
122 Street, NW, 4th floor
Washington, DC 20001-2109
(202) 383-2557 office
(202) 383-2555 fax
renewables

Ms. Jan Schori
General Manager
Sacremento Municipal Utility District
6201 S Street
Sacremento, CA 95817
(916) 732-5325 office
(916) 732-6562 fax
electricity

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Lindley DeGarmo
Director
Salomon Brothers
7 World Trade Center, 30th floor
New York City, NY 10048
(212) 783-5879 office
(212) 783-4164 fax
finance

Mr. George Avery
Shaw, Pittman, Potts, & Trowbridge
2300 N Street, NW
Washington, DC 20037-1128
(202) 663-8856 office
(202) 663-8007 fax
finance

Ms. Sharon Moore
Vice President - Business Development
Sithe Energies, Inc.
450 Lexington Avenue
New York, NY 10017
(212) 450-7345 office
(212) 450-9005 fax
electricity

Mr. John J. McAtee, Jr.
Vice Chairman
Smith Barney, Inc.
388 Greenwich Street, 34th floor
New York City, NY 10013-0060
(212) 816-6000 office
(212) 816-7029 fax
finance

Mr. Roger G. Little
President and CEO
Spire Corporation
One Patriots Park
Bedford, MA 01730-2396
(617) 275-6000 office
(617) 275-7470 fax
renewables

Mr. Paul Koeppe
President
Superconductivity, Inc.
2114 Eagle Drive
Middleton, WI 53582
(608) 828-9131 office
(608) 831-5793 fax
electricity

Mr. Larry Byrne
Assistant Administrator
Bureau for Management
U.S. Agency for International Development
320 21st Street, NW
Washington, DC 20523
(202) 647-8646 office
(202) 736-4147 fax
Binational Commission

Mr. Wilbur Thomas
Bureau for African Affairs
U.S. Agency for International Development
320 21st Street, NW
Washington, DC 20523
(202) 647-4344 office
(202) 736-4147 fax
Binational Commission

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Kneeland Youngblood
Director - Member of the Board
U.S. Enrichment Corporation
6903 Rockledge Drive
Betheda, MD 20817
(301) 564-3448 office
(301) 564-3202 fax
oil & gas

Ms. Tina Poitevien
Partner
Washington, Hackett, Poitevien & Co.
1500 Walnut Street, Suite 303
Philadelphia, PA 19102
(215) 772-1130 office
(215) 772-1416 fax
finance

Ms. Carol Earls-Franklin
Manager EEO/Employment
Western Resources
818 Kansas Avenue, P.O. Box 8890
Topeka, KS 66601
(913) 575-6511 office
(913) 575-6523 fax
capacity building/electricity

Mr. Kenneth C. Karas
President and CEO
Zond Systems, Inc.
1300 Jameson Road, P.O. Box 1910
Tehachapi, CA 93581
(805) 822-6835 office
(805) 822-7880 fax
renewables

Document Number 47

TO ES

MASTER SCHEDULE

Friday, August 18

12:30-
1:30pm — Delegation Meeting and Briefing
SITE: Signature Aviation, Dulles Airport

2:00pm — Depart Washington, D.C. enroute Cape Town, South Africa
NOTE: Pod meetings on plane

Saturday, August 19 -- Cape Town

3:30pm — Arrive Cape Town, South Africa
MET BY: Minister of Mineral and Energy Affairs Pik Botha
Ambassador Princeton Lyman
Steven Fried
NOTE: Arrival statement to media

5:30-
7:30pm — **In-Country Briefing and Welcome reception hosted by Ambassador Lyman**
SITE: Ambassador's Residence
ATTENDEES: Official Delegation
ATTIRE: Casual

Sunday, August 20 -- Cape Town

7:00-
9:00am — **Delegation breakfast**
SITE: Cape Sun Hotel, Tastevin Restaurant, 1st floor
NOTE: Briefing at 8:30am

8:30-
9:30am — **Secretarial Staff meeting**
SITE: Secretary's Work Room

9:00am-
12:00pm — **Oil and Gas Pod Geological site visit**
NOTE: Charles Brown to handle logistics

11:00am-
12:45pm — **Visit to Renewable Energy for African Development training site**
SITE: Peninsular Technicon
NOTES: Reception and light lunch at conclusion of event
Casual attire
ATTENDEES: Secretary plus Renewables pod and interested Delegates

Sunday, August 20, Cont. -- Cape Town

1:00- 3:00pm **Visit to Guguletu Township**
SITE: Guguletu
NOTES: Computer and Book donation at school in Guguletu
ATTIRE: Casual
ATTENDEES: Secretary plus interested Delegates

5:00-
6:00pm **Secretarial Staff Meeting**
SITE: Secretary's Work Room

Monday, August 21 -- Cape Town

7:00-
8:30am **Secretarial Staff Meeting**
SITE: Secretary's Work Room

7:30-
8:30am **Delegation Breakfast and Meeting**
SITE: Cape Sun Hotel, Tastevin Restaurant, 1st floor

9:00-
10:00am **Bilateral meeting with Minister of Mineral and Energy Affairs Botha**
SITE: Waalburg Conference Center, 6th floor conference room
ATTENDEES: Secretary, Ambassador, notetaker plus 22

10:00-
10:30am **Media Availability**
SITE: Waalburg Conference Center, 6th floor conference room

9:30am-
1:30pm **Electricity Pod site visit to electrification project**

10:30-
11:30am **Efficiency Pod meeting with Dick Dutkiewicz**
SITE: Stellenbosch Room, 2nd floor

12:00-
1:30pm **Business Delegation Lunch with the Organization for Economic Development of the Western Cape (WESGRO)**
SITE: Cape Sun Hotel, VOC South, 3rd floor
NOTE: Mark Chupka to handle event

2:00-
4:00pm **Roundtable Meeting with Parliament Energy Committee**
SITE: Old Assembly Chamber
ATTENDEES: Entire Delegation, Ambassador plus 17 at the table

Monday, August 21, Cont. -- Cape Town

5:00-
6:00pm **Bilateral Meeting with Deputy President de Klerk**
SITE: Deputy President's Office
ATTENDEES: Secretary, Ambassador, notetaker plus 12

5:30-
6:00pm **Press briefing**
SITE: Cape Sun Hotel, Constansia room, 2nd floor

7:00-
8:30pm **Welcome cocktail reception hosted by Minister Botha**
SITE: Groot Constantia Estate
NOTE: Secretary O'Leary arriving at 7:30pm
ATTIRE: Business
ATTENDEES: Entire Delegation

9:00-
9:30pm **Delegation Meeting**
SITE: Cape Sun Hotel, VOC North, 3rd floor

10:00pm **DOE Trip Team meeting**
SITE: Staff room

Tuesday, August 22 -- Cape Town and Johannesburg

7:00am Charter plane departs enroute Johannesburg

7:00am Other Delegates depart enroute Johannesburg via commercial flight

9:00am Charter plane arrives Johannesburg Airport

10:00-
10:30am **Factory Ribbon Cutting and Tour of Photovoltaic Manufacturing Facility**
SITE: 55, 12th Rd, Kew, Wynberg
PARTICIPANTS: Secretary plus Renewables pod plus interested Delegates

11:00-
11:50am **Visit to Ipolokeng School**
SITE: Soweto
NOTES: Dedicate photovoltaic electricity system
Computer and Book donation at school.
Computer to be powered by newly-installed PV panels
ATTENDEES: Secretary plus Renewable pod plus interested Delegates

Tuesday, August 22, Cont. -- Johannesburg

2:15-
3:15pm **Meeting with Deputy President Mbeki**
SITE: Sun City Palace Hotel, Royal Suite
PARTICIPANTS: Secretary O'Leary, Ambassador Lyman, Rich Rosenzweig, Johannah Dottori, Frank Stewart, Steven Fried

POD EVENTS

12:30-
2:00pm Electricity and Oil and Gas Pod meeting with Sasol

2:00-
3:30pm Efficiency Pod meeting with SAPPI paper producer

2:30-
4:30pm Electricity and Oil and Gas Pod meeting with Chamber of Mines

4:00-
4:45pm Efficiency Pod meeting with Chamber of Mines

4:30-
5:30pm Meeting with National Electricity Regulator Ian MacRae

5:00-
5:30pm Efficiency Pod meeting with Steel and Engineering Industries Federation

6:30-
7:00pm Press Briefing

Wednesday, August 23 -- Johannesburg

7:00-
8:15am **Delegation Meeting and Breakfast**
SITE: Carlton Hotel, Top of The Carlton, 30th Floor
NOTE: Briefing begins at 7:30am

7:30-
8:15am **Meeting of Summit Breakout Session Chairs and Coordinators**
SITE: Carlton Hotel, Boemfontein room, 4th floor

8:30-
10:00am **Energy Summit Opening Plenary Session**
SITE: Carlton Hotel, Cape room, function level
NOTE: Presentations by Secretary O'Leary and Minister Botha

Wednesday, August 23, Cont. -- Johannesburg

Secretary O'Leary's Agenda

10:30-
11:30am **Media Opportunities**
SITE: Carlton Hotel

2:45-
3:30pm **Meeting with Atomic Energy Corporation CEO Stumpf**
SITE: Carlton Hotel, room 905
NOTE: Minister Botha attending

3:45-
4:30pm **Meeting with Minister of Public Enterprises Sigcau**
SITE: Carlton Hotel, room 801
ATTENDEES: Secretary, Ambassador, notetaker plus 13

Delegation Agenda

10:15am-
12:45pm **Energy Summit Breakout session discussions**
Breakout sessions: Urban Household Energy Supply and Use
Rural Energy Supply and Use
Conventional Approaches to Electricity Supply
New Approaches to Energy Supply
Energy Efficiency
Gas Market Development and Liquid Fuels

12:45-
2:15pm **Energy Summit Lunch -- Topic: Capacity Building, Finance and Environment**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

2:30-
4:30pm **Energy Summit Breakout session discussions, conclusions**

Secretary and Delegation

4:45-
6:00pm **Energy Summit Reporting Session**
SITE: Carlton Hotel, Cape room, 4th floor

6:00-
6:30pm **Press Briefing**
SITE: Carlton Hotel, Boemfontein room, 4th floor

6:00-
8:00pm **Reception hosted by Secretary O'Leary**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor
ATTENDEES: Entire Delegation plus others

Thursday, August 24 – Johannesburg

7:00-
7:30am **Secretarial Staff Meeting**
SITE: Secretary's Work Room

7:00-
7:30am **Delegation breakfast and Meeting**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

8:30-
9:30am **Secretary visits Technicon of the Northern Transvaal**
ATTENDEES: Secretary O'Leary
Rich Rosenzweig
Corlis Moody
Fredrick Humphries
Corlis Moody
Johannah Dottori
Mae Jemison

8:00-
10:00am **Financing Roundtable**
SITE: Carlton Hotel, Cape room, 4th floor
PARTICIPANTS: Entire Delegation invited, 10 at table

George Avery
David Benhke
Jude Kearney
Musheer Robinson
Ken Woodcock
Julie Belaga
Clarence James
Tine Poitevein
Pete Smith
Marc Chupka

8:30-
10:00am **Delegation Visit to Ipolokeng School**
PARTICIPANTS: Interested Delegates

11:15am **Meeting and Photograph with President Mandela**
SITE: Waterkloof Airforce Base
ATTENDEES: Entire Delegation

1:00-
2:30pm **Meeting with ESKOM Chairman and CEO**
SITE: Executive Board and Dining Rooms, ESKOM Building, Megawatt Park
ATTENDEES: Secretary O'Leary
Ambassador Lyman
Commissioner Hoecker
Larry Byrne, US AID
Robert Nordhaus, DOE
Rich Rosenzweig, DOE
Denise Swink, DOE
Dana Marshall, OVP
Ken Woodcock, AES
Clark Gellings, EPRI
George Avery, Shaw Pittman

Thursday, August 24, Cont. -- Johannesburg

Meeting with Eskom Chairman and CEO

Mary Boyd, Duke Power
Paul Koeppe, Superconductivity, Inc.
David Benhke, J.P. Morgan
Nari Hingorani, EPRI
John Bradburne, Fluor Daniel
David Jhirad, DOE
George Edwards, Amoco
Karl Butler, ICC
Pete Smith, NRECA
Larry Papay, Bechtel
Charles Condy, Proven Alternatives
Hank Keohane, Keohane & Keegan
Joel Bennett, Parsons Engineering
David Reichle, Oak Ridge
Musheer Robinson, Marsh & McLellan
Nancy Bacon, ECD
Mae Jemison, Jemison Group
Terri Tran, DOE
Art Baldwin, DOE

1:00-
2:30pm **Renewables Pod meeting with Center for Scientific and Industrial Research**

3:30-
5:30pm **Roundtable: Making Energy Policy**

SITE: Carlton Hotel, Loveld Room, 2nd floor
ATTENDEES: Entire Delegation
PARTICIPANTS: Secretary O'Leary
Ambassador Lyman
Rich Rosenzweig, DOE
Bob Nordhaus, DOE
Jane Wales, OSTP
Martha Krebs, DOE
Amb. Spearman, REFAD
Clark Gellings, EPRI
Vello Kuuskraa, ARI
Wendall Holland, Reed, Smith...
Mike Kammerer, Dresser
Charles Condy, Proven Alternatives
Dan Dudek, Environmental Defense Fund
Terry Thorn, Enron
Emmet George, Iowa Public Utilities
Cheryl Alexander, Alexander Companies
Mannie Jackson, Honeywell

Thursday, August 24, Cont. -- Johannesburg

6:00-
6:30pm **Press Briefing**
SITE: Carlton Hotel, Bloemfontein room, 4th floor

7:30-
9:30pm **Dinner hosted by American Chamber of Commerce**
SITE: Carlton Hotel; Highveld room, 2nd floor
NOTE: Presentations by Secretary O'Leary and Minister Botha
ATTENDEES: Entire Delegation

Friday, August 25 -- Johannesburg

7:00am **Delegation Meeting**
SITE: Carlton Hotel, Top of the Carlton, 30th Floor

9:00-
10:00am **Bilateral Meeting with Minister of Trade and Industry Manuel**
ATTENDEES: Secretary O'Leary
Ambassador Lyman
Rich Rosenzweig, DOE
Jude Kearney, Commerce
Larry Byrne, U.S. AID
Julie Belaga, Ex-Im
Ken Woodcock, AES
Andrea Lockwood, DOE
Mannie Jackson, Honeywell
Rodney Webb, Destec
Michael Clark, Atlantic Pacific Technology
Jerome Davis, Cummins
Dr. Fred Humphries, Florida A&M
Lilia Abron, PEER Consultants
Tina Poitevien, Washington, Hackett...
Dana Marshall, OVP

10:30-
11:30am **Meeting of Energy Committee of Binational Commission**
SITE: Union Buildings, Pretoria Room 259
ATTENDEES: Entire Delegation
PARTICIPANTS: Secretary O'Leary
Julie Belaga
Larry Byrne
Jude Kearney
Regina Brown
Frank Stewart
Jane Wales
Martha Krebs
Dana Marshall

Friday, August 25, Cont. -- Johannesburg

11:30am-
12:30pm **Signing Ceremony for Bilateral Agreements and Business Deals**
SITE: Union Buildings Courtyard, Pretoria
ATTENDEES: Entire Delegation

12:30-
1:00pm **Press Conference**
SITE: Union Buildings, Pretoria Room 259

1:00-
3:00pm **Renewable pod visit to Solar Homes**

Saturday, August 26 -- Johannesburg and Kimberley

9:00am Depart Johannesburg enroute Kimberley Airport

10:00am Arrive Kimberley Airport
Met by Premier Dipico, Premier of the Orange Free State, other VIPs
NOTE: Welcome statements and cultural program

10:30am Depart enroute Kimberley Museum

10:45am Arrive Kimberley Museum

10:45-
11:15am **Coffee and Reception**

11:15am-
12:45pm **Roundtable on Provincial Issues, Energy and Empowerment**
ATTENDEES: Entire Delegation
PROGRAM: Welcome by Premier Dipico
Welcome by Secretary O'Leary
South African presentation on specific needs, potential areas of cooperation
Empowerment and Capacity Building
Electricity
Renewables
Mining
Financing
U.S. response
Discussion
Conclusions

12:45-
1:15pm **Reception and informal discussion with provincial business leaders**

1:40-
3:00pm **Luncheon hosted by Premier Dipico**
SITE: Savoy Hotel
NOTE: Toast by Secretary

Saturday, August 26, Cont. -- Kimberley

4:00pm	Depart Kimberley Airport enroute Johannesburg for refueling
5:00pm	Arrive Airport
9:30pm	Depart enroute Cape Town
11:30pm	Arrive Cape Town
12:30am	Arrive Cape Sun Hotel

Sunday, August 27 -- Cape Town

11:30am	Depart enroute Washington, D.C.

Monday, August 28 -- Washington, D.C.

2:30am	Arrive Washington Dulles Airport

Document Number 48

CLINTON ADMINISTRATION DELEGATION ON SUSTAINABLE ENERGY & EMPOWERMENT TO SOUTH AFRICA

STRENGTHENED KINSHIP

AUGUST 20-27, 1995

LED BY

HAZEL O'LEARY, U.S. SECRETARY OF ENERGY

THE WHITE HOUSE

WASHINGTON

August 15, 1995

Dear Delegate:

I am pleased to join Secretary O'Leary in welcoming you as a member of the Mission on Sustainable Energy and Trade Development to the Republic of South Africa. Your mission will help advance the goals of the Binational Commission led by Vice President Gore and Minister Mbecki, which President Mandela and I established to address issues of importance to our nations. Your work will strengthen our ties with South Africa, promote private investment, assist in building capacity, and facilitate economic growth and efforts to protect the environment.

This mission focuses on one of the significant concerns that President Mandela mentioned to me during his visit to Washington, D.C., last fall -- providing South Africans with access to power, a critical ingredient to building a strong economy based on shared prosperity. Your efforts can also help show the importance of what the U.S. private sector and our education and non-governmental communities have to offer South Africa, and in turn, what South Africa has to offer us -- unprecedented capabilities and opportunities.

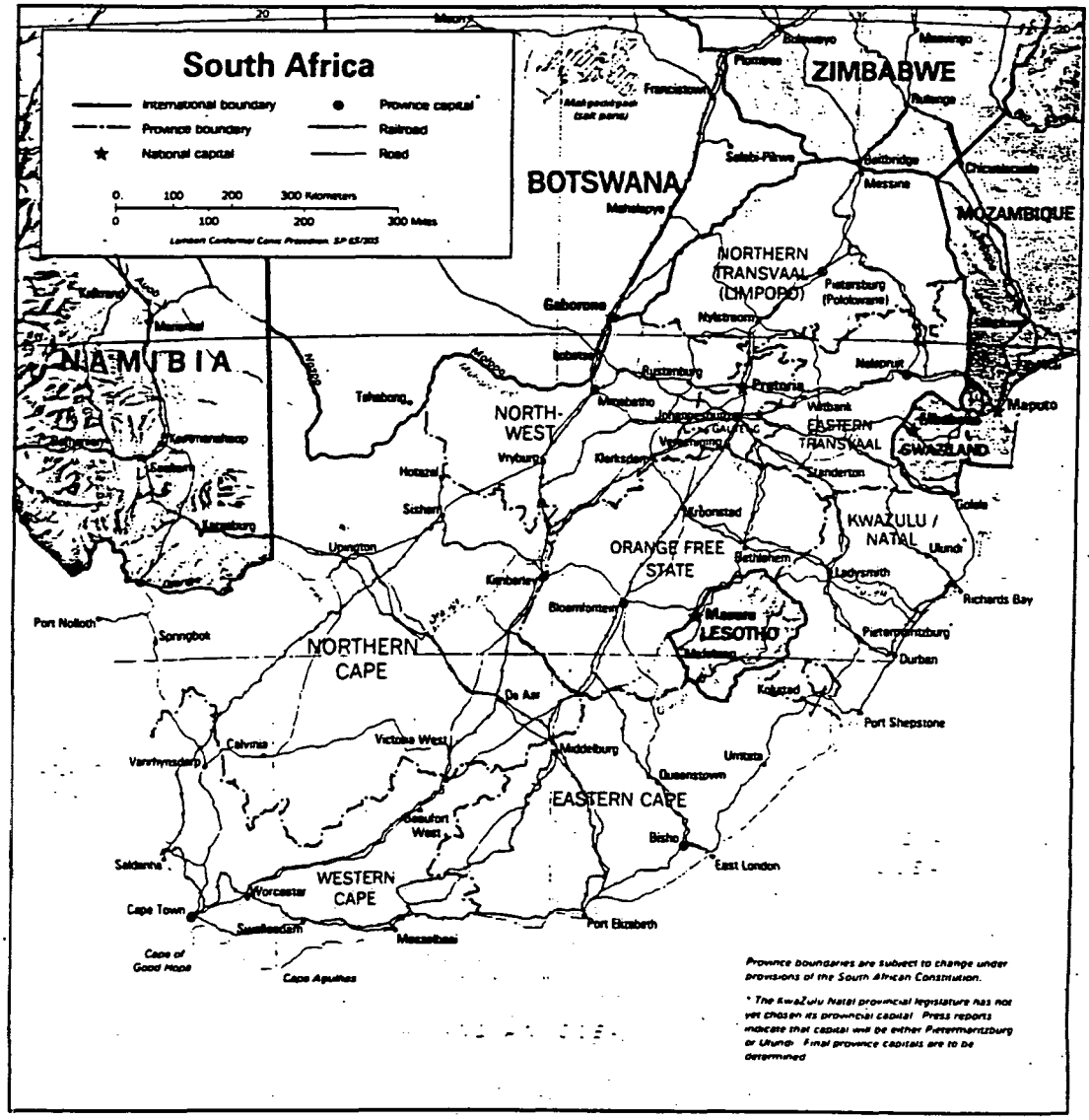
Representing the best of America from a broad spectrum of energy companies, financiers, environmental groups, and government specialists, the mission includes those with expertise in traditional energy production, as well as in innovative renewable energy and efficient, clean technologies. Selected for your particular ability to assist in meeting South Africa's energy needs, you possess the creativity and ingenuity to make this historic mission successful -- and I am pleased that you are on board.

It is my hope that this mission will forge strong bonds of friendship between the United States and South Africa and that new opportunities will arise for cooperative ventures that produce economic, energy, and environmental benefits for both of our nations. I know you will make the most of every opportunity to promote these goals.

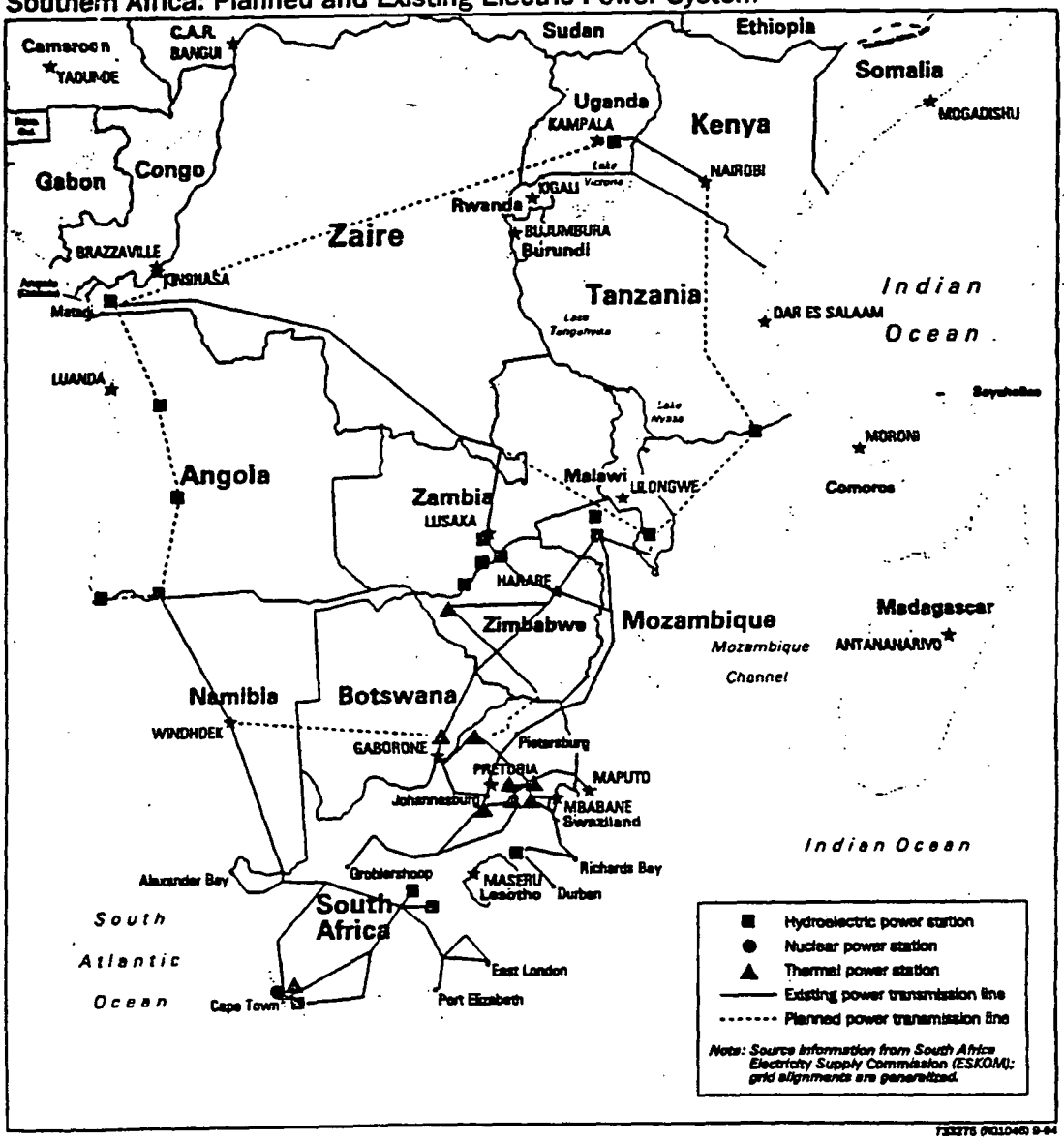
On behalf of the American people, I wish you much success. I also want to offer my personal thanks for contributing your time, effort, and talent.

Sincerely,

Bill Clinton


South Africa
International boundary
Province boundary
National capital
Province capital*
Railroad
Road
0 100 200 300 Kilometers
0 100 200 300 Miles
ZIMBABWE
BOTSWANA
MOZAMBIQUE
NAMIBIA
NORTHERN TRANSVAAL (LIMPOPO)
NORTH-WEST
EASTERN TRANSVAAL
SWAZILAND
KWAZULU / NATAL
ORANGE FREE STATE
LESOTHO
NORTHERN CAPE
EASTERN CAPE
WESTERN CAPE
Gaborone
Pretoria
Maputo
Durban
Port Shepstone
Bloemfontein
Kimberley
Upington
Port Nolloth
Springbok
Calvinia
Vanrhynsdorp
Saldanha
Cape Town
Worcester
Swellendam
Mossel Bay
Beaufort West
Victoria West
De Aar
Middelburg
Queenstown
Umtata
Bisho
East London
Port Elizabeth
Cape of Good Hope
Cape Agulhas
Province boundaries are subject to change under provisions of the South African Constitution.
* The KwaZulu Natal provincial legislature has not yet chosen its provincial capital. Press reports indicate that capital will be either Pietermaritzburg or Ulundi. Final province capitals are to be determined.

Southern Africa: Planned and Existing Electric Power System



The Secretary of Energy
Washington, DC 20585

August 18, 1995

To our Delegation:

Under President Mandela, South Africa is building a renewed democracy that will bring an end to the inequities and inefficiencies of its racial history. South Africa's vision of economic growth, shared abundance and empowerment supports democracy, peace and prosperity. President Mandela has invited our partnership to spark and support progress for all of Africa.

South Africa is a country of immense promise. Its gross domestic product of $120 billion per year is the largest of any southern African nation. South Africa, one of the ten biggest emerging markets for U.S. exports, is a major trading partner and a strategic ally. As an energy market, South Africa produces fifty percent of the electric power produced in all of Africa. Electricity is the key to modern industrial development. Yet sixty percent of the population has no access to power. Our vision is to assist the South African government achieve its goal of electrifying 2.5 million households by 2000. Energy consumption is far outpacing economic output providing significant potential for increases in energy and economic efficiency. South Africa is highly dependent on coal and coal utilization is expected to grow with attendant increases in carbon emissions creating opportunities for deployment of clean coal technologies and U.S. infrastructure equipment. South Africa's gas infrastructure has not been developed and may require extension due to large field development in the region.

South Africa has already proven itself capable of playing a major role in world affairs. South Africa developed a proposal that became the foundation of the indefinite extension of the nuclear non-proliferation treaty. President Clinton honored our Nation's commitment to this treaty by committing the United States to conducting no more nuclear tests in an attempt to conclude a comprehensive test ban treaty.

The partnership has been initiated by the United States to assist South Africa build a new future. As an energy policy leader, environmental technology expert and educator, you will play a vital role in this mission. The government's Reconstruction and Development Program places a high priority on energy policy with a focus on rural and urban electrification, infrastructure improvements, efficiency, training, new technologies that improve the environment, and science and technology. These priorities open tremendous opportunities for partnerships between our two nations. To facilitate this cooperation, Presidents Clinton and Mandela have established the United States-South Africa Binational Commission chaired by Deputy President Mbecki and Vice President Gore. This visit precedes the first meeting of the Commission currently scheduled, and its results will shape the agenda.

Printed on recycled paper

I am proud to represent the U.S. Government, and act as head of this delegation, leading a group of experts from the private and public sectors with international reputations for excellence in technology investment and policy development. Together, we embark on a rigorous schedule that includes thirty meetings, policy roundtables and inaugural events in three cities. We will meet with key decision makers in both the public and private sectors who seek our participation in helping South Africa build its new energy infrastructure including an expanded role in the southern Africa region. We will identify projects that can help realize the vision of inclusive development and policies that attract investment and which create jobs in both nations. We will underscore the importance of partnerships. We will emphasize training and empowerment. We will deliver real and measurable results.

South Africa's rapid and complete transformation has captured the hearts and fulfilled the dreams of many Americans. It has awakened a strengthened kinship between our two nations. Inspired by the courage of her leaders and the potential of her people, we redouble our efforts to partner in her renewal.

Hazel R. O'Leary

Background Materials Index

- Biography for President Nelson Mandela
- Biography for Deputy President Thabo Mbeki
- Biography for Deputy President Willem DeKlerk
- Biography for Alfred Nzo
- Biography for Minister of Mineral and Energy Affairs Roelof F. Botha
- Letter to from Minister Botha outlining policy areas he would like to focus
- Department of Energy Policy Strategy Path paper
- Department of State Paper on South African Energy Policy
- Electricity Background Paper
- Finance Background Paper
- Environment Background Paper
- Renewable Energy Background Paper
- Energy Efficiency Background Paper
- Oil and Gas Background Papers
- Research and Development Background Paper
- Binational Commission Background Paper
- Capacity Building Background Paper

Nelson MANDELA
(Phonetic: mahnDEYlah)

Executive President (since May 1994); President, ANC (since 1991)

Addressed as: Mr. President

Since becoming South Africa's first black president in the historic 1994 elections that marked his country's transition to multiracial democracy, Nelson Mandela has repeatedly emphasized the importance of national reconciliation and economic development. He has said that during his five-year term he wants to impress on all South Africans a new sense of national identity, loyalty, and unity. A hallmark of his presidency is the sweeping Reconstruction and Development Program (RDP), which is aimed at addressing the neglected social and economic needs of the black majority. The RDP's specific objectives are to rectify disparities between the white minority and other South Africans in areas such as housing, jobs, health care, potable water, electrification, and education. South African press commentaries continue to note that Mandela is revered by most in South Africa. They also indicate, however, that he continues to clash with some political leaders, most notably Inkatha Freedom Party leader Mangosuthu Buthelezi, in very public policy battles, such as those concerning the division of power between the central and regional governments. In covering foreign affairs, Mandela has traveled widely, often pushing for investment in his country.

The Early Years

Mandela became politically active as a student at Fort Hare University, and in 1940 he was expelled for his involvement in a student strike. He completed a B.A. in 1941 and later earned a law degree from the University of the Witwatersrand. Together with Walter Sisulu, Mandela helped found the ANC Youth League in 1944 and became national secretary in 1948. A year later he played a seminal role in getting the ANC to adopt the "Program of Action," a document that energized the ANC. In 1950, Mandela became president of the Youth League, and in 1952 he led the Defiance Campaign, an organized effort to challenge apartheid laws. That year Mandela, who by then was deputy national chairman of the ANC, was arrested, given a suspended sentence, and banned.

In late 1956, Mandela was arrested again along with 156 other activists and was charged with high treason. He conducted his own defense and, nearly five years later, was found not guilty. In 1961, Mandela and others went public with their conclusion that peaceful strikes would not change the white regime and opted for selected sabotage attacks. He became the first commander of the ANC's armed wing, Umkhonto we Sizwe (MK), and in 1962 was captured and sentenced to five years in prison. A year later, the stakes were raised when the government tried him along and others on sabotage charges. His vigorous defense at what became known as the Rivonia Trial received international coverage but was not enough to sway the judge; Mandela was sentenced to life imprisonment in 1964 and sent to Robben Island Prison. He was released in 1990.

Personal Data

Mandela was born on 18 July 1918 near Umtata. His father was a chief of the Tembu tribe, part of the prominent Xhosa ethnic group; he died when Mandela was 12. Mandela was then raised by his cousin, the acting paramount chief. In part to avoid an arranged tribal marriage, the young Mandela decided to move to Johannesburg instead of staying in the Transkei and following in his father's footsteps.

In 1993, Mandela was the corecipient, with then President F. W. de Klerk, of the Nobel Peace Prize. In July 1994 he underwent eye surgery to remove a cataract, according to press accounts. He is separated from his wife, Winnie. They have two daughters. Mandela also has a son and a daughter from a previous marriage.

Thabo MBEKI
(Phonetic: emBEHkee)

Deputy President (since May 1994)

Addressed as: Mr. Deputy President

Thabo Mbeki's de facto status as the number-two official in the government—he is one of two deputy presidents—has made him Nelson Mandela's heir apparent, according to the media. Mbeki's responsibilities are wide ranging: he often stands in for Mandela at key meetings and acts as the government's troubleshooter when domestic, and sometimes international, crises emerge. He also has been the guiding force on senior personnel assignments and has mediated turf and leadership disputes at both the national and regional levels, according to the South African press. Mbeki primarily focuses on the Reconstruction and Development Program, the sweeping socioeconomic plan to rebuild South Africa. To this end, he heads the Cabinet Economic Committee, the most senior economic decision making body in the executive branch.

Mbeki has a similarly strong grasp on the reins of power within the ANC. After serving as ANC national chairman since August 1993, he relinquished the post for the more influential job of ANC deputy president in December 1994. The press reports that his much vaunted race with ANC Secretary General Cyril Ramaphosa for Mandela's mantle has been decided in Mbeki's favor, for now.

Once a Diplomat, Always a Diplomat

Mbeki was the ANC's top diplomat in the years preceding the 1994 election—he headed its Department of International Affairs from 1989 until 1994—and still plays important international roles. He travels widely and is engaged in a wide range of diplomatic efforts, including public diplomacy geared toward attracting foreign investment, serving as South Africa's representative at presidential-level regional summits, and helping mediate potential crises on South Africa's borders.

© *(1991)*

Mbeki is widely described in the press as a pragmatist who places great stock in building consensus. South African political observers consider him to be an adroit behind-the-scenes player. Mbeki exudes charm and never loses his composure, according to South African press accounts.

ANC Roots

Mbeki's roots in ANC politics are deep. He was born into the movement, growing up the son of one of the ANC's most revered leaders, Govan Mbeki, who was jailed with Nelson Mandela. The younger Mbeki joined the ANC Youth League while in high school in 1956—the year his father became national chairman of the ANC—and helped shut down his school through student strikes in 1959; Mbeki has said he was expelled and subsequently finished his exams elsewhere. Mbeki has told interviewers that he took correspondence courses from the University of London in 1961 and worked simultaneously for the then-underground ANC in the Pretoria area. (The organization was banned after the 1960 Sharpeville massacre, during which police killed 69 ANC marchers.)

Mbeki left South Africa in 1962 on orders from the ANC leadership but was quickly arrested in what was then Southern Rhodesia. Pressure from the

(continued)

British House of Commons won him his release, and he was granted asylum in what is now Tanzania. He subsequently traveled to the United Kingdom, where he earned an M.A. in economics at the University of Sussex in 1966. After receiving military training in the USSR, he worked at the ANC's London office during 1967-70. He then returned to Africa, working first in Zambia and later in Botswana, where he attempted to open an ANC office. He has also served as ANC representative to Swaziland (1975-76) and Nigeria (1976-78). Mbeki's base of operations in the 1970s and 1980s was Lusaka, where he held numerous posts, including one in the ANC president's office. He was elected to the ANC National Executive Committee in 1975 and was publicity and information czar during 1986-89.

Mbeki was born on 18 June 1942 and is a member of the Xhosa ethnic group. He frequently addresses white audiences—including leaders of the white business community and Afrikaner college students—on the role and policies of the ANC. His wife, Zanele, works for the UN High Commission for Refugees.

24 February 1995

E-3

SOUTH AFRICA

Frederik Willem DE KLERK
(Phonetic: dih CLAIRK)

Deputy President (since May 1994);
Leader, National Party (since 1989)

Addressed as: Mr. Deputy President

F. W. de Klerk, who lost the presidency after his party finished second in the landmark April 1994 elections, remains a key player in South African politics. He is one of two deputy presidents under President Nelson Mandela and heads two important Cabinet committees, according to press reports. A fourth-generation Afrikaner leader, de Klerk helped set his country on the course of profound political changes, capped with the nation's first multiracial elections. His presidency (1989-94) was marked by decisions to release ANC leader Mandela, remove bans on antiapartheid groups, open membership in the ruling National Party (NP) to all races, abolish racially discriminatory legislation, and guide his party through the multiparty negotiations.

De Klerk was born on 18 March 1936. He received an LL.B. from Potchefstroom University and practiced law for 10 years before entering parliament in 1972. Elevated to the Cabinet in 1978, he has held several portfolios—Sports, Telecommunications, Energy, Internal Affairs, and National Education. He also chaired the Council of Ministers from 1985 until assuming the presidency. He concurrently moved up in the ranks of the NP; after serving consecutively as Transvaal information chief and vice chairman, he became head of the NP for Transvaal in 1982 and replaced then President P. W. Botha as national chairman in 1989.

De Klerk is widely traveled; his trip to the United States in September 1990 was the first by a South African head of government or state since then

©

Prime Minister Jan Smuts attended the opening session of the UN General Assembly in 1947. Earlier trips to the United States came when de Klerk was an International Visitor Program grantee in 1976 and when he was Minister of Mineral and Energy Affairs in 1979.

De Klerk enjoys hunting and golf and likes to watch rugby and opera. He is a member of the Gereformeerde (Dopper) Church, a small offshoot of the mainstream Dutch Reformed Church. He speaks Afrikaans and English. De Klerk and his wife, Marike, have three grown children: a married son, Jan, a farmer, who gave them their first grandchild ("Little F. W.") in January 1990; another son, Willem, who is beginning a career in marketing and communications; and a daughter, Susan.

31 October 1994

Alfred NZO
(Phonetic: enZOH)

Minister of Foreign Affairs (since May 1994)

Addressed as: Mr. Minister

Alfred Nzo is one of only two remaining member of President Nelson Mandela's Cabinet who hail from the President's generation of leaders. He has traveled constantly since becoming Foreign Minister, visiting capitals throughout Africa, Europe, North America, and Asia. Press analysts were surprised by Nzo's emergence as Foreign Minister; he had been out of the limelight since 1991, when he lost the ANC secretary-generalship to Cyril Ramaphosa—Nzo had held that post since 1969. Before taking up the Foreign Affairs portfolio, Nzo had been chief of the ANC's Intelligence Department. In addition, he served as the ANC's representative on the Intelligence Subcouncil of the Transitional Executive Council from December 1993 to May 1994.

Nzo has deep roots in the ANC. He has ties to some of the movement's most famous leaders, past and present. For instance, press reports note that he worked very closely with former ANC President Oliver Tambo. Nzo and Mandela helped organize the ANC Youth League in the mid-1950s and helped mount bus boycotts in 1957. Nzo was elected in 1958 to both the Transvaal Executive Committee and the National Executive Committee (NEC), the ANC's policymaking arm. He was also elected to the National Working Committee, a subgroup of the NEC that oversees day-to-day ANC administration and activities; he remains a member of both the NEC and the National Working Committee. During 1959-64, he was frequently banned and arrested for his political activities; he fled the country in 1964 and subsequently served as the ANC representative in Cairo (1964-67) and in New Delhi (1967-69). He returned to South Africa in 1990.

The Early Years

Nzo was born on 19 June 1925 in the Johannesburg township of Benoni and was educated in the Eastern Cape. He is a member of the Xhosa ethnic group. He attended, and then dropped out of, Fort Hare University in the mid-1940s. Nzo completed the health inspectors course in 1951 and secured a job as an inspector in Alexandra Township. In 1958 he was fired because of his political activities, according to his official biography.

Nzo speaks English.

Roelof Frederik BOTHA
(Phonetic: BOtah)

SOUTH AFRICA

Minister of Mineral and Energy Affairs (since May 1994)

Addressed as: Mr. Minister

Roelof "Pik" Botha is one of six National Party politicians included in the cabinet of President Nelson Mandela. However, the April 1994 elections marked the end of Botha's long tenure as Foreign Minister (1977-94). Before he relinquished that post, he had been the world's longest serving foreign minister. Botha continues to travel widely as Energy Minister. He is involved in efforts to bring electricity to the black townships of South Africa, a policy he has pushed in public interviews and appearances. For instance, in December 1994 he called for the initiation of a pilot electrification program in a Cape Town squatter camp. In his speech he noted that the dwellings might only be temporary but that there was "nothing temporary about the needs of a human being."

As Foreign Minister, Botha was a vocal defender of his country and won acclaim at home and abroad for condemning petty apartheid. He oversaw the opening of numerous South African missions abroad, primarily in eastern Europe and Africa. He also played a major role in the agreement in 1988 that led to the removal of foreign forces from Angola and to independence for Namibia. Botha viewed South Africa as an important player in the region's development, and he still supports economic cooperation among the country's neighbors, according to the press.

Botha was born on 27 April 1932. He has an LL.B. from the University of Pretoria. A career diplomat, he joined the foreign service in 1953 and served in Sweden and West Germany. He gained prominence in the 1960s as a member of the legal team that went before the International Court of Justice to defend South Africa's right to administer Namibia. Before becoming Foreign Minister, he had been Ambassador to the United States and Permanent Representative to the UN since 1975. In addition to his government duties, Botha has been chairman of the ruling National Party in the Transvaal and then in Gauteng Province.

Botha has diverse pastimes, including swimming, hunting, and carpentry. He likes to read, and he writes poetry and short stories, several of which have been published. A natural history buff, he enjoys ornithology and botany; during travels abroad he collects unusual trees to plant at home. He is also an amateur astronomer. Botha's nickname "Pik" is a shortening of the Afrikaans word for penguin. He speaks English as well as his native Afrikaans. Botha's [ ] according to press reports. The couple has four children and several grandchildren.

b6

21 July 1995

E-3
14

MINISTER OF MINERAL AND ENERGY AFFAIRS

E1/2/9

My Dear Ambassador,

COOPERATION WITH THE USA

In a recent discussion you advised me that Ms O'Leary, US Secretary of Energy, will now probably visit South Africa in November 1995. You requested that I provide you with information on possible areas of cooperation with the USA. My staff have had two discussions with your Mr A C Woods and specific information on the topic was conveyed verbally, as well as selected documents provided. Broad areas of collaboration are given below.

DEVELOPMENT AID

Development Aid in energy context would be considered mainly in those areas where affordability is a problem and normal commercial principles cannot be applied, such as:

- Biomass (firewood) production and effective use;
- Electrification, including small scale stand alone photovoltaic systems (especially in rural areas, focusing on schools, clinics and community centres and technologies that minimise capital cost);
- Electrification of poor areas, urban and rural, as well as the reduction in cost of transitional fuels and energy use appliances.

ENERGY POLICY AND INSTITUTIONAL DEVELOPMENT

E-3
15

- Energy policy analysis and development;
- Integrated long term energy planning;
- Development of a national energy data system;
- Simplified systems of energy modelling;
- Energy efficiency policy development and programmes, including the transportation sector;
- Electricity and gas demand side management;
- The energy-environment interface.

ENERGY EDUCATION

Development and training of multi-disciplinary energy analysts, policy makers and practitioners, especially energy economists and managers. There is a shortage of these people in the country and no dedicated education is available. Of value would also be assistance, financial and institutional, in affirmative action programmes for the Department and the energy sector.

Support towards the development of energy management consulting activities, including partnerships or collaborative agreements with USA companies.

RESEARCH, DEVELOPMENT AND DEMONSTRATION OF ENERGY TECHNOLOGIES

Support in the evaluation and further development of our national energy research, development and demonstration programme, including:

- advice on the best institutional placement and methodology of such a programme;
- technology scanning and development to fit local conditions,
- the handling of inventors;

E-3
16

- assistance in financing R & D activities, including joint and task sharing programmes.

One important potential area of cooperation is the structured exchange of appropriate information, as well as the possible secondment of some of our staff to work for relatively short periods in appropriate USA energy agencies to gain hands-on experience.

Mr Sala of your Embassy visited my Department on October 18, 1994 together with Mr Taylor of US DOE and undertook to let us have a draft Memorandum of Understanding to serve as basis for a more detailed discussion on protocol and areas of cooperation. It is my view that such a draft MOU is an important element in our deliberations and should also receive attention in the preparation of Ms O'Leary's proposed visit.

Thank you for your interest in these important areas of human life.

Warm regards

Pik Botha

R F BOTHA

His Excellency Mr P N Lyman
Ambassador Extraordinary and Plenipotentiary
Embassy of the United States of America
877 Pretorius Street
ARCADIA

As of August 16, 1995 (10:15pm)

SOUTH AFRICA MISSION POLICY STRATEGY PATH

OUTCOMES

- Promotion of United States-South African energy cooperation in:
  - -Private Investment
  - -Capacity Building and Empowerment
  - -Economic and Environmental Equity
  - -Sustainable Energy Committee of the Binational Commission
- Agreement on specific policies and procedures to mobilize capital and projects.
- Identification of targeted energy projects to use as "fast track" pilot projects and see what works.
- Work plan for implementing these projects with specific dates and work teams.
- Agenda for December meeting of Sustainable Energy Committee of Binational Commission.

E-3
15

As of August 16, 1995 (10:15pm)

POLICY STRATEGY PATH

Pre-Trip Preparation (Ongoing)

Outcomes

- o Drafting of US comments on South African policy green paper:
  - -Government
  - -Private sector
- o Recommendations on South African:
  - -Processes
  - -Policies
  - -Institutions
- o Identification of areas for cooperation.

↓

Meeting With Minister Botha--(Monday a.m.)

Outcomes

- o Agreement on goals for mission.
- o Strategy for cooperation path culminating in Binational Commission work plan.
- o Agreement on priorities for meeting South African RDP energy goals:
  - -Electrification
  - -Transitional fuels
  - -Investment
  - -Structural/process reform
  - -Capacity building
- o Identification of issues surrounding future of ESKOM

↓

As of August 16, 1995 (10:15pm)

Roundtable With Parliament
Energy Committee (Monday p.m.)

Outcomes

- Learn Parliament's views and role in the "process development" of the White Paper.
- Identify options for governance of the energy sector.
- US input to energy policy green paper--Refine prepared US comments.
- Identification of priority areas.
- Identification of issues surrounding future of ESKOM
- Options for cooperation and capacity building.

↓

Meeting With Ian McRae
National Energy Regulator (Tuesday)

Outcomes

- Identification of issues surrounding future of ESKOM
- Review outcomes from Parliament meeting.
- Understanding of McRae's view of future activities and policy gaps.
- Options for US-South African cooperation:
  - -Regulatory workshops

↓

As of August 16, 1995 (10:15pm)

Energy Summit (Wednesday)

Outcomes

- Refinement of policy and regulatory issues affecting private sector investment.
- Proposals for cooperation in capacity building.
- Proposals of pilot projects for fast-track processing.
- Action plan for resolving issues/next steps.

↓

Meeting With ESKOM Chairman Maree (Thursday a.m.)

Outcomes

- Learn ESKOM views and plans:
  - -Electrification
  - -Meeting environmental requirements
  - -Diversifying generation base
  - -Capacity building
  - -Structure and ownership of electricity industry
  - -Cogeneration and Independent Power Producers
  - -Southern African Power Pool
  - -Demand Side Management
- Identify areas for public/private cooperation.

↓

As of August 16, 1995 (10:15pm)

Energy Policy Roundtable (Thursday p.m.)

Outcomes

- o Presentation of US delegation comments on South African policy green paper:
  - -Process issues
  - -Policy issues
  - -Institutional issues
- o Options on process for achieving policy restructuring.
- o Identification of fast track pilot projects for implementation.
- o Identification of teams to implement specific fast track projects.
- o Next steps and timeline.

↓

Binational Commission Meeting (Friday)

Outcomes

- o Agreement on management process for Sustainable Energy Development Committee.
- o Summary of outputs from Summit, Energy Policy Roundtable and other consultations.
- o Agreement on and identification of:
  - -Policy & process issues -- US comments
  - -Past track projects -- renewables, fossil, others tbd
  - -Empowerment strategy -- govt & private sector
  - -Timeline of deliverables and dates
- o Projected outcomes for Binational Commission meetings in December.
- o Agree to final Terms of Reference.
- o Projected outcomes for Binational Commission meetings in December.

SOUTH AFRICAN ENERGY POLICY

The government of South Africa is in the process of formulating a post-apartheid energy policy to change its focus from self-sufficiency and a concern over national security to a policy that will meet broader development goals within an open market context. Specifically, the current government is grappling with the continued existence of government monopolies supported by subsidies and price guarantees, as well as by entry barriers for new firms. These policies produced electricity that was cheap and abundant for industry but unavailable to 65% of the population. There was uneven regulation of different sectors in the economy, and the programs were extremely costly.

South Africa's new energy policy will specifically aim to:

- Improve social equity by addressing the energy requirements of the poor;
- Provide low-cost, high quality energy inputs to industrial, mining, and other sectors to enhance efficiency and competitiveness; and
- Accomplish this within the constraints of environmental sustainability.

In practice, this will mean redefining the state's role in the energy sector to create a level playing field for industry while not relinquishing South Africa's competitive advantage in many industries. The SAG is pervasive in parts of the energy sector -- namely the liquid fuels market -- as a result of the government's pursuit of national energy security during the apartheid era. These particular subsectors are governed by various laws defining the state's functions, while in others, the state's role has never been formally defined.

The SAG must also institutionalize a policy formulation process that incorporates citizens and their interests in decisions affecting them to meet the goals of the new energy policy. Past government practice in formulating energy policy has tended to be secretive. Recent pressures for an opening of the policy process have resulted in the formation of various forums, such as the Liquid Fuels Industry Task Force.

Liquid Fuels

South Africa's liquid fuels industry was highly regulated even before the introduction of the United Nations crude oil embargo that prompted the establishment of the SASOL and MOSSGAS synthetic fuels industries. However, current regulations reflect the adaptations of South African industry to embargo conditions, including the use of expensive synfuels and the world's largest synfuels program. The Department of Mineral and Energy Affairs (DMEA) has not yet prepared a coherent analysis of the liquid fuels industry. Instead, existing

government monopolies continue to exercise undue weight in the policy process. SASOL continues to indirectly receive $300 million billion from the state annually.

DMEA is evaluating the cost and benefits of continued SAG support, and is considering linking liquid fuels policy to general energy and broader economic policy. It is also examining means to establish an independent liquid fuels industry regulator. In considering reforms, DMEA hopes to create a level playing field for domestic and export markets, as well as assuring a continued secure market supply.

Mining Policy

Coal's importance to the economy, both as an energy source and as an employer, have focussed attention on the SAG's mining policy, which also affects oil and gas. South Africa's abundant natural resources have yet to be adequately explored because of the low level of foreign investment during apartheid and continuing uncertainty over mineral rights. Documents covering minerals and mining rights are generally outdated and fail to address new technologies like coal-bed methane. The process of establishing a new mining policy has been haphazard at best.

At the end of 1994, the DMEA and the African National Congress released separate, uncoordinated draft proposals of new mining policy. The ANC favored returning mineral rights to the state and supported small-scale mining. DMEA reflected the interests of larger firms and opposed these options. The SAG established the Tripartite Steering Committee, comprised of industry and labor and chaired by the government, to collate the ANC and DMEA discussion papers and to resolve differences of views. It is likely to take the Steering Committee some time to develop a consensus supporting a new mining policy.

Without a clear mining policy, investors are hesitant to invest in South Africa. The lack of a clear policy is also delaying the receipt of foreign exchange that the SAG expects to finance the program of Reconstruction and Development.

The lack of a clear policy affects two proposed U.S. projects (by Amoco and Advanced Resources International) in coal-bed methane technology in particular. The SAG has yet to decide whether the coal and the gas found within the coal will be treated as one mineral or separate minerals. The companies will need either one or two licenses, depending on the decision.

Synfuels

MOSSGAS and Sasol are synthetic fuel companies created through capital provided by the government. The two synfuel plants account for 35% of South Africa's liquid fuel supply. Sasol produces 150,000 b/d in crude equivalent utilizing 25% of the country's coal production and employing 27,000 people. Sasol produces 150,000 b/d in crude equivalent in its oil-from-gas plant employing 1,100 people. Sasol is permitted to directly market a limited

amount of its production through "blue pumps" at service stations. The seven companies involved in marketing fuel products in South Africa, as wholesalers, are obliged to purchase Sasol and Mossgas production pro-rated to their share of the local fuel market which is then marketed along with their own refined product. To support the two synfuel plants, the government controls the prices of fuels and some petroleum products.

Sasol, privatized by large government loans and supported with large subsidies, estimates its operations contribute in excess of $1.5 billion to South Africa's GDP. Sasol size and diversification into petrochemicals make it an important player in the SA economy. Mossgas, still state-owned, is considered uneconomic. A detailed study of Sasol financial viability was commissioned by the SAG in 1989. The study, performed by independent accountants, indicated that Sasol needed to be protected if the price of crude oil went below $23.00 per barrel. The SAG pays Sasol this price support from an 'equalization fund' which derives its income via a levy on the fuel price.

The SAG is reconsidering its highly intrusive role in the industry, specifically the issues of price deregulation and the future of synfuels through the Tripartite Task Force. Industry accepts the possibility of deregulation although Sasol insists on "tariff protection" in the case of deregulation; labor opposes deregulation as many jobs will be lost. The government has yet to make any final decisions on the synfuel industry as any changes in the industry will have significant implications for employment, the structure of the retail sector, the price of fuels and the viability not only of synfuels, but also the associated chemical industry. It is questionable whether the synfuel program would survive competition.

The SAG is considering granting an alternative form of protection to the synfuels industry through increased customs duties on imported crude and refined products. This may have adverse consequences for South Africa's refined products market in which American companies have vested interests. In mid-July, the Tripartite Commission advocated continuing subsidies for 4 years, although it acknowledged that South African chemical producers could face counter-vailing duties on their exports. SASOL was able to prevail in getting a longer time than the SAG and private companies advocated for the transition.

Equalization Fund Levy

For more than a decade until the early 1990's, South Africa was forced to pay premiums for imported crude oil as a result of the oil embargo. Since January 1979, these have been financed by a levy on retail sales of petroleum products, known as the equalization levy. The oil companies collect and pay the levy into the equalization fund, managed by the Central Energy Fund and controlled by the Ministers of Mineral and Energy Affairs and of Finance in accordance with the Central Energy Fund Act of 1977. The levy is currently applicable to petrol, diesel, and illuminating parrafin. Although the need to pay premiums on imported oil has gone, the SAG continues to use the equalization fund to finance Sasol and Mossgas.

Regulation of Petroleum Products

Petroleum is one of the most contested areas of energy policy in South Africa. The petroleum sector is governed by a complex system of agreements between government and the oil industry which regulates the price of petrol and diesel and how it is distributed, produced, produced, transported and sold.

The broad principle of the current South African pricing formula, which has remained unchanged in format for over half a century, is that prices are based on supply and demand for petroleum products in 'east of Suez' markets. Various costs are then added to make up the final pump price in a given price zone (magisterial districts are used as price zones).

Trade in crude oil and refined petroleum products is presently regulated in terms of the Petroleum Products Act of 1977 to promote local refinery throughput especially of synfuels. The substantial investments in crude oil refineries and synfuels plants in South Africa are aimed at satisfying the local demand for petroleum products. The current import controls effectively protect the oil industry. Petroleum products which may become available from time to time on the international market at relatively low prices cannot be imported without the necessary permit based on the recommendation of the DMEA.

The export of petroleum products is regulated to ensure that local demand and the requirements of the Southern African Customs Union are satisfied. Substantial volumes of products in excess of these requirements, refined by the oil industry from imported crude oil, are currently exported to neighboring countries and to countries further afield, with a net gain in foreign exchange.

Gas

Currently, SAG energy policy does not explicitly deal with natural gas. However, Enron's imminent development of the Pande gas field in Mozambique as well as prospects for imports from the Kudu field in Namibia have stimulated activity in the gas policy area and the government has begun canvassing opinion among stakeholders. There seems to be consensus among stakeholders that policy is urgently needed to provide stable 'rules of the game' to provide potential participants with an environment conducive to making commitments needed to develop the industry. A National Gas Policy Working Group was convened by DMEA and met for the first time in May 1994. By April 1995 draft options have been circulated to working group members, although the document has yet to be finalized.

In the meantime, powerful gas marketeers are moving to establish positions. A potential domestic development in the gas industry is Sasol proposal to use an unused Petronet liquid pipeline to transport gas from its synfuels plants in Secunda to the Natal coast.

Electricity Issues

Background:

The electricity industry is critical to South Africa's efforts to build its economy and expand the benefits of economic prosperity to the vast majority of its population. Electricity is a major part of the economic infrastructure and current government policies are designed to increase competitiveness and efficiency within the electricity sector and to attract private investment. In addition, the government is interested in expanding the electricity grid to provide electricity service to rural areas. In addition to helping to increase productivity and provide a base for economic expansion, expansion of the electricity network will vastly improve the living conditions of the rural population and provide an important political benefit to the government.

The goals of the national government in the electricity (and other) sectors are complicated by the low level of education and training of the populace. Therefore, another important element of the government's policy is to "build capacity" in the economy by increasing collaborative activities with entities within and outside South Africa. These programs are designed to help South Africa expand its intellectual capital and support economic growth in all sectors of the economy.

Issues:

Major issues faced by the South African Government in accomplishing these goals include:

1. <u>Restructuring of Electricity Distribution Sector and Electrification of Predominantly Black Communities.</u>

One of the most controversial and difficult energy problems facing South Africa is the need to restructure and professionalize its distribution sector and expand electricity service to the 60 percent of the populace that presently is without service.

In most areas, electricity distribution is a responsibility of local government, and the existing distribution sector is a hodgepodge of almost 400 distributors, with the most economically viable entities in mostly-white areas and many non-viable entities in mostly-black areas. The municipal boundaries have recently been redrawn in all areas to establish multiracial local governments, and provisional local administrations have been appointed. Local elections are scheduled for November. Existing local electricity distributors that wished to obtain licenses to continue in the distribution business were to file license applications in May, and the National Electricity Regulator is to issue licenses to qualified applicants by August 31.

In areas where the local governments have been effective, they have typically set electric rates to produce revenue surpluses that have been used to cover the cost of other government services. Now the national government proposes to divert these surpluses into electrification, and to augment them with additional cross-subsidies from existing customers, if necessary, to cover the costs of electrification.

Thus, the restructuring/electrification proposal is controversial because it threatens an important revenue stream for many local governments, and would also raise electricity rates at least marginally or keep them from falling. This, in turn, complicates the national government's goal of financing grid expansion from revenues generated within the electricity sector. This would be aided by cross-subsidies among electricity customer classes, with large industrial and commercial customers subsidizing residential customers. Cooperation of local distribution companies is critical to maintaining the effectiveness, and minimizing the adverse side-effects of this policy.

2. Establishing a National Regulator.

South Africa has recently established a National Electricity Regulator (NER) and is considering options to modify the regulation and structure of its electric industry. These policies need to be consistent with promoting competition in the industry and attracting private investment while assuring adequacy and reliability of supply.

Important elements of the Regulator's overall role remain to be defined, including sources of policy guidance (e.g., statute, advisory bodies), whether the Regulator will be wholly independent in policy terms from Department of Mineral and Energy Affairs, and whether other levels of government will exercise regulatory authority in the electricity sector.

Resolution of these questions is not separable from the more general process in South Africa of developing a governance structure for the energy sector.

3. Governance of the Energy Sector.

The National Regulator is especially interested in assistance from U.S. government and private sector entities in establishing an appropriate system of governance for South Africa's energy sector generally. This effort includes clarification of his own office's role, development of a staff in his office with appropriate training in regulatory procedure and economics, and broadening the experience and perspectives of the members of his Governing Board, to aid them to better fulfill their responsibilities.

As one of the first steps in this process, the Department of Mineral and Energy Affairs has prepared an Energy Policy Discussion Document (the "Green Paper"). Over the next several months, the Department will host several workshops and briefings for affected stakeholder groups, followed by a National Energy Policy Summit in November.

After the Summit, a drafting committee of senior Department officials and outside experts will prepare a Draft White Paper on National Energy Policy. The Draft White Paper will then be subject to established comment, discussion, and decision procedures used for the development of government policy positions. Presumably, enabling legislation will be needed in certain areas in order to implement decisions emerging from this process.

Opportunities:

These efforts by the South African Government with regard to its electricity industry provide numerous opportunities for U.S. entities (government, private sector, and non-government organizations) to participate in restructuring of South Africa's economy and social infrastructure. In the short-term, these efforts are likely to be concentrated on programs relating to capacity building and governance. In the longer term, as economic growth and empowerment expands, important investment opportunities for U.S. companies are likely to develop.

Opportunities for U.S. entities include:

- South Africa has established a goal of "commercialization" within the generation sector. Lessons learned from the US experience with competitive bidding and other regulatory mechanisms could be applied to the South African experience by U.S. utilities, independent power producers, and federal and state regulators.

- South Africa's national electric utility, ESKOM, is considering selling some mothballed generating plants and refurbishing others. Opportunities exist for U.S. companies to make investments in these activities, if the National Regulator and other government agencies will support privatization of these plants.

- Integrated resource planning and demand-side management programs could aid development of least-cost resources, reduce the need for new energy supplies, and improve industrial competitiveness and economic growth. U.S. companies and regulators can help South Africa add value to existing efforts in this area.

- Greater cooperation among industry participants (ESKOM, IPPs, distribution companies, national regulator) can improve efficiency in siting, operating and expansion of the electricity grid. U.S. entities help South Africa explore options and develop mechanisms to support these activities.

- Development of multi-national entities in Southern Africa, such as regional power pools and planning groups, can improve the efficiency and reliability of electricity service. U.S. government and private entities can help South Africa explore options for developing these regional entities.

- South Africa presently has excess power generating capacity, and does not anticipate a need for additional generating capacity until after 2005. However, many surrounding countries in sub-equatorial Africa, such as Zimbabwe and Botswana, have projected shortfalls. Approximately 90% of sub-Sahara Africa does not have access to electricity. U.S. entities can help South Africa explore options for increasing utilization of existing generating capacity to supply electricity to other countries in Africa through an interconnected power grid.

- ESKOM produces 95% of South Africa's electricity, approximately 90% of which is coal-fired generation. The efficiency and environmental performance of these coal-fired plants can be improved through the use of new clean coal and other technologies. U.S. entities can help ESKOM, the National Regulator, and the Ministry of Minerals and Energy Affairs explore options to increase the reliability, availability, and environmental performance of these generating plants.

- Waste products from many decades of coal mining and utilization in South Africa present an environmental threat as well as an opportunity for beneficial use through advanced technologies. Clean coal technologies that use waste products as fuel (e.g., fluidized bed combustors) can play a role in converting these waste products to useful resources.

- U.S. entities can help identify options for regulatory and structural reform in South Africa that would facilitate private investment and efficient expansion of the South African electricity sector. These include identifying mutual opportunities for investments in existing and new generation and transmission facilities, and participation in management, educational and training programs.

- U. S. entities also could explore opportunities for future collaboration with South Africa, such as a possible U.S./South Africa seminar on electricity governance in November 1995, or other forums for possible future cooperation in capacity building and establishing an institutional framework to support private development of South Africa's energy sector.

Financial Issues

South Africa needs foreign capital to expand the economy, increase employment, and raise living standards. International sanctions and the domestic policies of the Apartheid regime stifled both foreign investment and trade. The Government of National Unity (GNU), led by the African National Congress, has indicated a strong desire to attract foreign investment. However, the process of liberalizing the South African economy is still in the early stages.

Although South Africa has a broad-based, industrialized economy, it also exhibits characteristics of a developing economy: divisions between formal and informal sectors, uneven distribution of wealth and income, foreign exchange earnings based primarily on commodity exports (e.g. gold, metals, and coal) and a legacy of government intervention. Many economic and political institutions are still evolving in South Africa. Virtually all of the market and institutional reforms have been directionally correct from the standpoint of attracting foreign capital. Portfolio investments in South African companies have been fairly strong, but lingering doubts about labor costs, political stability, and competitiveness in a more open international market setting has made foreign investors wary of committing more resources. Direct investment has not met expectations, however. Although investors generally recognize South Africa as a long-term strategic market, concerns regarding the overall political situation and the near-term growth potential have made U.S. investors extremely wary.

Finance and investment issues in the energy sector are imbedded in a host of other policy issues including evolving regulatory structures, privatization decisions, implementation of the Reconstruction and Development Plan (RDP), regional energy trade, and environmental rules. Thus, finance issues are not paramount (although several barriers remain for expanding U.S. direct investment and trade) but rather the uncertainty surrounding the resolution of other issues has impaired the attractiveness of direct investment.

South African Financial Sector

South Africa has a highly developed financial sector, including investment, merchant and commercial banks and the Johannesburg Stock Exchange. However, the equity markets are not very liquid, due to the interlocking structure of the stock market. Strict limits on offshore investments forced companies to invest exclusively within the country -- i.e. to buy each other's stock. As a result, six holding companies currently control 87% of the shares of the Johannesburg Stock Exchange: Anglo-American corp. (controlling 43%); Rembrandt group (13%); Sanlam (10%); South Africa Mutual (10%); Liberty Group (7%); and Anglovaal Group (4%). These holding companies own a myriad of subsidiaries in all sectors of the economy. Of the 654 companies listed on the exchange, only 7% are actively traded. In fact, the Johannesburg Stock Exchange is the 11th largest in the world measured by capitalization, but is only the 35th largest in terms of transaction volume.

The Government is pressuring companies to "unbundle" their tightly held holdings, and they have begun to sell off non-core business. Although that creates opportunities for potential investors, unbundling also raises concerns about capital flight, as South African firms try to

reduce their systematic risk. This concern has perpetuated the strict limits on offshore investing, described below, which at this point in time is limited to certain types of asset swaps. By the 3rd quarter of 1994, over 20 U.S. public pension funds and other institutional investors had shifted assets into South Africa.

Government Economic Policy and Debt

South Africa's GDP, at $120 billion in 1994, is a little bigger than Norway's and a little smaller than Thailand. About one-half of GDP comes from services and about one-quarter from manufacturing. Mining accounts for about 70 percent of foreign exchange earnings.

The Government is pursuing market-based policies, with the private sector as generator of wealth and the government actively addressing the inequities in housing, health, education, and social services. Economic policy has concentrated on the formal sector, but increasingly the challenge will be to bring segments of the informal sector into the formal economy by focusing on education and training, job creation and assistance to small and medium size business enterprises (SMBEs). To accomplish these goals without undermining business confidence, the government's first-year budget called for continued fiscal discipline and strict monetary controls. Despite sluggish growth and strikes early in 1994, the South African economy rebounded in the fourth quarter of 1994, leading to an overall GDP growth rate of 2.3 percent for all of 1994, with estimates of 1995 GDP growth in the 3 percent range. While continued growth is expected, there is concern that inflation, interest rates, and the current account deficit will rise in the coming years. Inflation in 1994 was down to 9%, its lowest level in 22 years.

The level of government debt, currently at $60 billion and growing (50% of GDP), is a very serious concern in South Africa. Although the Government has submitted a relatively austere budget, the annual deficit is still at $7 billion. Interest payments on the debt are growing (currently the second largest single item in the budget). The stated policy of fiscal discipline severely constrains the money available for other programs, notably investment in public infrastructure. Over 80% of the debt is held domestically.

1994, the Government of National Unity floated a $500 million 12% global bond. Demand was so great that the issue was increased to $750 million. Due in 1999, the issue was offered at 198 basis points over comparable treasuries. Standard & Poors and Moody's Investor Service have ranked the sovereign debt of South Africa at "BB" and "Baa3," respectively -- i.e. predominately speculative.

With the lifting of sanctions in 1993, the United States regained its position as South Africa's principal trading partner. In 1993, U.S. exports to South Africa totaled $2.4 billion, representing about 14% of South Africa's total imports. Most other imports originate in Europe, especially from the United Kingdom and Germany, and Japan.

Financial Policy

The Government of South Africa encourages foreign investment and treats it the same as

domestic investment. Screening of foreign investment does not occur and no performance requirements are normally imposed. Foreign firms are eligible for various investment incentives and are treated the same as domestic companies in terms of export incentive programs, tariffs, and other trade regulations. South Africa places no restrictions on the reinvestment of profits and earnings.

All corporations are taxed at a flat rate of 40% on total taxable income deemed to be sourced in South Africa, and this applies to resident and non-resident companies. Capital gains are not taxed, but a 15 percent tax on distributed profits went into affect in March of 1993.

In March 1995, the Government eliminated the two-tiered system for incoming capital, considered to be a positive move by foreign investors. The "Financial Rand" was abolished, and the new fully convertible currency began to trade at values between the old Financial Rand and Commercial Rand. Although foreign investors generally receive national treatment, they are subject to certain lending limits. One limitation is particularly restrictive: if a foreign entity owns 25% or more of a South African subsidiary, that subsidiary firm faces restrictions on seeking additional debt financing from South African sources. The restrictions take the form of a formula based on the percentage foreign ownership and the effective shareholder funds. The maximum amount of local debt finance available, as a percentage of shareholder funds is:

$$50\% + [(\%\text{South African equity} / \%\text{foreign investment}) \times 50\%]$$

Thus, for example, a company that is 40% South African and 60% foreign owned may borrow up to 83.3% of its effective shareholder funds from South African sources: $50\%+[(40/60)\times 50\%] = 83.3\%]$. Foreign firms borrowing to create a South African entity are unrestricted in their borrowing until they create their South African subsidiary; at that time their borrowing ability is reduced and constrained by the formula.

A symmetric restriction exists on South African firms' ownership of offshore assets: they cannot borrow freely from South African sources when they own more than 25% of a foreign firm. While providing an effective barrier against capital outflow, these limits impede capital inflows, making strategic alliances between foreign and domestic companies (especially smaller South African corporations) difficult. Joint ventures between larger firms are less affected. There is some movement toward gradual elimination of these controls. For example, Finance Minister Liebenberg has stated his desire to abolish these restrictions, but the actual timetable and implementation of such a policy is not yet determined.

In 1990, South Africa eliminated legal restrictions against foreign-owned financial institutions, and more recent changes have allowed branches of foreign banks to operate without forming a subsidiary. However, permission is still required to bring foreign exchange into the country, and if this permission is not secured, repatriation of dividend, earning, and capital is prohibited. Although this is an improvement, foreign companies could be faced with more restrictive exchange controls in the future should a shortage develop, leading the Government to tighten access to foreign exchange markets. Finally, local content rules apply in certain industries, notably automobiles and televisions.

Electrification Finance

Financing the ambitious electrification initiative represents a crucial and challenging set of issues for ESKOM, the Government, and distribution utilities. Two sources of funds are mentioned in the RDP: cross-subsidies from existing ratepayers and an electrification fund supported through government guarantees. While the National Electrification Forum concluded that sufficient funding will be available for the project, there are limits to both cross subsidies and government supported funding mechanisms. Therefore, a potential shortfall of capital is clearly a risk, and the ability of South Africa to attract foreign capital may become critical for the attainment of their electrification goals.

ESKOM currently finances its part of the electrification through earnings and borrowing, where two bond issues of R1.2 billion have earned credit ratings of Baa (Moody's) and BB (Standard and Poors), the same grade given to South African sovereign bonds. However, additional borrowing could erode these ratings as ESKOM adds more debt to its balance sheet. Substantially raising rates on existing ESKOM customers runs contrary to ESKOM's goals of reducing the real price of electricity, and revenues from higher rates could only be used to finance the portion of new hookups that ESKOM has agreed to finance (300,000 per year out of a total of 450,000). Therefore, the current arrangement can only be anticipated to provide for a portion of the necessary funds.

As for the National Electrification Fund, the version discussed in the South African Energy Policy Discussion Document (DMEA Green Paper) is not currently fleshed out in sufficient detail to attract potential investors -- and thus this option needs careful analysis and greater depth in order to gauge the prospects for attracting foreign investment. Three sources of funds are mentioned -- central government, external sources and possible levies on bulk power sales. This option has some apparent similarities with the U.S. Rural Electrification Administration (now the Rural Utility Service), and U.S. experience may be quite relevant for the Government of South Africa.

Other options discussed in the Green Paper include more direct government involvement in tariff setting, for example mandating cross-subsidies within a new national tariff structure to provide for electrification funds for ESKOM and local utilities or placing a levy on bulk power sales as a possible source of funds for the National Electrification Fund. These options cannot be isolated from the eventual structure of the electricity sector. Finally, an option for direct government grants and taxes on electricity sales are offered. These policies have the virtue of transparency but that same attribute can subject such schemes to significant direct political pressure.

Just as financing issues are difficult to isolate from the possible changes in the overall structure of the electricity sector, the ultimate viability of these infrastructure investments cannot be separated from the economic ability of new customers to pay their bills. Thus, policies aimed at economic development in townships and rural areas, where many citizens are not part of the formal economy, must be considered.

Environment Background

- South Africa has an above average energy intensity, largely as a result of the structure of the economy and its reliance on coal for production of electricity and liquid fuels. Both of these energy transformation processes are relatively inefficient in their conversion of energy. South Africa also does not employ the latest developments in energy efficient technology. Energy costs are relatively low (coal costs approximately $8/ton) and government energy policy has favored supply side actions rather than encouraging the efficient use of energy.

- Environmental quality has generally been accorded a low priority in the South African energy sector. In the household sector, unelectrified households rely mainly on coal, wood, and/or paraffin. In urban townships, people have been exposed to levels of particulate pollution far in excess of acceptable health standards. Major indoor air pollution is also a problem for rural people who burn wood, often in fireplaces without proper chimneys or ventilators.

- All electric power stations are fitted with control technologies to remove particulate matter from emissions, although gaseous pollutants such as sulphur and nitrogen oxides are not removed at all. These and other greenhouse gas emissions are emitted through tall chimneys into the upper atmosphere, threatening to raise the ambient pollution levels.

<u>Issues</u>

- South Africa emits far more carbon dioxide on a per capita basis than the global average, mainly because of the predominance of coal in the economy. In 1991, South Africa's Department of Environment Affairs established an interdepartmental Coordinating Committee for Global Environmental Change. We may want to explore the possibility of working with the Department of Environmental Affairs through the U.S. Country Studies Program to develop a proposal for a formal U.S.-supported Climate Change Country Study for South Africa, in accordance with its obligations under the Framework Convention on Climate Change. The U.S. Country Studies Program and SCIR Forestek will co-sponsor a climate workshop, entitled "African Regional Workshop on Greenhouse Gas Emission Inventories and Emission Mitigation Options: Forestry, Land Use and Agriculture" in Johannesburg May 29-June 2, 1995.

- <u>Possible Agenda Item</u>: Information session on the U.S. Initiative on Joint Implementation (USIJI). Joint implementation refers to arrangements between entities in two or more countries, leading to the implementation of projects that reduce, avoid, or sequester greenhouse gases. The USIJI program serves as the first joint implementation pilot program under the Framework Convention on Climate Change. This program offers an additional way for South Africa to attract environmentally beneficial foreign investment and technology development.

Renewable Energy Opportunities in South Africa

The Republic of South Africa is presently in a state of dynamic change centered on reducing the inequalities resulting from decades of minority rule social policies. The country presents some large near-term opportunities (pre year 2000) for renewable energy and energy efficiency technologies, as well as the environment for sustained markets there and the other countries of southern Africa.

Energy Overview

South Africa has been called the powerhouse of Africa. With only 5% of Africa's total population, it produces more electricity than all of the combined sources on the remainder of the continent. However, 29% of the country's population still use candles as the main source of lighting, and 47% use wood or paraffin (kerosene) for heating. This gap presents tremendous opportunity for renewable energy technologies.

The single utility in South Africa is called ESKOM (Electricity Supply Commission). It is a parastatal entity with 40,000 employees, assets of R47 billion (1 US Dollar = 3.6 Rand), annual sales of R15.4 billion, and a capacity of 37 GW, with a peak load of 25 GW. They are essentially unregulated, and the ownership of its assets is unclear. ESKOM is virtually all coal-powered, with surface mined coal and a standardization of plant architecture (6-7 600 MW modules in each station, nick-named "six packs") allowing for low generation costs. The stated average price to industrial customers is approximately 4 US cents/kW-hr. They sell the second cheapest industrial and domestic electricity in the world (next to New Zealand with its extensive hydropower resources.) ESKOM is committed to reducing its prices by 15% from 1995 to 2000 in order to stimulate economic development. Today the real price of electricity is 70% of its 1985 price.

ESKOM plans to electrify (through grid connection) 1,750,000 additional homes during the 1995-2000 time frame, and are using innovative programs to bring electricity to the poorer elements of the urban population. One example being electrified is a black settlement in the Johannesburg area called Ivory Park. This 5 year old community consists of ~ 14,000 "stands' or lots having between 200 and 300 square meters of area. The homes themselves were of the so-called informal type, that is, they were non-permanent structures put together with used lumber, old packing crates, and other odd building material. A typical home has two rooms, one for cooking/living and the other for sleeping. Total floor area is 20 or 25 square meters. A system of schools and clinics served the community. Homes were electrified by ESKOM via a meter/power point panel.

In a typical electricity transaction a customer would come to the ESKOM cashier's window with a R20 note (~$5.75). The cashier would return a coded cash register slip indicating that 77 kW-hours of electrical power had been purchased. The customer would then return home and entered the coded information into the home's power meter, enabling the flow of energy to the house.

ESKOM has formed a non-grid electrification group, which is expected to support the utility's role in the federal government's South African Financing and Implementation Agency for Renewable Energy (SAFIRE).[1] The group is involved in solar hot water, water pumping, cooking, energy efficient dwellings, and energy storage, as well as primary electrical power from PV, wind, diesel, microhydro and hybrids. The group sees its roles as being responsible for coordination and facilitation, site identification/ establishment of specifications and standards, training, hardware and commissioning, and executing contractual agreements.

While there is a current perception of a large capacity surplus, ESKOM is planning additional generation. Of the 37 GW of capacity, 6 GW is in mothballs. 4 GW represents equipment which is ~ 25 years old. Their peak last winter was 25 GW. With their stated availability of just over 80%, the 31 GW on-line are just equal to peak demand. Their near term plans for additional capacity involve the purchase of hydropower from Mozambique and Botswana, completion of half of a recently begun "six pack" coal station, and recommissioning of some of the younger mothballed stations. While near-term plans are set, the time appears right to provide information regarding the status of solar thermal and wind technologies for their consideration in future expansions.

There is significant and growing interest in South Africa in developing alternative renewable energy and energy efficiency technologies to help meet energy demands and mitigate environmental and health problems. The country's abundance of solar energy and large rural population make it an ideal candidate for the extensive use of photovoltaics. It is estimated that 2 million homes and half of the 18,000 schools and 4000 clinics will be electrified with this technology, as they are not included in ESKOM's grid extension plans. This will effect 20% of the population over the next 20 years. In terms of biomass, wood is the primary energy source of 25% of the nation's households.

Photovoltaics: Last year's market for photovoltaic (PV) systems was approximately 1.5 MW. Most of this was supplied from US factories. A bit over 20% came from the only module manufacturer (Helios) in South Africa. There is no indigenous PV cell manufacturing capability in the country. Helios bought primarily Siemens cells for its module production. Primary applications are telecommunications (15,000 PV-powered telephones were installed prior to the April 1995 national elections), rural homes (a migrant mine or factory worker will often spend a month's wages to purchase a single panel system just before he returns to his

[1] This organization to implement sustainable off-grid rural electrification will be described later.

home after a working stint), schools and clinics, and water pumping. The Department of Mineral and Energy Affairs estimates that the present market for PV systems will triple over the next several years. There are estimated to be 65,000 PV systems installed for all applications in South Africa today.

Biomass: For African households in South Africa wood is the primary energy source, representing 35% of the total energy consumption. Among rural Africans in the Eastern Cape, KwaZulu and the Transvaal, 48% spend two to four hours daily in their search for fuel wood. Another 37% spend between half an hour and two hours collecting wood. Most of the hewers and gatherers are women. The central government recognizes this large expenditure in labor and the resulting degradation and desertification of the environment, and has launched an integrated program to ameliorate the problem of denudation and improve access to plant stocks. There is now a national network of nurseries, a group of integrated clinic vegetable/tree gardens, woodlot, agroforestry and reclamation forestry projects, and various educational programs.

Hydroelectric: Hydroelectric power does not now play a large role in the South African electricity picture. In 1991 and 1992, less than 1% of the electricity produced was from hydropower sources. Much of the country is dry, with 80% receiving less than 760 mm of rain per year. The potential for significant future hydropower production is small.

Wind: At present there is very little use of wind power in South Africa. Current applications are primarily for water pumping in remote areas. Utility scale potential does exist, primarily along with Eastern Capt coastline. A wind resource expertise is present at the University of Natal. CSIR, a US national laboratory-type research organization, is developing a wind energy technical capability. A renewable energy specialist from ESKOM recently spent two weeks in the US familiarizing himself with US wind energy technology.

Solar Thermal: There is a well-established domestic hot water system manufacturing capability in South Africa. Market penetration has been slow in urban electrified areas because of the availability of inexpensive electricity. Available models range from thermosiphon and batch-type systems seen in the US to innovative unglazed systems based on swimming pool heater technology costing $250 or so. There is no current solar thermal electric capacity in the country.

Opportunities for US Business

The national election of April 1994 resulted in a government committed to helping the so-called victims of apartheid. The Reconstruction and Development Program (RDP) was formed to direct and prioritize efforts to improve the quality of life of the recently enfranchised majority population. The RDP is an integrated and coherent socio-economic policy framework seeking to mobilize all the people of South Africa and its resources to reduce poverty and provide opportunity and growth in a stable society where human rights are

paramount.

The RDP sets out to integrate growth, development, reconstruction, redistribution and reconciliation into a unified program. The main targets of the RDP are:

- urban renewal
- rural development
- democracy and institutional change
- urban development
- technical back-up

The government plans to spend R40 billion on the RDP over the next five years. The opportunities for renewable energy and energy efficiency technologies within this program are large.

There are several national efforts presently underway which address renewable energy technologies and are driven by the RDP:

- *Independent Development Trust*: The Independent Development Trust (IDT) is the largest grant-making development institution in South Africa. It was launched in 1990 with a fund of over R2 billion to address some of the pressing socio-economic problems of the poorest of the poor in the country. The IDT consists of five portfolios: Housing and Urban Development, Education, Capacity Building and Community Participation, Micro-enterprise Development, and Health and Rural Development. Within this last portfolio is the Rural Energy Program. Approximately $15 million will be spent before the end of 1996 in electrifying rural clinics. Another $4 million will be spent over that period in its associated biomass energy element.

- *REFSA*: The Renewable Energy for South Africa (formerly SAFIRE) is being formed to create a sustainable environment for rural off-grid electrification of homes and businesses. It will be a corporation owned by the government but run under private law. It is expected to provide electricity to approximately 10 million rural citizens over the next 20 years. Consequently, REFSA will complement ESKOM's domestic electrification efforts. While ESKOM electrifies through grid extension, REFSA works on homes which have virtually no hope of being reached by the grid. Major presence on its board of directors will be from representatives of the Department of Mineral and Energy Affairs. ESKOM will also serve on this board. Firm plans are in place for a 2500 system pilot program to be funded and defined during 1995.

Examples of specific business opportunities:

Rural domestic electrification: In addition to the present markets served by the 20 PV systems companies (5 large, 20 small) now in South Africa, there is the opportunity to join

the REFSA pilot program placing 2500 systems in rural homes and businesses during 1995, 1996 and 1997. As noted above, this pilot is expected to lead to the installation of approximately 2 million domestic systems over the expected 20 year life span of REFSA. The USDOE is expected to be a partner with REFSA, IDT and the Energy for Development Research Center (ERDC) at the University of Cape Town in designing and implementing this pilot.

Model clinic program: The IDT is looking for additional qualified suppliers of PV systems for its clinic electrification program. These systems are typically rated at a kW or so. The USDOE plans to participate in this program by sponsoring US suppliers of PV systems technology to become qualified bidders for this RDP activity which ideally will electrify 2000 clinics through PV over the next two years.

Rural water pumping: Potable water supplies are a problem area for much of rural South Africa. Pumping systems powered by wind or PV or both are expected to have markets off 1.5 MW yearly over the next several years.

Manufacturing joint ventures: Cooperative ventures which can combine state-of-the-art US PV, wind and energy efficiency technologies with the large available labor pool and growing markets of South Africa are being sought.

PV for telecommunications: The market through the decade for 100-500 kW power systems in telecommunications is estimated to be 5,000 per year.

Biomass electric and gasification technologies: The rural electrification market can also be partially satisfied by the pyrolisis gasification of agricultural waste streams, and the subsequent burning of the produced fuel in heat engines. Anaerobic digester technology would also appear to be appropriate for partially displacing fuel wood for cooking in the rural environment.

Utility/industry energy efficiency: Energy service, demand side management and integrated resource planning providers are virtually non-existent at present. As demand for electricity grows, the need for these skills will grow.

Barriers

While the potential for developing business opportunities for renewable energy and energy efficiency in South Africa is high and the timing is right, there are barriers to doing business there. Some of these barriers include:

White-dominated corporate structure: Until recently the economy of South Africa was closely controlled by 7 or 8 large white dominated corporations. This situation is not quickly changing.

Lack of black majority business skills: Because of the former social climate, most blacks have not had the opportunity to develop the skills necessary for founding and operating a successful business. Most of the existing black businesses are involved with trading, or retail.

Lack of black majority technical skills: At the present time there is no substantial intermediate level of government between that at the central level and that within the communities. This requires developers to work repetitively with each candidate community, rather than take advantage of provincial programs to provide leveraging. Provincial elections scheduled for November 1995 should alleviate this situation.

Availability of financing and competition from foreign governments creating a nonlevel playing field with trade subsidies, tied aid, grants, etc. are also barriers.

Proposed DOE Strategy in Partnership with US Industry

The USDOE has specific objectives related to the renewable energy industry in the United States. Objectives include: i) assist South Africa in developing renewable energy markets in which US companies can participate, ii) work with other federal agencies to match the foreign competition generated by other governments in promoting business development for their companies in South Africa, iii) promote US business in South Africa by developing experience with and confidence in US products and companies, iv) help reduce risk to the US companies in pursuing renewable energy projects by cost sharing initial projects and working with South African agencies to address barriers to doing business in that country, v) assist development of direct business relationships with South African companies through project implementation, and vi) support development of technical training in advanced renewable energy technologies.

The use of US manufactured products to meet cost-sharing requirements will be given high priority. Teaming arrangements between US and South African (especially black) companies (or other partners) will be encouraged and actively facilitated to promote sustained partnerships after initial project phases are completed. Funds will be highly leveraged both in the US and South Africa through loan institutions, foundations and direct cost-sharing. A primary objective of South African-US cooperation is the development of sustainable

renewable energy markets in South Africa. Therefore, attention to infrastructure development in the form of training programs and quality personnel for installation, operation and maintenance, marketing, and monitoring will be given a high priority.

The USDOE has been interfacing with the government, financial and utility contacts in South Africa. There have already been three cost-shared proposals for cooperation in rural domestic electrification, rural clinic electrification and rural water pumping made to the USDOE by the appropriate South African entities. The DOE has also been communicating with South African black empowerment venture capitalists and chambers of commerce and funded black business development supporters in the US to accelerate creation of majority capacity to partner with US firms.

Sandia National Laboratories (SNL) in Albuquerque, New Mexico and the National Renewable Energy Laboratory (NREL) in Golden, Colorado will work with the South African government, appropriate institutions, and the USDOE to implement projects, coordinate US renewable energy company participation in projects, and have a primary responsibility for project success.

Costs

The US (primarily DOE) direct investment in cooperative South African renewable energy-related activities is expected to be approximately $3.5 million over the next two years. These activities will build manufacturing, installation, operation and maintenance, training, and financing capabilities in South Africa. The projects generally will be equally cost-shared by South African entities, and will be heavily leveraged by existing programs of much greater size. This set of projects is designed to provide US renewable energy businesses better access to large near- and medium-term markets in South Africa and neighboring southern African nations.

Benefits

For the United States:

- The development of direct linkages with US and South African companies to promote sustainable business interactions.
- The development of sustainable markets for assisting US industry in expanding production and achieving cost reduction.
- High level government cooperation to encourage South Africa to incorporate renewables into strategic planning and funding actions of the government.
- The development of a foundation for US competition with Europe and Japan in developing renewables in South Africa.
- Assistance in the development of sustainable markets for renewables in South Africa.
- Increase the experience base with renewables, laying the foundation for using renewables to make a significant contribution to supplying energy needs to South Africa.

E-3

SOUTH AFRICA ENERGY EFFICIENCY

Background highlights

- Real GDP has been declining since 1980, although this is expected to change in 1994/1995. Since most of the infrastructure is underutilized, the economy can absorb increases without significant capital investments.

- In 1990, South Africa spent 14 percent of its GDP on energy - a number similar to the U.S.

- South Africa is responsible for 2% of the world's greenhouse gas emissions although it has only 1% of the world's population.

- The Minister of Mineral and Energy Affairs has the responsibility for developing energy policy, framing legislation, administration of regulatory controls, funding of energy research and overall control of the Central Energy Fund, which funds energy related development and demonstration projects in consultation and cooperation with the private sector, and responsibility for the Electricity Control Board.

- Energy policy is being aligned with new social and economic policies that improve social equity, efficiency and competitiveness and work towards environmental sustainability. Currently an Energy Policy Green Paper is being drafted by a Parliamentary Standing Committee on Minerals and Energy, which may be turned into a White Paper in September 1995.

- Coal forms the base of the energy sector comprising 82 percent of the primary energy needs; 95 percent of the electricity is generated by coal. By contrast, OECD countries use a greater amount of the more efficient fuels such as oil and natural gas. South Africa has limited oil reserves and virtually no gas reserves; however, major gas reserves exist in neighboring countries.

- Energy prices are low by international standards. Energy prices are not government controlled. Coal was controlled until a few years ago, but has since been completely deregulated. Electricity prices are set by ESKOM without any government interference, except possibly by Board members favoring government policy.

- Almost all electricity is produced by state-owned ESKOM, one of the largest utilities in the world, with capacity of almost 40,000 MW; ESKOM has significant overcapacity - about 25 percent; tariffs are low. Consequently there is little incentive for energy conversation on the part of consumers and there is little interest in integrated resource planning.

- Industry has made limited investments in energy-efficient technologies. Energy is cheap and decisions are solely or mainly taken on economic grounds; industry is therefore, energy inefficient with significant pollution problems; waste energy is not always recovered.

- Energy intensity (energy use per unit of economic output) is high according to 1990 World Development report; a survey of 111 countries indicated that only ten countries have higher industrial primary energy intensities than South Africa. The reasons for this are several fold; most prominent are the relatively low energy prices; electricity generation over capacity; the lack of information, awareness, training, government commitment and institutional capacity i.e., no energy efficiency agency; the infrastructure of the economy; the large and growing primary industry that has a very significant mining component; and finally the high reliance on coal for production of electricity and liquid fuels both of which are relatively inefficient.

- In a paper entitled "Proposed Strategy for Improved Industrial Energy Effectiveness in South Africa", M.G. De Villiers stated that annual industrial energy costs could be reduced by about 9½% in 2005 and 14-16% in 2015 through improved energy effectiveness.

- In 1991, industry (40%) and mining (8%) accounted for almost half of the energy consumption; transportation (24%), domestic (19%), commerce (5%), and agriculture (4%) account for the remainder.

- Base metals, with a large steel component, consume 44% of the industrial energy; other significant components are: food (14%), non-metals (13%), paper (10%), chemicals (9%), manufacturing (4%), textiles and clothing (3%).

- The mining industry consumer 82% of its energy in the form of electricity equivalent to 24% of ESKOM's output. Gold mining consumes 65% of the energy used in mining. The next generation of gold mines in the Potchestroom and Bothaville areas will be deeper and hotter than existing mines and will be more energy intensive.

- South Africa contains a sophisticated downstream oil sector that includes the capability to refine more than 400,000 barrels of oil per day (b/d). There are four refineries, two in Durban (Shell/BP - 160,000b/d and Engen - 65,000b/d), one in Capt Town (Caltex - 90,000b/d), and one in Sasolburg (Sasol - 86,000 b/d).

- Sasol is the world's largest producer of oil from coal and supplies, South Africa with virtually all the feedstocks needed for the country's petrochemical industry and provides over one third of the country's motor fuel needs.

- Transportation accounts for 24% of primary energy consumption. In 1995 unleaded fuel will be introduced into the South African market by domestic refineries. The concept of electric vehicles is being promoted by ESKOM and ESKOM is very keen to explore potential areas of cooperation with the U.S. The International Institute for Energy Conservation (IIEC) has submitted a proposal to DOE to assess opportunities for electric vehicles and production of transportation fuels from biomass. DOE has agreed to fund this proposal for $150,000.

- The domestic area uses about 19% of total energy use, 60% of which comes from non-commercial sources. Much of the housing is energy inefficient, especially the component constructed of corrugated iron. The Reconstruction and Development Program (RAP) aims to support the building of 1 million new homes over the next five years.

- The Energy Research Institute (ERI), University of Capetown is the major university-based technology and policy center. ERA may be a key player for policy development in the areas of demand side management and integrated resource planning.

- A research and development program has been in existence since 1981. The main achievements of the program are characterizing energy use, identification of the South Africa's high energy intensity, promoting DSM and information documentation. The program is now focussed on policy development and implementation.

Opportunities

- Significant energy efficiency, productivity and pollution prevention opportunities exist in industrial and mining companies; these opportunities are augmented by the projected growth in the energy intensive industries. Specifically opportunities exist for cogeneration in the chemicals, base metals and sugar industries, for improved computer control of industrial processes and boiler operations. There are undoubtedly opportunities for an ESCO to work on energy-efficiency issues and programs. No indigenous ESCOs currently exist in South Africa.

- Since energy audits are recognized by South Africa as a prerequisite for energy efficiency investment, there is an opportunity to share the DOE experience from the Energy Analysis and Diagnostic Centers and the Industrial Assessment Centers.

- To develop and implement a program of energy efficiency standards for air conditioners, heat pumps, household appliances, water heaters, lighting, boilers, electric motors and other equipment; to develop and implement labelling information on appliances for consumer protection.

- To increase recycling of steel, paper, glass and aluminum, which is currently at levels considerably below those in the U.S.

- Even though ESKOM has overcapacity, increasing loads and other factors mean that DSM is starting to receive the necessary attention; thus there is an opportunity to work with ESKOM on DSM and IRP. Since over 60% of the population is without electricity, there is an opportunity to implement a national DSM programs for energy efficient appliances and lighting technologies at a bulk discount.

- Mining is one of the major industries and consumes over 20 percent of the electrical energy; there is an opportunity to develop a "Motor Challenge Program" involving ESKOM, a motor manufacturer and a mining company. There is a possibility that these companies could become affiliated members of the U.S. program sharing in the data in the information clearinghouse; a subsequent step would be development of a showcase demonstration followed by development of a full Motor Challenge Program in South Africa.

- An alternative, or an addition, to the above is to determine the applicability of a concept recently implemented by the International Institution for Energy Consumption (IIEC) in a copper mine in Chile. The focus would be to develop effective energy management by setting up an internal ene[illegible] company as a profit center within the mining company. If successful energy consumption would be decreased and profitability enhanced and capital created for other projects. IIEC may be willing to assist if there is interest in a South African mining company in this concept.

- In the transportation area, there is an opportunity for the development and introduction of electric vehicles and for the conversion of biomass to fuels for alternative fuel vehicles.

- The RDP aims to support the building of 1 million new homes over the next five years; an opportunity exists to design and construct passive solar/energy efficient systems into these homes using advanced U.S. technologies. This should be augmented by the establishment of building codes and practices.

Challenges

- ESKOM currently has excess generating capacity although this may change as the economy recovers; also energy prices are relatively.

- South Africa institutions have well trained and educated personnel in the energy and energy efficiency area. However, in interviews with U.S. companies, who market energy efficient technologies, the companies have expressed that there is a lack of information on South Africa and a lack of hands-on experience in South Africa.

- Capital availability in South Africa, competition from foreign governments and companies, and trade and tariff issues although not overly restrictive, do inhibit investment in energy efficient technologies.

Outcomes

- Broader cooperation with South Africa in advancing its implementation of RDP by reaching agreement to share U.S. experiences in a combination of workshops, seminars and ultimately, in commercial business transactions in energy efficiency.

- Identify opportunities for U.S. businesses, services and technologies to participate in partnerships with South African industry to improve energy efficiency, implement pollution prevention technologies and measures and reduce environmental emissions.

- Obtain agreement for a preliminary action plan for the establishment of U>S./South African business energy partnerships for high priority energy efficient technologies and measures, policy development, DSM technologies and IRP strategies, information exchange, communication, education, etc. Develop a preliminary action plan that will include milestones for establishing the composition of the partnership teams and milestones for drafting implementation plans in each topical area.

- Specific outcomes could include agreements: (a) to initiate development of a South African Motor Challenge Program; a first step could be the sign-up of an affiliated member(s) to the U.S. program; (b) to develop a more effective electrical energy management program in the mining industry by setting up an internal energy services company as a profit center within the mining company; (c) to explore the applicability and benefits to the application of U.S. process control and pollution prevention technologies to the petroleum refining industry.

- In the transportation area, facilitate the signing of an agreement between the International Institute for Energy Conservation (IIEC) and the Group for Environmental Monitoring to assess partnership opportunities for development of electric vehicles and batteries and production of transportation fuels from biomass.

- In the housing area, sign agreements to design and construct passive solar/energy efficient systems into those homes using advanced U.S. technologies.

South Africa Liquid Fuels

Background

The most significant issue in the South African liquid fuels market involves the manufacture of synthetic fuels. South Africa has a robust synthetic fuels market which is the result of its previous international isolation, where past governments made liquid fuels a top strategic priority. As a result, the government made enormous investments in the synthetic fuels market (gasoline from coal) and regulated the entire liquid fuels industry in order to meet these strategic goals. The primary issues confronting the government today revolve around the transition from policies whose primary objective was to mitigate an unusual political circumstance (not to mention a lack of domestic oil production) to a more open and market-oriented system which reflects South Africa's acceptance in the international community and a desire to achieve the efficiencies of market-driven prices. This debate naturally has centered around the issues of "traditional" oil industry and the issue of the former parastatal synthetic fuels manufacturer, Sasol -- Discussions further center around issues relating that the continuing state subsidy (as well as other market interventions such as the retail pricing schemes and tariffs designed to support this subsidy) are unfairly supporting an industry which is already profitable. Sasol indicates that it needs assistance as it moves into the open market, and that the subsidy will be necessary throughout this transition period. The discussions are complex and the government has formed a commission and contracted the accountancy firm, Arthur Anderson, to examine the issue. Arthur Anderson released its report on the tariff protection issue to the commission at the end of June, 1995.

Issues

Synfuels- Synthetic fuels made from coal and gas provide a substantial percentage of liquid fuels consumed in South Africa. The main components of the liquid fuel industry, crude oil refining and synthetic fuel production, account for about 35 percent of commercial energy consumption. The main use of liquid fuels in South Africa is as a transport fuel, with gasoline and diesel accounting for 83 percent of total liquid fuel consumption in 1992.

South Africa produces no crude oil at this time; however, some small deposits have been found off the southern coast near Mossel Bay. Reserves are estimated at 200 million barrels of oil. Sasol was founded in 1950 as a parastatal to produce oil from coal and thus reduce South Africa's dependence on imported oil. It was privatized in 1979. It is currently an integrated producer of fuels and petrochemicals. Although Sasol has expanded its interests to include a wide range of chemical, polymer, and fertilizer products, synfuels remain its biggest generator of cash, accounting for an estimated 40 percent of profits. Sasol's capacity of 150,000 bpd accounts for 23 percent of South Africa's total production capacity. Sasol's export sales have increased over the past few years and now account for about 30 percent of non-fuel sales.

South Africa's first chemicals-from-gas project, began commercial production in January, 1993. Mossgas has the capacity to produce 45,000 bpd of product, roughly two-thirds gasoline, one third diesel, and three percent kerosine. *Question: What are the near and*

longterm objectives South Africa intends to take in order to enter into a more open, market-oriented system?

Synfuel Tariffs and Subsidies - In late 1993, the National Economic Forum, composed of representatives from industry, labor and government, established the Liquid Fuels Industry Task Force to recommend changes to the structure of the industry. Two basic issues dominate the discussion: price deregulation and the future of synfuels. Any changes made in the laws regulating the industry will have significant implications for employment, the structure of the retail sector, the price of fuels, and the viability of synfuels and the chemical industry with which they are associated. This task force is also expected to make recommendations in July, 1995.

The current petroleum agreement stipulates that domestic oil companies buy all of Sasol's fuel production, pro-rated to their share of the local fuel market. Sasol, in turn, limits its stake of fuel sales at pump level to 10 percent of the market. Sasol also has fuel pumps on the forecourt of other oil companies' service stations. The proposed deregulation would change this arrangement entirely and create aggressive pricing competition.[1] Sasol argues that any major change could adversely affect the company and, given its size and importance, this could have disastrous consequences. The domestic refiners are generally of a different opinion. These policies are obviously part of the government's comprehensive liquid fuels policy review.

In September 28, 1994, the Cabinet approved a new gasoline pricing scheme. Under the new policy, fuel prices will change on the first Wednesday of every month and will be calculated according to a publicly available formula. Previously, price changes were made at the government's discretion. Much of this price control was, again, the result of the government's involvement in the synfuels industry and the need to control prices and subsidies. The government, through the Industrial Development Corporation, provided the capital to build Sasol and Mossgas, synthetic fuel plants. While Mossgas remains a parastatal, Sasol has been privatized. The new system adjusts prices on a monthly basis, reflecting movements in the international oil prices and the rand/dollar exchange rate. Domestic fuel prices are likely to decline initially as crude oil prices are expected to continue their downward trend. *Question: What steps, if any, will the South African government take to deregulate the refining industry?*

Crude Oil Production - As has already been discussed, South Africa has no domestic production and imports all of its crude oil. There are no import tariffs, although Sasol has suggested an oil import fee if plans go through to remove its subsidy.

South Africa's state-owned oil and gas exploration company, Soaker, announced in March that the country's first oil-field development was expected to come on stream early in 1996. The E-BT field is located off Still Bay on the southern Cape coast east of Cape Town. Initial output is estimated at 20,000 bpd of high quality, low sulphur, light oil. The E-BT field is jointly owned by Soekor (80%) and South Africa's integrated oil company, Engen (20%).

---

[1]Financial Times European Energy Report, March 31, 1995

Soekor officials were encouraged by the amount of initial interest shown in purchasing data for its international licensing round was held last October. Soaker sought bids from private companies for exploration rights on its tracks covering more than 231,000 sq km on South Africa's continental shelf. International oil and gas exploration rounds were held in London, Houston, and Cape Town, and 23 companies have bought packages of data detailing offshore acreage.

None of the companies who entered the bid round have actually acquired acreage and conventional wisdom in the industry does not expect sales to be forthcoming. Companies have generally cited the same reasons for not bidding: most of the acreage offered has already been effectively drilled. Previous governments, as part of the energy self-sufficiency program already discussed, aggressively drilled the available acreage -- in some cases more thoroughly than private industry would have. This has left few plays other than the riskier deep water production. Most independents are shying away from this production due to the capital costs versus risks, and the majors are reluctant to add what is generally considered risky proposition to their portfolios. The position taken by Soakor (in some cases, a 20% carry with no investment up-front) has only heightened this reluctance. The lack of any major oil finds (such as the North Sea where similar carries are common), coupled with the fact that any gas finds do not have a current market, have caused further diffidence. Although the fiscal system is really not prohibitive by world standards (see Investment section), it may discourage investment in an environment of such political (the new government still needs to be tested) and geological uncertainty. Many analysts feel that the government must offer terms that are much more favorable than the rest of the world (Ireland, for example, might be a model). *Question: What future favorable terms and conditions, if any, does the South African government plan to propose?*

Refinery upgrades/expansion - Four refineries process imported crude oil -- Gencor's Genref and Shell/BP's Sapref in Durban; Caltex in Capetown; and Sasol's Natref in Secunda. The total design capacity of these four refineries after expansion programs are completed will be 450,000 bpd. With the completion of these projects, it is expected that refining capacity will exceed demand for years. South Africa's total refinery capacity of 645,000 bpd is expected to be sufficient until the turn of the century.

Investment -The investment climate for liquid fuels in South Africa is complicated and uncertain. Although the fiscal regime for oil and gas exploration is acceptable by world standards, it may not be sufficient in a climate of political and geological uncertainty to attract necessary investment. Several aspects of the system are favorable, however. For example, 100% depreciation is allowed on capital expenses for tax purposes, and a 12% allowance on unrecovered capital effectively ensures no tax on rates of return less than 12%. The exploration economics are average with a rate of return which is generally higher than average, but a government carry which is also higher than average. In short, the financial picture, in a vacuum, is one where some careful financial planning could yield very favorable results.

Natural Gas Development

Background

The future of natural gas in South Africa depends on several factors which are, at the moment, uncertain. Although there is only one significant domestic source of on-shore gas, coal-bed methane (est. 60-200 bcm), there are significant reserves offshore of both Namibia (Kudu field, est. 110-1,420 bcm) and Mozambique (Pande field, est. 70-370 bcm). Several consortia have been eager to develop these fields in order to supply the South African market. There are also possible plays in deep water offshore South Africa, but these have not been vigorously explored. The most pressing issue is whether there will be a market in South Africa. The most important factors affecting this market evolution are: (1) the relative economics of competition with other fuel sources -- namely coal which currently dominates electric power generation; (2) environmental factors; (3) the evolving regulatory regime; and (4) the patterns of growth within South Africa as well as the pattern and relative success of regional integration -- which could lead to a Southern African electric grid. The stability of South Africa's neighbors is also a concern.

Issues

Supply - South Africa has a per-capita energy demand of approximately one-fifth of that of the U.S. The main commercial forms of energy are coal, oil, and electricity. South Africa has limited resources of gas. Several small and medium sized gas fields are located near Mossel Bay, some of which are being developed by the Mossgas Project. Total gas reserves on and offshore are estimated at 120-730 bcm.[1] Gas makes only a small contribution at present, supplying less than one percent of South Africa's commercial energy.[2]

Sasol produces and distributes coal gas through its subsidiary, Gascor, to customers in the Transvaal area through a 700-km pipeline system. By international standards, the Gascor system is very small. Gascor is going ahead with a US$19 million expansion of its pipeline network into the greater Pretoria region. Later this year, Gascor will begin delivery to Kwazulu/Natal using the Petronet pipeline. (Petronet is a parastatal that owns and operates gas and crude oil pipelines.) This follows its US$22 million 120 km pipeline from Secunda to Witbank and Middelburg which was recently commissioned. Gascor has been supplying pipeline gas to industrial companies for the past thirty years. Because of its current infrastructure and experience, Gascor is a likely distributer of Pande gas should it be developed.[3] The municipalities in Port Elizabeth also produce and distribute gas but the market is mainly industrial and relatively small. Other than coal-bed methane which is discussed later, the Pande gas field in Mozambique and the Kudu field in Namibia offer the

---

[1]World Bank, May, 1995

[2]NTDB Market Report, January 30, 1995

[3]NTDB Market Report, November 18, 1994

greatest potential for greater use of gas in the future.

Potential Markets - The most pressing question appears to be whether or not there is a viable market for natural gas. Most studies have concluded that there will be a growing market for gas in the Transvaal, PWV, and Durban/Richard's Bay areas as natural gas could displace other fuel sources being used by large industrial customers. Since South Africa does not possess any significant oil reserves, natural gas' primary competition will come from low-cost, low sulfur coal. In some cases, this may boil down to competing transportation economics -- especially in the Cape province where the proximity of the Kudu field to the rapidly developing Western Cape may give it an advantage over the coal fields in the Transvaal.

Although most analysts agree that the use of gas will increase, there is significant disagreement over how fast this demand will rise, and whether it will be sufficient to capitalize the major investments necessary to bring the gas to market. Another major factor affecting this transition will be environmental concerns. Although emissions have not received the attention that they have in some other nations, there is growing awareness and strength in the South African green movement. This could also create legislative pressures which could make gas more attractive to large industrial users.

Because of South Africa's mild climate, the household market for gas is probably limited. The aggressive program of rural and township electrification is more likely to continue the residential dominance of electricity. This is especially true given the current overcapacity of the generating system. The other major factor that could affect the gas market is the regional integration of the electric grid. There has been significant discussion among analysts of the value of regional integration -- especially in order to tap the large hydroelectric potential in Zaire. In an integrated system with a larger customer base, there may be a greater rationale for clean thermal energy to enhance system reliability.

Coal-bed Methane - Due to South Africa's extensive and geologically favorable coals, coal-bed methane could be an important energy resource. Preliminary studies (Amoco/ARI) estimate that coal-bed methane could supply 200 Tcf, enough to meet South Africa's current demand. The Ellisras area of the Waterberg in Northwest Transvaal in particularly promising. The gas is located at only 320 km from Johannesburg. Shell and Anglo-American have done some preliminary studies in the area, which estimate the possibility of at least 57 bcm (2 Tcf) from their acreage. This differs from Intera's estimate of only 86 bcm (3 Tcf) as the mean potential from the entire country. Further study and some institutional reform, however, will be necessary before coal-bed methane could be considered viable. For example, the industry needs reliable geologic and technical data to help it make investment decisions. There is also a large amount of uncertainty over who owns the rights to the gas in the coal. Ownership rights to the gas are as follows: On private land, the landowner owns all mineral rights, except where these rights have been separated from the ownership of the land, in which case the holder is the person in whose name the mineral rights are registered in the deed office by means of a certificate of mineral rights. As a result, coal can be leased separately from coal-bed methane. On public land, where work is currently being done, the mineral ownership rights issue is less important. On private land there is potential for conflict between the

production of coal and the exploitation of coal-bed methane. When the rights are separated, the lessees are forced to negotiate an agreement with eachother as to how they will resolve the conflict. *Question: Will the development of coal-bed methane require special attention, or will it be covered by the general gas laws already discussed?*

Investment - The energy crisis of the seventies, combined with international sanctions on South Africa's supply of imported crude oil, have resulted in the government being involved in most aspects of the industry, particularly in an effort to achieve a degree of energy self-sufficiency. The government, through the industrial development corporation, provided the capital to build Sasol and Mossgas synthetic fuel plants. In order to support these plants, the government controls the price of fuels and some petroleum products.

Despite this extensive government involvement in other parts of the energy industry, South Africa exerts little or no control over the gas industry apart from licensing exploration, environmental standards and controls, and taxation. In essence the downstream industry is self regulated, with even specifications being self-imposed by the industry. While these standards have not created problems for the current scale of industry, future growth probably depends on the development of a formal regulatory framework.

With exploration and production of petroleum covered by the Minerals Act of 1991, there is no separate petroleum law to reconcile the differences between the onshore mineral rights and the offshore rights. Onshore mineral rights are held by individual owners, offshore are held by Soekor, the national oil company. In many cases the rights to the minerals have been severed from the land rights, and are held by individuals owners. Some have suggested the adoption of a petroleum exploration and production law to return the rights to petroleum and hydrocarbons to the state to facilitate licensing. However, returning the rights to hydrocarbons and petroleum owned by individuals would abrogate property rights granted under the Mineral Act of 1991.

The granting of individual property rights for oil and gas exploration onshore has created varying procedures for obtaining onshore leases. Standard terms do not apply to rights belonging to individual owners and there are no licensing rounds. Current taxation practices apply with terms ring fencing the income from each separate mine or gas field in a manner such that costs cannot be offset against income from other fields or businesses in South Africa.

With the government owning large tracts of land and all offshore mineral rights, offshore exploration opportunities are somewhat clearer. Soekor owns all the rights and subleases them in bidding rounds with royalties levied on a sliding scale. Because the lease from Soekor incorporates taxation terms as they stood in 1977, there is no ring fencing of income from oil and gas development, and costs may be offset against income from other sources in South Africa. Moreover, some speculate that the Soekor lease will protect against the secondary company tax. Consequently, for exploration and development strategies, offshore opportunities provide more attractive terms that opportunities onshore.

Research and Development Efforts in South Africa

- South Africa's scientific community is struggling to find a new role for itself in the post-apartheid environment. In the "old" South Africa, much of the country's research efforts were devoted to defense and state security. Since the Government of National Unity came to power, tackling poverty and improving access to health and education have become its top priorities. As a result, the scientific and research efforts of South Africa are being transformed from top to bottom and scientists are being encouraged to focus on these pressing national problems.

- This overhaul of South Africa's research system was laid out two years ago in a report written by an international group of technology policy experts.

  - One of the key proposals of the report was to set up a Cabinet-level department responsible for science and technology, which the new government did soon after its election. The Department of Arts, Culture, Science, and Technology (DCAST) is pursuing more relevant areas of research, such as photovoltaic cells (for solar power).

  - In addition, the Council for Scientific and Industrial Research (CSIR), which operates a collection of laboratories just outside Pretoria, is reorienting its work toward industrial applications in areas such as food processing, mining, forestry, microelectronics and construction. CSIR is also moving into areas such as developing building techniques for low-cost housing and equipment packages to set up sawmilling businesses and bakeries.

  - In addition to the CSIR, the four councils that fund research and development in medicine, agriculture, mineral technology, and human sciences are all shifting resources into projects designed to benefit the majority of the population.

  - A major sponsor of South Africa's best academic researchers is the Foundation for Research Development (FRD), a unique government body. FRD is also undergoing fundamental change in order to reflect the priorities of the new South Africa, for instance, improving science teaching in high schools and helping black universities compete more effectively for grant money. FRD has launched a University Development Program to foster a research culture in disadvantaged universities.

E-3

Energy Research Issues:

Establishing Contacts and Promoting Dialogue: A primary objective of this mission is to develop communication channels with those officials in government, academia, and the private sector responsible for setting and implementing the national science agenda. These contacts will allow a comprehensive assessment of South African interests and the furthering of collegial relations between scientists from both nations. In turn, this information will facilitate the identification of areas where partnering makes scientific (and economic) sense.

Leveraging Scientific Resources: Both South Africa and the United States are facing competing social priorities, and as a result, budgets for basic scientific research are not growing. Consequently, identifying areas of mutual research interest (and complimentary expertise) is a logical and cost-effective strategy. Also, collaboration generally produces better scientific research. Consequently, this mission will identify opportunities for *bilateral* partnerships that involve private and academic institutions in both nations. U.S. academic institutions involved in collaborative research will range from historically-black colleges to major public and private research universities.

Enhancing Scientific Capabilities: Apartheid policies prevented the vast majority of South Africans from receiving a formal education. Therefore, remedial training will be required in order for many to constructively participate in a dynamic South African economy. The Office of Energy Research intends to identify opportunities for scientists from the national laboratories and the private sector to assist in building the scientific and technical skill levels of all South Africans. This initiative may entail South Africans traveling to the United States for training and to participate in scientific and engineering projects. Conversely, it may require the temporary assignment of U.S. scientists to scientific and engineering programs in South African universities and scientific facilities.

Identifying Economic Opportunities: The Office of Energy Research recognizes that science must be conducted with an eye open to promoting economic growth, environmental quality, and international competitiveness. This mission allows the identification of critical technology gaps (e.g., scientific instrumentation and user facilities, environmental remediation and waste management technologies, etc.) in South Africa that could translate into new markets for U.S. companies. In particular, there may be significant opportunities for U.S. companies to facilitate the transfer of innovative environmental remediation and pollution control technologies to South Africa as well as provide long-term training in the use of these technologies.

Promoting Sustainable Development: Sustainable growth in population and living standards will necessitate the development of new energy production technologies. This mission will identify ways to achieve key sustainable development goals within South Africa and the United States. The Office of Energy Research will focus on opportunities for the development of energy technologies that can be pursued through cooperative ventures between U.S. and South African laboratories and universities.

United States - South African Binational Commission Background

The United States - South African Binational Commission, co-chaired by Vice President Albert Gore and Deputy President Thabo Mbeki, was established on March 1, 1995. Under the Binational Commission, there are five committees, with broad participation from various agencies.

The committees are: (1) Sustainable Energy Development, co-chaired by Energy Secretary O'Leary; (2) Business Development, co-chaired by Commerce Secretary Brown; (3) Conservation and Environment, co-chaired by Interior Secretary Babbitt; (4) Human Resources and Education, co-chaired by Agency for International Development Administrator Atwood; and (5) Science and Technology, co-chaired by Science Advisor Gibbons. Notably, the United States has established only one other binational commission mechanism (with Russia).

The first meeting of the United States - South African Binational Commission was held in Washington, D.C., in March 1995. The next meeting is scheduled to be held in Pretoria, South Africa, in December, and is anticipated to be an opportunity for each Committee to "showcase" its plans and progress to date.

Each Committee has drafted a Terms of Reference (charter), which formally establishes each Committee and delineates goals and objectives. To date, only the Terms of Reference for the Business Development Committee, which predates the actual establishment of the Binational Commission, has been signed. Negotiations continue on the other charters.

Under the Sustainable Energy Development Committee, preparatory discussions have been held among U.S. participants. The Terms of Reference is scheduled to be signed as the inaugural event for the first full session Committee Meeting on August 25, 1995, in Pretoria, South Africa. As a major capstone of Secretary O'Leary's Sustainable Energy Trade Mission, the Committee Meeting will highlight outcomes and emphasize energy policy formulation and capacity building activities.

Through the South African Department for Mineral and Energy Affairs, the Department of Energy has agreed, in principle, to a comprehensive cooperation that includes such broad areas as renewable energy, energy efficiency, and fossil energy technologies. Specific interests include use of photovoltaics in rural areas, advanced coal processes, and clean coal technologies.

Science and Technology:

Efforts are ongoing to finalize the United States - South African Environment, Science and Technology Agreement and the Terms of Reference for the Committee.

Several U.S. agencies, including National Aeronautics and Space Administration and the U.S. Information Agency, are planning electronic linkup between students at a South African elementary school and U.S. astronaut Winston Scott aboard the space shuttle in November.

The National Oceanic and Atmospheric Administration is building upon successful collaboration on climate prediction and assisting South Africa with efforts to develop a regional partnership for climate forecasting.

E-5
56

CAPACITY BUILDING
SOUTH AFRICA TRADE MISSION

Background

South Africa has expressed a desire to develop human capacity to assist in building an energy sector at all levels of the energy economy. Two thirds of South Africa's citizens must be brought into the economic mainstream. By assisting in the transfer of management, technical, and scientific expertise, the United States will help fuel economic growth, build long lasting relations, and, in the end, create more jobs in both South Africa and the United States.

The United States has joined South Africa in seeking enhanced participation of the previously disenfranchised majority as an important cornerstone to successful cooperation and a strong long-term relationship.

As part of the Secretary's commitment to the Gore-Mbeki Commission meeting, Capacity Building was identified as essential to South Africa in addressing these challenges.

Issues

- Rural homes, schools, and health clinics are in need of power for lights, communication and clean water.The need to provide energy so that all its citizens can lead economic productive lives, because at least 25% of the 32 million people are still settled in relatively remote areas where there is no electricity, thus making training in environmental and renewable energy applications essential.

- Because of the former social climate and structure, most of the black majority lack business and technical skills necessary for founding and operating a successful business, and there have been few opportunities for them to acquire the technical background needed to best participate in energy related business activities. And existing small and medium-sized enterprises are underdeveloped. So, there is a need to develop partnerships between U.S. and South African companies, laboratories, colleges and universities, and to improve the administrative, academic, and research infrastructures.

- Segregation in education, health, welfare, transport and employment left deep scars of inequality and economic inefficiency. The black majority workers are poorly equipped for the rapid changes taking place in the world economy, and the challenges facing South Africans are enormous. Thus, a need to enhance, empower and promote professional development of students, faculty and management/technical staff.

- The new South African government has inherited enormous backlogs in economic development, education, unemployment, lack of technological and managerial skills and know how, urban-rural imbalances, gender inequalities, and a myriad of other national and individual depravities. Only a comprehensive approach to harnessing the resources of the country can reverse the crisis created by apartheid. This has resulted in a lack of a sound energy and science technology base to support a sustainable energy market. The need exists for the development of intellectual, operational and experiential capacity through business development, transferring skills and technology, and education and training.

Clinton Administration Delegation for Sustainable Energy and Empowerment to South Africa

Led by the Honorable Hazel R. O'Leary, Secretary of Energy

MASTER SCHEDULE

Friday, August 18

12:30-1:30pm	Delegation Meeting and Briefing	
	SITE:	Signature Aviation, Dulles Airport
2:00pm(T)	Depart Washington, D.C. enroute Cape Town, South Africa	
	NOTE:	Pod meetings on plane

Saturday, August 19 -- Cape Town

12:30pm(T)	Arrive Cape Town, South Africa	
	MET BY:	Minister of Mineral and Energy Affairs Pik Botha Ambassador Princeton Lyman Steven Fried
	NOTE:	Arrival statement to media
1:00pm	Depart enroute Cape Sun Hotel	
1:30pm	Arrive Cape Sun Hotel	
4:00-6:00pm	**In-Country Briefing and Welcome reception hosted by Ambassador Lyman**	
	SITE:	Ambassador's Residence
	NOTE:	Media in attendance after briefing
	ATTENDEES:	Official Delegation
	ATTIRE:	Casual

08/17/95 at 04:03 am

Sunday, August 20 -- Cape Town

7:00-9:00am	Delegation breakfast	
	SITE:	Cape Sun Hotel, Tastevin Restaurant, 1st floor
	NOTE:	Briefing at 8:30am
8:00am-12:00pm	Oil and Gas Pod Geological site visit	
8:30-9:30am	Staff meeting	
	SITE:	Secretary's Work Room
10:30am	Depart enroute REFAD	
11:00am-12:45pm	**Visit to Renewable Energy for African Development training site**	
	SITE:	Peninsular Technicon
	NOTE:	Reception and light lunch at conclusion of event
	ATTENDEES:	Secretary plus Renewables pod and interested Delegates
12:30pm	Interested Delegates depart Hotel enroute Guguletu	
12:45pm	Secretary and REFAD participants depart enroute Guguletu	
1:00-3:00pm	**Visit to Guguletu Township**	
	SITE:	Guguletu
	NOTES:	Computer and Book donation at school in Guguletu
	ATTENDEES:	Secretary plus interested Delegates
3:30pm	Return to Cape Sun Hotel	
4:15pm	Business Delegation site visit	
5:00-6:00pm	Staff Meeting	
	SITE:	Secretary's Work Room

08/17/95 at 04:03 am

Monday, August 21 -- Cape Town

7:00-
8:30am Staff Meeting

SITE: Secretary's Work Room

7:30-
8:30am Delegation Meeting

SITE: Cape Sun Hotel, Tastevin Restaurant, 1st floor

9:00-
10:00am **Bilateral meeting with Minister Of Mineral and Energy Affairs Botha**

SITE: Mt. Nelson Hotel, room tbd

ATTENDEES:: tbd, pending site

10:00-
10:30am **Media Availability**

SITE: Mt. Nelson Hotel, room tbd

10:00am-
1:30pm Electricity Pod site visit to electrification project

10:30am-
2:00pm Hold for Bilateral Meetings and lunch

12:00-
1:30pm Business Delegation Lunch with the Organization for Economic Development of the Western Cape (WESGRO)

SITE: Cape Sun Hotel, VOC South, 3rd floor

2:00-
4:00pm **Roundtable Meeting with Parliament Energy Committee**

SITE: New Assembly E-249

ATTENDEES: Entire Delegation

08/17/95 at 04:03 am

Monday, August 21, Cont. -- Cape Town

4:00-
5:00pm **Hold**

5:00-
6:00pm **Bilateral Meeting with Deputy President ~~Mbeki~~** de Klerk

SITE: Deputy President's Office

5:30-
6:00pm Press briefing

SITE: Cape Sun Hotel, Constansia room, 2nd floor

7:00-
8:30pm **Welcome cocktail reception hosted by Minister Botha**

SITE: Groot Constantia Estate

NOTE: Secretary O'Leary arriving at 7:30pm

ATTENDEES: Entire Delegation

9:00-
9:30pm Delegation Meeting

SITE: Cape Sun Hotel, VOC North, 3rd floor

Tuesday, August 22 -- Cape Town and Johannesburg

7:00am	Some Delegates depart enroute Johannesburg commercially	
7:30- 8:30am	**Bilateral Meeting with Finance Minister Liebenberg**	
	SITE:	Minister Liebenberg's Office, 120 Plein St.
	ATTENDEES:	Secretary plus tbd
9:00am	Depart Cape Town enroute Johannesburg	
	NOTE:	Ambassador and Mrs. Lyman, Minister Botha and Gavin LeRoux, private secretary, will accompany the delegation.
9:00am	Some Delegates arrive Johannesburg	
9:40am	Some Delegates depart enroute Johannesburg commercially	
11:00am	Arrive Johannesburg Airport	
	NOTE:	Delegation splits between those going to the Ipolikeng School and to the hotel
11:30am	Depart Airport enroute Ipolokeng School, Soweto	
11:40am	Some Delegates arrive Johannesburg	
12:15- 1:30pm	**Visit to Ipolokeng School**	
	SITE:	Soweto
	NOTES:	Dedicate photovoltaic electricity system
		Computer and Book donation at school.
		Computer to be powered by newly-installed PV panels
	ATTENDEES:	Secretary plus Renewable pod plus interested Delegates
	ATTIRE:	Casual

08/17/95 at 04:03 am

Tuesday, August 22, Cont. -- Johannesburg

2:00-
2:15pm **Visit Photovoltaic Street Lighting Installation**

SITE: Alexandra River Community

2:00-
4:00pm Electricity and Oil and Gas Pod meeting with Sassol

2:00-
4:00pm Efficiency Pod visit to SAPPI pulp and paper mill

2:30-
3:15pm **Factory Ribbon Cutting and Tour of Photovoltaic Manufacturing Facility**

SITE: 55, 12th Rd, Kew, Wynberg

3:00-
4:30pm Electricity and Oil and Gas Pod meeting with Chamber of Mines

4:30-
5:30pm **Meeting with National Electricity Regulator Ian MacRae**

SITE: Carlton Hotel, Lowveld Room, 2nd floor

ATTENDEES: Secretary plus tbd

5:30-
8:00pm South African Business Briefing and Reception

SITE: Carlton Hotel, Lowveld room, 2nd floor

6:30-
7:00pm Press Briefing

SITE: Carlton Hotel, Boemfontein room, 4th floor

08/17/95 at 04:03 am

Wednesday, August 23 -- Johannesburg

7:30-
8:15am Staff Meeting

SITE: Secretary's Work Room

7:30-
8:15am Delegation Meeting and Breakfast

SITE: Carlton Hotel, Top of The Carlton, 30th Floor

7:30-
8:15am Meeting of Summit Breakout Session Chairs and Coordinators

SITE: Carlton Hotel, Boemfontein room, 4th floor

8:30-
10:00am **Energy Summit Opening Plenary Session**

SITE: Carlton Hotel, Cape room, function level

NOTE: Presentations by Secretary O'Leary and Minister Botha

ATTENDEES: Entire Delegation

Secretary O'Leary's Agenda

10:30-
11:30am **Media Opportunities**

SITE: Carlton Hotel

2:00-
2:45pm **Meeting with Minister of Public Enterprises Sigcau**

SITE: Minister Sigcau's Office
Infotech building, 4th floor, Arcadis Street, Hatfield
012-3423-7111

ATTENDEES: Secretary plus 13

3:45-
4:30pm **Meeting with Atomic Energy Corporation CEO Stumpf**

SITE: Carlton Hotel, room 801

NOTE: Minister Botha attending

08/17/95 at 04:03 am

Wednesday, August 23, Cont. -- Johannesburg

Delegation Agenda

10:15am-
12:45pm Energy Summit Breakout session discussions

Breakout sessions: Urban Household Energy Supply and Use
Rural Energy Supply and Use
Conventional Approaches to Electricity Supply
New Approaches to Energy Supply
Energy Efficiency
Gas Market Development
Liquid Fuels

12:45-
2:15pm Energy Summit Lunch -- Topic: Capacity Building, Finance and Environment

SITE: Carlton Hotel, Top of the Carlton, 30th Floor

2:30-
4:30pm Energy Summit Breakout session discussions, conclusions

Secretary and Delegation

4:45-
6:00pm **Energy Summit Reporting Session**

SITE: Carlton Hotel, Cape room, 4th floor

6:00-
6:30pm Press Briefing

SITE: Carlton Hotel, Boemfontein room, 4th floor

6:30-
8:00pm **Reception hosted by Secretary O'Leary**

SITE: Carlton Hotel, Top of the Carlton, 30th Floor

ATTENDEES: Entire Delegation

08/17/95 at 04:03 am

Thursday, August 24 -- Johannesburg

7:00-8:00am	Staff Meeting	
	SITE:	Secretary's Work Room
7:00-8:00am	Delegation Meeting	
	SITE:	Carlton Hotel, Top of the Carlton, 30th Floor
9:00-11:00am	**Secretary visits Technicon of the Northern Transvaal**	
	SITE:	tbd
	NOTES:	Presentations by Secretary O'Leary and Dr. Mae Jemison
		Computer and Book donation to the I Can Foundation
		Announcement of student and teacher education initiatives
	ATTENDEES:	Secretary plus Capacity Building Pod and interested Delegates
9:00-11:00am	Financing Roundtable	
	SITE:	Carlton Hotel, Cape room, 4th floor
	NOTE:	No Secretarial Participation
	ATTENDEES:	Interested Delegates

11:00am Some participants depart Technicon of the Northern Transvaal enroute ESKOM

11:00am Some participants depart Technicon of the Northern Transvaal enroute Hotel

11:00am ESKOM participants depart enroute ESKOM

08/17/95 at 04:03 am

Thursday, August 24, Cont. -- Johannesburg

12:00-
2:00pm **Meeting and Lunch with ESKOM Chairman and CEO**

SITE: ESKOM Building, Megawatt Park

ATTENDEES: Secretary plus 23

1:00-
2:30pm Renewables Pod meeting with Center for Scientific and Industrial

3:30-
5:30pm **Roundtable: Making Energy Policy**

SITE: Carlton Hotel, Loveld Room, 2nd floor

ATTENDEES: Entire Delegation

6:00-
6:30pm Press Briefing

SITE: Carlton Hotel, Bloemfontein room, 4th floor

7:30-
9:30pm **Dinner hosted by American Chamber of Commerce**

SITE: Carlton Hotel, Highveld room, 2nd floor

NOTE: Presentations by Secretary O'Leary and Minister Botha

ATTENDEES: Entire Delegation

08/17/95 at 04:03 am

Friday, August 25

tbdam	Delegation Meeting	
	SITE:	Carlton Hotel, Top of the Carlton, 30th Floor
9:00-10:00am	**Bilateral Meeting with Minister of Trade and Industry Manuel**	
	SITE:	Minister Manuel's Office House of Trade and Industry, 11th floor, Corner of Pretorius and Prinslo 012-322-7677
	ATTENDEES:	Secretary plus
10:30-11:30am	**Meeting of Energy Committee of Binational Commission**	
	SITE:	Union Building, Pretoria
	ATTENDEES:	Entire Delegation
11:30am-12:00pm	**Signing Ceremony for Bilateral Agreements and Business Deals**	
	SITE:	Union Building Courtyard, Pretoria
	ATTENDEES:	Entire Delegation
12:00-12:30pm	**Press Conference**	
	SITE	Union Building, Pretoria
1:00-3:00pm	Renewables Pod visit to solar homes outside of Pretoria	
pmtbd	Site visit for Secretary O'Leary	
pmtbd	Site visit by Business Delegation	

Saturday, August 26

8:00am	Depart Carlton Hotel enroute Johannesburg Airport
9:00am	Depart Johannesburg enroute Kimberley Airport
10:00am	Arrive Kimberley Airport, met by Premier Dipico, Premiers of Northern Province and Free State, other VIPs
	Depart enroute Kimberley
10:30am	Arrive Kimberley
10:30-11:00am	**Coffee with Premier and VIPs**
	Delegation in reception with provincial business people
11:00am-12:30pm	**Roundtable on Provincial Issues, Renewables, Mining and Financing**
	Draft roundtable program: Welcome by Premier Dipico Welcome by Secretary O'Leary U.S. presentation on generic benefits of renewables South African presentation on specific needs, potential areas of cooperation U.S. response Discussion Conclusions
Note:	Site visit options for Business Delegation members not participating in roundtable
12:30-1:00pm	**Reception and informal discussion with pod groups and counterparts**
1:00-2:30pm	**Luncheon hosted by Premier Dipico**
	NOTE: Toast by Secretary Possible announcement of pilot project
3:00pm	Depart Kimberley enroute Kimberley Airport
4:00pm	Depart Kimberley Airport enroute U.S.
8:00am(T)	Arrive Washington, D.C. (Sunday, August 27)

08/17/95 at 04:03 am

POD EVENTS FOR DOE BUSINESS DELEGATION

Sunday, August 20, 1995 **8:00am - 12:00pm**

The Oil and Gas pod will host a geological field trip to Table Mountain and other sites. SOEKOR, a Cape Town -based oil and gas exploration company, is providing materials packets and leadership for this event.

Address: Cape Sun group departure to Table Mountain

Note: Maximum participation for this event is 15 delegation members.

Contact: Charles Brown

Monday, August 21, 1995 **10:00am - 1:30pm**

The Electricity pod will lead 25 delegation members to a visit at an ABB electrification site. A site briefing and lunch will be provided.

Address:

Note: Maximum participation for this event is 20 delegates.

Contact: Dave Meyer

Tuesday, August 22, 1995 **12:30pm - 2:00pm**

The Electricity and the Oil and Gas pods are meeting with SASOL . SASOL is South Africa's synthetic fuels company for conversion of coal to gas, oil and chemicals. *[Date for SASOL meeting may change to Friday, Aug. 25, 1995].*

Address: 1 Sturdee Avenue, Rosebank 2196
Johannessburg

Note: Participation is unlimited

Contact: Art Baldwin or Charles Brown

Tuesday, August 22, 1995 **2:00 - 4:00pm**

Efficiency pod to visit SAPPI, South Africa's pulp and paper mill producer, to discuss process and energy efficient technologies.

Address: 48 Ameshoff St
Braamfontein

Note: Participation is limited to 15 people.

Contact: Peter Salmon-Cox

Tuesday, August 22, 1995 **3:00pm - 4:30pm**

The Electricity and Oil and Gas pods are sponsoring a meeting with the Chamber of Mines to obtain an overview of South Africa's coal industry, mining and minerals policy, environmental concerns, and to discuss coal bed methane development and other initiatives of mutual interest at a coal testing facility.

Address: Chamber of Mines building, Ground Floor Conference Centre: 5 Hollard Street (off Marshall St. between Sauer and Simmonds Sts) Johannesburg

Note: Maximum participation for this event is 18-20 delegates.

Contact: Art Baldwin and Charles Brown

Tuesday August 22, 1995 **4:00pm - 4:45pm**

Efficiency Pod to visit Chamber of Mines to be briefed on South African Mine operations with emphasis on efficiency gold mining.

Address: 3 Hollard Street
Johannesburg

Note: Participation is limited to 15 people

Contact: Peter Salmon-Cox

Tuesday, August 22, 1995 **5:00pm - 5:30pm**

Efficiency pod to meet with Steel and Engineering Industries Federation of South Africa to be briefed on recent developments, energy use and energy efficiency issues in steel, ferro-alloy, foundry and aluminum industries.

Address: Efficiency Pod Room, Carlton Hotel

Contact: Peter Salmon-Cox

Thursday, August 24, 1995 **1:00pm - 2:30pm**

The Renewables pod will visit and meet renewable energy staff at Center for Scientific and Industrial Research (CSIR). This event starts at 1:00pm with lunch.

Address: Pretoria

Note: Participation is unlimited

Contact: Paul Klimas or Chris Sherring

Friday, August 25, 1995 **1:00pm - 4:00pm**

The Renewables pod and personnel from the Department of Minerals and Energy Affairs will visit a group of solar powered homes outside of Pretoria.

Address: Group will meet at DMEA, Visage St; Pretoria and proceed to location of demonstration site.

Note: Maximum participation for this event is unlimited.
Contact: Chris Sherring or Paul Klimas

E-3
74

Department of Energy Business Facilitation Center

Clinton Administration Delegation on Sustainable Energy and Empowerment to South Africa

Led by Department of Energy Secretary Hazel R. O Leary

WHO ARE WE?

Dawn Schrepel
Marti S. Thomas
Andrea Esquer
Ann Walls

WHAT WILL WE DO FOR THE DOE BUSINESS DELEGATION?

- Maintain up-to-date delegation listing and schedule of POD activities and POD events
- Assist you in connecting with the South Africa business world
- Schedule business appointments and business calls
- Provide nightly updates and mission notes

2 LOCATIONS TO SERVE YOU

Capetown

Cape Sun Hotel Room 2915 Phone: 021-242-256

Johannesburg

Carlton Hotel Room: 1101 Phone: 011-331-8911

Hours of Operation:

Capetown

August 19,	Saturday	10am - 10pm
August 20,	Sunday	8 am - 11 pm
August 21,	Monday	7 am - 11 pm
August 22,	Tuesday	6 am- Noon

Johannesburg

August 22,	Tuesday	7 am- 11 pm
August 23,	Wednesday	7 am -11 pm
August 24,	Thursday	7 am- 11 pm
August 25,	Friday	7 am- 6 pm

PLEASE LET US HELP YOU MAKE THIS MISSION AS SUCCESSFUL AS POSSIBLE

CONTACT LIST-South Africa

Access Numbers

Cape Town-to-US:	0-9-1-Area Code+Number
Cape Town-to-Johannesburg:	0-11+Number
Cape Town-to-Pretoria:	0-12+Number
Johannesburg-to-US:	0-9-1-Area Code+Number
Johannesburg-to-Cape Town:	0-21+Number
Johannesburg-to-Pretoria:	0-12+Number
US-to-Cape Town:	011-27-21+Number
US-to-Johannesburg:	011-27-11+Number
US-to-Pretoria:	011-27-12+Number

Note: To call a cellular phone from the US: Dial 011.27.82 plus the last 7 digits of the cellular number.

Cape Town Cape Sun Hotel

Phone #: 23-8844 (from US: 011.27.21.23-8844)

Name	Room	
Staff Room	Room 3116	
	24-2247 (voice)	(from US:011.27.21.24-2247)
	24-2268 (voice/data)	(from US:011.27.21.24-2268)
	24-2273 (Mac room)	(from US:011.27.21.24-2273)
	24-2269 (fax)	(from US:011.27.21.24-2269)
Command Post	Room 3115	
	23-0068 (voice)	(from US:011.27.21.23-0068)
	23-0096 (fax)	(from US:011.27.21-23-0096)

Support Team

Communications and Computer Team:		Cel. Phone
Joe Carter	2202	
Peter Englert	2406	
John Stush	2414	
Security Team:		
Bob Newman	arriving 8/19	
Marvin Mittlestat	1213	
Paul Saunders	arriving 8/15	
Terry Moist	arriving TBD	
Admin Team:		
Bob Jankovits	2216	
Al Owens	1204	082-457-0758

CONTACT LIST-South Africa

Johannesburg Carlton Hotel

Phone #:	331-8911	(from US: 011.27.11.333-8911)
Name	Room	
Staff Room	333-6902 (voice)	(from US:011.27.11.333-6902)
	333-6830 (voice)	(from US:011.27.11.333-6830)
	333-6918 (Mac)	(from US:011.27.11.333-6918)
	333-6898 (fax)	(from US:011.27.11.333-6898)
Command Post	333-6809 (voice)	(from US:011.27.11.333-6809)
	333-6891 (fax)	(from US:011.27.11-333-6891)
	333-6852 (data)	(from US:011.27.11-333-6852)

Support Team

Communications and Computer Team:		Cel. Phones
Martin Walsh	1211	
Peter Englert	arriving 8/22	
Tom Monahan	1222	
Security Team:		
Bob Newman	arriving 8/22	
Dwight Brown	?	
Stewart Statham	?	
Steve Zuck	?	
Admin Team:		
Al Owens	1204	082-457-0758
Don Frizzell	1218	
Logan Watts	1225	

Contacts Pretoria

		Cel Phone	Home
Pretoria Embassy	342-1048	(after hours-----)	fax-012.342-2245
Mike Cleverly		082-457-0092	
Catherine Corson		082-457-0751	012.47-2902

Cape Town

Cape Town Consulate	21-4280 (after hours-21-4283)	
Control Officer	Matt Meyer	
CPU	Earl Green	21.75-7706
	Chuck Reynolds	
Admin	Stephanie Brown	
	Desiree (Asst. Admin)	
GSO	James Brady	
RSO	Dan Wutrich	
South African Police	Gerard Victor	wk-467-6435 (fax-467-7411)

LISTING OF POD ROOMS/AVAILABILITIES

CAPE SUN HOTEL
CAPE TOWN, SOUTH AFRICA
(Sunday, August 20 - Tuesday, August 22, 1995)

POD	ROOM LOCATION	AVAILABILITY
Electricity	Constantia Room *Second Floor*	All Day
Renewables	Paarl Room A *Second Floor*	All Day
Finance	Paarl Room B *Second Floor*	All Day
Efficiency	Stellenbosch Room A *Second Floor*	All Day
Environmental	Stellenbosch Room B *Second Floor*	All Day
Oil and Gas	Stellenbosch Room C *Second Floor*	All Day
Capacity Building Policy R&D	Franschhoek Room *Third Floor*	All Day

E-3
78

LISTING OF POD ROOMS/AVAILABILITIES

CARLTON HOTEL
JOHANNESBURG, SOUTH AFRICA
(Tuesday, August 22, 1995 ONLY)

POD	ROOM LOCATION	AVAILABILITY
Electricity	International Suite *Fourth floor*	All Day
Renewables	Highveld pre-function area *Second floor*	All Day
Finance	Lecture Room # 3 *29th floor*	All Day
Efficiency	Top of the Carlton *30th floor*	All Day
Environmental	Lowveld, pre-function area *Second floor*	All Day
Oil and Gas	Top of the Carlton *30th floor*	All Day
Capacity Building Policy R&D	Quarterdeck *First floor*	All Day

LISTING OF POD ROOMS/AVAILABILITIES

CARLTON HOTEL
JOHANNESBURG, SOUTH AFRICA
(Wednesday, August 23, 1995 ONLY)

POD	ROOM LOCATION	AVAILABILITY
Electricity	Lecture Room #3 *29th floor*	All evening after Summit
Renewables	Pretoria Room *Fourth floor*	All evening after Summit
Finance	Lecture Room # 4 *29th floor*	All evening after Summit
Efficiency	International Suite *Fourth floor*	All evening after Summit
Environmental	Durban Room *Fourth floor*	All evening after Summit
Oil and Gas	East London Room *Fourth floor*	All evening after Summit
Capacity Building Policy R&D	Quarterdeck *First floor*	All evening after Summit

LISTING OF POD ROOMS/AVAILABILITIES

CARLTON HOTEL
JOHANNESBURG, SOUTH AFRICA
Thursday, August 24, 1995 ONLY)

POD	ROOM LOCATION	AVAILABILITY
Electricity	Lecture Room #2 *29th floor*	All Day
Renewables	Lecture Room #1 *29th floor*	All Day
Finance	Lecture Room #3 *29th floor*	All Day
Efficiency	Lecture Room #4 *29th floor*	All Day
Environmental	East London Room *Fourth floor*	All Day
Oil and Gas	Durban Room *Fourth floor*	All Day
Capacity Building Policy R&D	Quarterdeck *First floor*	All Day

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Vello A. Kuuskraa
President
Advanced Resources International
1110 North Glebe Road. Suite 600
Arlington. VA 22201
(703) 528-8420 office
(703) 528-0439 fax
oil and gas

Mr. Ed Romero
Chairman
Advanced Sciences. Inc.
6739 Academy Road. NE
Albuquerque. NM 87109
(505) 828-0959 office
(505) 828-0173 fax
environment

Mr. Ken Woodcock
Senior Vice President
AES Corporation
1001 North 19th Street. Suite 2000
Arlington. VA 22209
(703) 522-1315 office
(703) 528-4510 fax
Electricity

Mr. John Butler
Vice President
African Electrification Foundation
5120 West Goldleaf Circle. Suite 280
Los Angeles. CA 90056
(213)298-1040 office
(213)298-4580 fax
electricity

Mr. C. Payne Lucas
Africare
440 R Street. NW
Washington. DC 20001
(202) 462-3614 office
(202) 387-1034
policy

Ms. Cheryl Alexander
CEO
Alexander Companies
3205 Casco Circle
Wayzata. MN 55391
(612) 471-0121 office
(612) 471-7434 fax
capacity buiilding

Mr. George Edwards
Vice President of International Negotiations
Amoco Exploration & Production Co.
P.O. Box 3092. Room 21188
Houston. TX 77253-2696
(713) 366-4543 office
(713) 366-5717 fax
oil and gas

Mr. Mark Sawyer
Vice President
ARCO International Oil and Gas
New Business Ventures
2300 West Plano Parkway
Plano. TX 75075
(214) 509-6684 office
(214) 509-3090 fax
oil & gas

C-2
82

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. D. Michael Clark
President
Atlantic-Pacific Technologies. Inc.
44853 Fremont Boulevard
Fremont. CA 94538
(510) 651-9995 office
(510) 651-9841 fax
renewables

Dr. Larry T. Papay
Senior Vice President
Bechtel Group. Inc.
50 Beale Street
Mail Stop 50/17/B36
San Francisco. CA 94105-1895
(415) 768-0275 office
(415) 768-0503 fax
energy efficiency

Mr. Ed Badolato
Bogart Environmental Services
2202 Kings Garden Way
Falls Church. VA 22043
(703) 821-7725 office
(703) 821-7789 fax
environment

Mr. Cordell Reed ✓
Senior Vice President
Commonwealth Edison
1 First National Plaza. 10 Dearborn - 37th Floor
Chicago. IL 60603
(312) 394-3121 office
(312) 394-3110 fax
electricity

Mr. Jerome Davis X
President
Cummins Power Generation
500 Jackson Street
Mail Code 60125. P.O. Box 3005
Columbus. IN 47202-3005
(812) 377-3743 office
(812) 377-4453 fax
renewables

Deputy Assistant Secretary Regina Brown ✓
Bureau for African Affairs
Department of State (STATE)
Room 6234-A
Washington. DC 20520
(202) 647-1818 office
(202) 647-6301 fax
Binational Commission

Mr. Jude Kearney ✓
Deputy Assistant Secretary for Service Industries and Finance
Department of Commerce (COMMERCE)
Room 1128
14th Street & Constitution Avenue. NW
Washington. DC 20230
(202) 482-5261 office
(202) 482-4775 fax
Binational Commission

Mr. Rodney Webb ✓
Senior Vice President
Destec Energy
2500 Citywest Blvd. Suite 150
Houston. TX 77042
(713) 735-4229 office
(713) 735-4059 fax
electricity

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Michael Kammerer
President
Dresser Valve & Control
10077 Grogans Mill Road, Suite 500
The Woodlands, TX 77380
(713) 367-5741 office
(713) 363-8244 fax
oil and gas

Ms. Mary T. Boyd
Vice President, Corporate Services
Duke Engineering & Services
230 South Tryon Street, Suite 400
Charlotte, NC 28202
(704) 382-8024 office
(704) 382-8389 fax
electricity

Mr. Jan Hartke
President
Earthkind International
2100 L Street, NW, Suite 500
Washington, DC 20037
(202) 778-6149 office
(202) 778-6134 fax
environment

Mr. Robert Eggleston
President and CEO
EFH Coal Company
89 Miller Street
West North End Station
Wilkes-Barre, PA 18705
(717) 823-7664 office
(717) 829-4515 fax
electricity

Ms. Nancy Bacon
Senior Vice President
Energy Conversion Devices, Inc
1675 West Maple Road
Troy, MI 48084
(810) 280-1900 office
(810) 280-1456 fax
renewables

Mr. Richard Guy
Vice President
Energy Initiatives, Inc.
1 Upper Pond Road
Parsippany, NJ 07054
(201) 263-6953 office
(201) 263-6977 fax
electricity

Mr. Terence Thorn
Senior Vice President
Government Affairs & Public Policy
Enron Corporation
P.O. Box 1188
1400 Smith Street
Houston, TX 77251-1188
(713) 853-6161 office
(713) 646-4831 fax
oil and gas

Mr. Dan Dudek
Senior Economist
Environmental Defense Fund
257 Park Avenue South
New York, NY 10010
(212) 505-2100 office
(212) 505-2375 fax
environment

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Clark Gellings
Vice President
EPRI
3412 Hillview Avenue
Palo Alto. CA 94303
(415) 865-2000
(415) 855-8501
electricity

Dr. Norain Hingorani
Vice President
EPRI
26480 Weston Drive
Los Altos Hills. CA 94022
(415) 941-4309 office
(415) 941-5240 fax
electricity

The Honorable Julie Belaga
Member of the Board
Export-Import Bank of the United States
811 Vermont Avenue. NW
Washington. DC 20571
(202) 565-3540 office
(202) 565-3548 fax
Binational Commission

The Honorable James Hoecker
Commissioner
Federal Energy Regulatory Commission
825 North Capital Street. NE
Room 9300
Washington. D.C. 20426
(202) 208-0383 office
(202) 208-0151 fax
electricity

Dr. Frederick S. Humphries
President
Florida A&M University
Administration Center. Room 301
Tallahassee. FL 32307
(904) 599-3225 office
(904) 561-2152 fax
research & development

Mr. John Bradburne
Vice President
Fluor Daniel
800 Connecticut Avenue. NW, Suite 600
Washington. DC 20006
(202) 955-9314 office
(202) 833-1630 fax

Mr. John Coors
President
Golden Photon. Inc.
4545 McIntyre Street
Golden. CO 80403
(303) 271-7177 office
(303) 271-7410 fax
renewables

Mr. Mannie Jackson
Senior Vice President. International Programs
Honeywell. Inc.
P.O. Box 524
Minneapolis. MN 55440-0524
(202) 857-9801 office
(202) 857-9858 fax
energy efficiency

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Karl Butler
President
ICC Energy Corporation
311 North Market Street
Dallas, TX 75202
(214) 744-2204 office
(214) 744-2206 fax
oil & gas

The Honorable Emmitt George
Commissioner
Iowa Public Utilities Board
Lucas State Office Building, 5th Floor
Des Moines, IA 50319
(515) 281-5325 office
(515) 281-8821 fax
policy

Mr. David Benhke
Managing Director
J.P. Morgan & Company
60 Wall Street
New York City, NY 10260
(212) 648-7675 office
(212) 648-5335 fax
finance

Dr. Mae Jemison
Executive Director
Jemison Group, Inc.
P.O. Box 591455
Houston, TX 77259-1455
(713) 486-7918 office
(713) 486-7522 fax
policy

Mr. Tom Gannon
Vice President
Johnson Controls
507 East Michigan Street
Milwaukee, WI 53202
(414) 272-6424 office
(414) 228-2077 fax
energy efficiency

Mr. Clarence L. James, Jr.
President and CEO
Keefe Company (The)
444 North Capitol Street, NW
Suite 517A
Washington, DC 20001
(202) 638-7030 office
(202) 638-6784 fax
finance

Mr. Harold J. "Hank" Keohane
Partner
Keohane & Keegan
21 Custom House Street
Boston, MA 02110
(617) 951-1400 office
(617) 951-1354 fax
electricity

Mr. Michael Hodge
Marketing
L.A.S. Energy Corporation of Florida
1265 South Semoran Blvd.
Suite 1250, Building #4
Winter Park, FL 32792-5506
(407) 678-2600 office
(407) 678-3099 fax
oil and gas

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Ernest L. Holloway
President
Langston University
Langston, OK 73050
(405) 466-3388 office
(405) 466-3461 fax
capacity building

Mr. Musheer Robinson
Senior Vice President
National CSG Public Sector - Practice Leader
Marsh & McLennan
10 South Broadway
St. Louis, MO 63102-1719
(314) 342-2653
(314) 241-0751
finance

Mr. Frank Russell
Global Power Strategic
Advisory Services
Merrill Lynch and Company
250 Vesey Street, 27th floor
New York City, NY 10281-1327
(212) 449-9793 office
(212) 449-8636 fax
finance

Ms. Kathy O'Reilly
Molten Metal Technology
1615 L Street, N.W., Suite 540
Washington, DC 20036
(202) 835-8940 office
(202) 835-8938 fax
electricity

Dr. Walter Massey
President
Morehouse College
830 Westview Drive, SW
Atlanta, GA 30314
(404) 215-2645 office
(404) 659-6536 fax
research & development

Mr. Granville "Pete" Smith
South African Program Director
National Rural Electric Cooperative Association
1800 Massachusetts Avenue, NW
Washington, DC 20036-1883
(202) 857-9686 office
(202) 857-4863 fax
renewables

Dr. David Reichle
AssociateDirector
Oak Ridge National Laboratory (ORNL)
P.O. Box 2008
Oak Ridge, TN 37831
(615) 576-2900 office
(615) 241-2967 fax
research & development

Mr. Dana Marshall
Senior Advisor for International Economic Affairs
Office of the Vice President
Old Executive Office Building
Washington, DC 20501
(202) 395-6013 office
(202) 395-6042 fax
Binational Commmission

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Ms. Jane Wales
Associate Director for National Security
and International Affairs
Office of Science and Technology Policy
Old Executive Office Building, Room 494
Washington, DC 20500
(202) 456-2894 office
(202) 456-6028 fax
Binational Commission

Mr. Joel Bennett
President
Parsons Engineering Science, Inc.
100 West Walnut Street
Pasadena, CA 99124
(818) 440-4412 office
(818) 440-6195 fax
environment

Dr. Lilia Abron
President
PEER Consultants
12300 Twinbrook Parkway,
Suite 410
Rockville, MD 20852
(301) 816-0700 office
(301) 816-9291 fax
environment

Mr. Jerome Foster
President and CEO
Pentech Energy
1250 24th Street, NW, Suite 350
Washington, DC 20037
(202)467-2797 office
(202)467-2796 fax
electricity

Mr. Charles Condy
President and CEO
Proven Alternatives, Inc.
601 California Street, #2200
San Francisco, CA 94108
(415) 781-2001 office
(415) 781-0552 fax
energy efficiency

Mr. Wendell F. Holland
Esquire of Counsel
Reed, Smith, Shaw, and McClay
2500 One Liberty Place
1650 Market Street
Philadelphia, PA 19103-7301
(215) 851-8100 office
(215) 851-1420 fax
electricity

Ambassador Leonard Spearman
Chairman of the Board
Renewable Energy for African Development
122 Street, NW, 4th floor
Washington, DC 20001-2109
(202) 383-2557 office
(202) 383-2555 fax
renewables

Ms. Jan Schori
General Manager
Sacremento Municipal Utility District
6201 S Street
Sacremento, CA 95817
(916) 732-5325 office
(916) 732-6562 fax
electricity

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Mr. Lindley DeGarmo
Director
Salomon Brothers
7 World Trade Center, 30th floor
New York City, NY 10048
(212) 783-5879 office
(212) 783-4164 fax
finance

Mr. George Avery
Shaw, Pittman, Potts, & Trowbridge
2300 N Street, NW
Washington, DC 20037-1128
(202) 663-8856 office
(202) 663-8007 fax
finance

Ms. Sharon Moore
Vice President - Business Development
Sithe Energies, Inc.
450 Lexington Avenue
New York, NY 10017
(212) 450-7345 office
(212) 450-9005 fax
electricity

Mr. John J. McAtee, Jr.
Vice Chairman
Smith Barney, Inc.
388 Greenwich Street, 34th floor
New York City, NY 10013-0060
(212) 816-6000 office
(212) 816-7029 fax
finance

Mr. Roger G. Little
President and CEO
Spire Corporation
One Patriots Park
Bedford, MA 01730-2396
(617) 275-6000 office
(617) 275-7470 fax
renewables

Mr. Paul Koeppe
President
Superconductivity, Inc.
2114 Eagle Drive
Middleton, WI 53582
(608) 828-9131 office
(608) 831-5793 fax
electricity

Mr. Larry Byrne
Assistant Administrator
Bureau for Management
U.S. Agency for International
Development
320 21st Street, NW
Washington, DC 20523
(202) 647-8646 office
(202) 736-4147 fax
Binational Commission

Mr. Wilbur Thomas
Bureau for African Affairs
U.S. Agency for International
Development
320 21st Street, NW
Washington, DC 20523
(202) 647-4344 office
(202) 736-4147 fax
Binational Commission

Clinton Administration Delegation on
Sustainable Energy and Empowerment to South Africa
OFFICIAL DELEGATION

Dr. Kneeland Youngblood
Director - Member of the Board
U.S. Enrichment Corporation USEC
6903 Rockledge Drive
Betheda, MD 20817
(301) 564-3448 office
(301) 564-3202 fax
oil & gas

Ms. Tina Poitevien
Partner
Washington, Hackett, Poitevien & Co.
1500 Walnut Street, Suite 303
Philadelphia, PA 19102
(215) 772-1130 office
(215) 772-1416 fax
finance

Ms. Carol Earls-Franklin
Manager EEO/Employment
Western Resources
818 Kansas Avenue, P.O. Box 8890
Topeka, KS 66601
(913) 575-6511 office
(913) 575-6523 fax
capacity building/electricity

Mr. Kenneth C. Karas
President and CEO
Zond Systems, Inc.
1300 Jameson Road, P.O. Box 1910
Tehachapi, CA 93581
(805) 822-6835 office
(805) 822-7880 fax
renewables

E-3
65

Oil and Gas Geologic Field Trip

Title: Field Trip to view the Geologic Resources of South Africa.

Time: Sunday - August 20th, 1995.

Participants: South African Geological Survey, U.S. Fossil Energy Delegation, South Africa petroleum & gas, coal companies (Sasol, LTD, Moss Gas, GENCOR) various appropriate South African ministries (Department of Water and Forestry, Chamber of Mines, National Coal Consortium, University of Capetown).

Location: Capetown - Table Mountain and other geological sites around Capetown.

Format:

8:00 a.m. Estimated Departure - Leave Cape Sun Hotel
8:30 a.m. Arrive by van and proceed by cable car to the mountain top
9:00 a.m. Discussion of geological features of South Africa - onshore and offshore.
10:00a.m. Other Sites/Chapsman Peak Drive: TBD time permitting
11:30a.m. Departure to Cape Sun Hotel
12:00 noon Arrive Cape Sun Hotel

Key Issues:

- Table Mountain is a world renowned geological feature and will be discussed in the context of the geology of South Africa and the potential occurrence and distribution of natural resources, specifically, natural gas and petroleum resources.

Points:

- Geological materials packet will be distributed. Trip will be led by members of SOEKOR Senior Staff. This event will be of interest to all pods especially Oil & Gas, and Environmental. There will be other significant topical discussions.
  Note: *Maximum participation for this event is Oil & Gas pod members + seven additional delegation members. Non O&G pod members should contact Charles Brown.*

Contact:

Dr. Charles Brown - Oil and Gas Advance
Capetown 24-2247 and fax 24-2269 (Cape Sun);
Johannesberg 333-6902 and fax 333-6898 (Carlton);

Mr. Reginal Spiller, DAS for Gas and Petroleum Technologies

E-3
91

Renewable Energy Regional Training Center
Dedication and Launch of Training Consortium

Location: Peninsula Technikon, east of Cape Town

Time: 11:30 AM - 12:30 PM, 20 August 1995

Participants: South African Minister of Education, Peninsula Technikon officials and students, DMEA representative, ESKOM representative, IDT representative, EDRC representative, US Embassy representative, US AID representative, South African renewable energy industry representatives (including Suncorp Holdings), Renewable Energy Pod and other interested delegation members (bios forthcoming).

Issues:

- Critical success factors for renewable energy in Southern Africa include a widespread awareness of the benefits and applications of renewable energy technology, and the creation of a sustainable local capacity for system design, installation, operations and maintenance. It has also been recognized that a crucial element in the success of the technology is the extent to which South Africa's Black population is empowered with this capacity.

Talking Points: These include:

- REFAD will play a major role in rural electrification programs, helping fulfill the RDP goals by reaching up to 10 million rural citizens not expected to have grid electricity within the next 20 years. Additionally, many of the students that attend this technikon currently live in homes without electricity and will promote renewable energy applications.
- Renewable technologies taught at REFAD will help provide solar hot water technical capability in urban South Africa, replacing coal heaters and thereby reducing pollution and detrimental health effects of burning coal.
- Solar hot water in rural South Africa will alleviate demand on wood gathering and burning and thereby reducing environmental degradation and increasing the time available for other productive purposes for the mostly female wood gatherers.
- REFAD and the consortium can significantly impact the country's capacity to take advantage of the benefits of renewable energy as well as provide economic development opportunities for both users and suppliers.

- The Department has the opportunity to formally define its support for capacity building by providing technical consultation, state of the art training materials, faculty exchanges, etc.
- REFAD offers an opportunity to encourage a positive predisposition

E-3
110

Outcomes:

- Understanding of ESKOM views and plans re: electrification, environmental requirements, diversifying generation base, and capacity building.
- Assessment of future markets for electricity in South Africa and Southern Africa.
- Assessment of role for natural gas & clean coal technologies in meeting electricity demand.
- U.S. public and private sectors interface with ESKOM to meet demand from electrical grid expansion in the RSA and southern Africa.
- Clarify DOE role in ESKOM-EPRI Center for Essential Community Services

Meeting with Minister for Mineral and Energy Affairs Botha

Location: Minister's office, 120 Plien Street, Capetown

Date/Time: Monday, August 21, 9:00 to 10:00 a.m.

Participants: Minister Roelf (known as Pik--pronounced PICK) Botha(Boat-ah)
Secretary O'Leary, Others TBD

Issues:

- Changing Policy and Regulatory Frameworks
- Institute information and analytical tools to support transparent policies and infrastructures
- Supporting Training and Capacity Building Among Black South Africans
- Emphasizing role of Women in Energy
- Defining U.S. Role in meeting South African Electrification Goals
- Exploring timing and potential market for Natural Gas
- Stressing South Africa as source for serving Southern African Electricity Markets
- Exploring Cooperation in Science and Technology
- Reinforcing Nuclear Cooperation prospects
- Dealing with the issue of South Africa's relationship with Iran

Talking Points:

- Emphasize that mission is the beginning of a long term relationship between the two countries.
- Explain U.S. sustainable energy goals and address U.S. interest vis a vis South Africa with regard to the environment, efficiency, conservation, competition and regulatory structures.
- Layout and gain agreement on policy path and outcomes for the mission.
- Discuss ways that Department can act as a magnet to bring forces in the energy public and private sectors together to benefit customers.
- Support for cooperation in science & technology development and nuclear cooperation.
- Reiterate U.S. concerns over the recent South African-Iranian oil storage and joint venture marketing deal and ask that the South African government reconsider it. Stress U.S. government objections to providing Iran with additional economic or financial benefits while Tehran diverts its scarce resources to support terrorism or to acquire weapons of mass destruction

Outcomes:

- Agreement on goals and schedule for the mission.
- Strategy for policy discussion culminating w/Work program for the Binational Commission.
- Agreement on priorities for meeting South African RDP energy goals: electrification, investment, structural/process reform, and capacity building.

DOE Mission on Sustainable Energy Development to the Republic of South Africa
Led by the Honorable Hazel R. O'Leary, U.S. Secretary of Energy

Roundtable Meeting with Parliament

Monday, August 21, 1995
New Assembly Building, Room E-249
Cape Town, South Africa

AGENDA

2:00-2:10pm	Welcome, Introductions, and Role of Parliament	Marcel Golding
2:10-2:20pm	Welcome, U.S. Perspective	Hazel R. O'Leary
2:20-2:30pm	Role of the National Electricity Regulator	tbd Parliament Representative
2:25-2:45pm	U.S. Response and Bilateral Dialogue	U.S. Delegation
2:45-2:55pm	The Structure of Energy Governance	tbd Parliament Representative
2:55-3:15pm	U.S. Response and Bilateral Dialogue	U.S. Delegation
3:15-3:25pm	Efficiency, Alternative Energy and Environment	tbd Parliament Representative
3:25-3:45pm	U.S. Response and Bilateral Dialogue	U.S. Delegation
3:45-4:00pm	Summation and Agreement for Outcomes	Marcel Golding Hazel R. O'Leary

POD EVENT
ELECTRICITY, AND OIL & GAS PODS

EVENTS:	Meeting with the Chamber of Mines to obtain an overview of South Africa's coal industry, mining and minerals policy, environmental concerns, and to discuss coal bed methane development and other initiatives of mutual interest. Meeting is at the Chamber of mines Building, located at 5 Hollard St., Johannesburg, which is about 10 minutes from the Carlton Holtel.
DATE:	TUESDAY, AUGUST 22, 1995
EVENT FORMAT:	See Attachment
COMMENTS:	Event should be of interest to Electricity, Oil & Gas, Environmental, Energy Efficiency, and Finance PODS
CONTACT:	Art Baldwin
ATTENDEES:	18-20 U.S. Delegates

E-3
47

MEETING BETWEEN US DEPARTMENT OF ENERGY DELEGATION MEMBERS AND THE CHAMBER OF MINES OF SOUTH AFRICA

DATE: Tuesday, August 22, 1995 at 14:30

VENUE: Ground Floor Conference Centre, Chamber of Mines Building, 5 Hollard St (off Marshall St, between Sauer and Simmonds Sts), Johannesburg

AGENDA

1.	Presentation on the Chamber of Mines of SA	R Boers
2.	Overview of the SA coal industry	R Boers
3.	Introduction to mining and minerals policy in SA	W Houtman
4.	Research thrusts in SA coal industry	Dr J Stewart
5.	Research initiatives - general discussion	
6.	Environmental protection	
	Introductory statement	Dr J Killani
	General discussion	
	a) Restoration and waste management b) Wetlands	
7.	Safety in coal mining	
	Introductory statement	D Kruger
	General discussion	
8.	Technology transfer and commercial opportunities	
	Introductory statement	US delegation
	General discussion	
	a) Utilisation of coarse and fine coal discards b) Clean coal technology c) Underground illumination in coal mines	

S/Energy/Boers 16.8.95

Installation of a Suncorp Photovoltaic Module(s) at a Satellite School

Location: Eastern Transvaal village (TBD from offered list)

Time: Tuesday, August 22, 12:15 pm

Participants: Department of Education representative, University of Witwatersrand Medical Facility personnel, local clinic staff, local community leaders, Independent Development Trust representative, Energy for Development Research Center representative, Suncorp representative, Renewable Energy Pod

Issues: None foreseen

Talking Points: These include:

- Works to RDP goals of electrifying 16000 rural schools.
- Example of Black South Africans entering high technology businesses (manufacturing, systems design/fabrication/installation/maintenance).
- Example of integrated technology introduction, business development and capacity building.
- Utilizes type of training provided under REFAD-run program element.
- US plans to participate in the ESKOM Model School Program to accelerate reaching the RDP objectives in electrifying rural schools, with both US technical and financial help.

Outcomes: Specific demonstration of results of US/RSA joint efforts to electrify rural school (RDP goal) and to install high quality photovoltaic systems designed and produced by Black South Africans empowered/trained through US/RSA cooperative efforts.

E-3
99

Tour of Photovoltaic Manufacturing Facility

Location: AEG Manufacturing Facility
Johannesburg area, adjacent to Alexandra township

Time: Tuesday, August 22, 2:30 p.m.

Participants: Suncorp Manufacturing, Suncorp Holdings, ASE Americas, Spire, AEG, Renaissance, Renewable Energy Pod, Gauteng Province representative, South African Economic Development Fund representatives

Issues: The joint venture has been seen by some of the existing photovoltaics suppliers in South Africa as representing unfair competition for the existing South African module supply industry.

Response: The facility's 500 kW annual production is approximately 10% of the anticipated domestic market when full production is reached, and the plant output is also a candidate for export to other southern African countries.

Talking Points: These include:

- Suncorp will compete in providing modules/systems for RDP mandated clinic and school electrification program. It is estimated that 2000 clinics and 16000 schools will be powered by photovoltaics.
- Suncorp products will compete in the REFSA (Renewable Energy for South Africa [formerly known as SAFIRE]) program for rural domestic and business electrification through renewables. This program is expected to impact 10 million people over its lifetime.
- Photovoltaics are expected to enable economic growth in the rural small business sector, particularly in micro-enterprise, industrial development and commerce. Suncorp products will compete in this market.
- Suncorp products will compete in what is expected to be a 1.5 MW yearly market to power water pumping and disinfectant systems.
- It is estimated that the Suncorp activity will result in the creation of approximately 250 new South African jobs including manufacturing, marketing, sales, installation maintenance and in training personnel to perform these tasks. In addition, 15 new US positions will be required to support the Suncorp effort.

Outcomes: This event highlights examples of

- US/South African joint business venturing
- US participation in Black South African empowerment
- US/South African cooperation in building products and capacity to satisfy specific elements of the Reconstruction and Development Program.

Meeting with National Electricity Regulator, Ian MacRae

Location: TBD
Date/Time: Tuesday, August 22, time TBD
Participants: Secretary of Energy, others TBD

Issues:

- NER's ability to regulate the electricity industry independently from the policy making functions of the DMEA. What public policies underlie the NER's approach to regulation?
- The regulatory process for the electricity sector should be stable, transparent, and supportive of private investment.
- Will the NER implement policies that support private investment in the electricity sector?
- Electricity subsidies: minimize, make transparent and end them as soon as possible.
- Options for financing extension of electricity supply to remote areas need to be explored.
- Options for restructuring the electricity industry, particularly with regard to rationalizing the distribution function and attracting private investment in the industry.
- Integrated resource planning and energy efficiency programs need to be incorporated effectively in the NER's regulatory mechanisms.

Talking Points:

- U.S. industry is interested in participating in South Africa's electricity sector and can help address grid expansion, electrification, energy efficiency, pricing, and other issues.
- U.S. industry and government can help the NER apply lessons learned in restructuring the U.S. electricity industry to South Africa's situation.
- Regulatory policy needs to be stable and transparent, and implemented in a manner consistent with development of competitive markets. Regulatory functions need to be effectively separated from policy functions of the DMEA.
- Rationalization of the local distribution sector (separating distribution functions from other local government policies and activities, and merging existing companies into larger, more effective enterprises) is needed to achieve national and local energy goals and to improve the financial viability of the electricity sector.

Outcomes:

- Better understanding of options under consideration by the NER, particularly with regard to local distribution companies
- Plan for applying U.S. government and private sector experience to South Africa; and identification of opportunities for U.S. investment.
- Follow-up activities to help South Africa develop stable, transparent regulatory mechanisms, and attract private investment in its electricity sector.

E-3
TOI

DRAFT/8/17/95

South Africa/United States Summit
on Sustainable Energy Development

August 23, 1995
Carlton Hotel, Johannesburg
Agenda

OPENING PLENARY

7:30-8:30 a.m.	**Registration** Pre-Function Area, Cape Town Room
8:30-10:00 a.m.	**Opening Plenary Session** Cape Town Room
8:30-8:35 a.m.	**Welcome:** Dr. P. J. Hugo, Director General, Department of Mineral and Energy Affairs
8:35-8:45 a.m.	**Goals and Summit Overview:** Richard Rosenzweig, Chief of Staff, U.S. Department of Energy
8:45-9:05 a.m.	**Presentation, South Africa Perspective:** Minister of Mineral and Energy Affairs, R. F. Botha
9:05-9:25 a.m.	**Presentation, U.S. Perspective:** U.S. Secretary of Energy Hazel R. O'Leary
9:25-9:50 a.m.	**Presentation, Major Issues for Discussion:** by Co-chair of each breakout session
9:25-9:29 a.m.	-- Urban Household Energy Use and Supply
9:29-9:33 a.m.	-- Rural Energy Use and Supply
9:33-9:37 a.m.	-- Conventional Approaches to Electricity Generation
9:37-9:41 a.m.	-- New Approaches to Electricity Generation

E-3
102

9:41- 9:45 a.m.	--	Energy Efficiency
9:45- 9:50	--	Liquid Fuels and Gas Market Development
9:50- 10:00 a.m.	Closing Summary: Dr. G. P. N. Venter, Deputy Director General, Department of Mineral and Energy Affairs	
10:00- 10:15 a.m.	Break	

South Africa/United States Energy Summit
Concurrent Breakout Sessions

PROCESS GUIDELINES

- Each breakout session will be co-chaired by the previously selected South Africa and United States delegation member. By mutual agreement of the co-chairs, one co-chair will serve as facilitator to ensure that presentations are kept within scheduled time and the discussion remains focused. The other co-chair will serve as breakout session rapporteur.

- Each breakout session will begin with brief introductions of participants by themselves (15 seconds), followed by brief a presentation of the South African and United States perspective, presented by a representative from each delegation. These presentations will focus on the current and expected future situation and opportunities for collaboration. The presentations will be followed by discussion by all participants as facilitated by the co-chair. The last hour of the discussion will concentrate on reaching agreement by participants on a priority list of potential opportunities for collaboration.

- The rapporteur will record the major issues discussed during the breakout and the potential for collaborative opportunities, including recommended events, milestones, and participants. This outputs need to be summarized as hand-prepared overhead slides for presentation at the following Reporting Plenary Session. A brief report (5 pages) of major issues will be provided to the Mitchell Group and to U.S. and S.A. delegation representatives for use in follow-up reports and monitoring activities by the next day.

- Potential collaborative opportunities in the written report should include (1) topic; (2) intended outcome; (3) recommended events; (4) milestones; (5) participants; (6) resources required (if possible).

CONCURRENT BREAKOUT SESSIONS

10:15 a.m.-
12:45 p.m. **Concurrent Breakout Sessions:**

- Urban Household Energy Use and Supply; **Durban Room (4th floor)**
- Rural Energy Use and Supply; **Pretoria Room (1st floor)**
- Conventional Approaches to Electricity Generation; **Lecture Room #3 (29th floor)**
- New Approaches to Electricity Generation; **Lecture Room #4 (29th floor)**
- Energy Efficiency; **International Suite (4th floor)**
- Liquid Fuels and Gas Market Development; **East London Room (4th floor)**

Breakout Session Agenda

10:15 a.m. to
10:30 a.m. **Introductions:**
Co-chair
Rapporteur
Nominate Scribe
Participants

10:30 a.m. to
10:50 a.m. **South African Overview:** South Africa Co-chair

10:50 a.m. to
11:10 a.m. **U.S. Overview:** U.S. Business Representative

11:10 a.m. to
12:45 p.m. **Discussion Period:** Discuss major issues and develop working plan on approaches for sustained energy development: All participants (facilitated by co-chair).

12:45 p.m. to
2:15 p.m. **Lunch:** Attend luncheon with all delegation members at Top of the Carlton, 30th floor

2:15 p.m. to
3:30 p.m. **Discussion Period, Continued:** All participants (facilitated by co-chair)

3:30 p.m. to
4:30 p.m. **Develop Priority List of Potential Collaborative Activities:** Identify follow-up collaborative activities, refine working plan, for presentation by rapporteur to Plenary Reporting Session at 4:30 pm.

4:30 p.m. to
6:00 p.m. **Reporting Plenary Session:** Breakout Session Rapporteurs report on discussion and follow-up collaborative activities.

E-3
105

LUNCH

12:45- 2:15 p.m.	**Lunch** Top of the Carlton (30th floor)
	Lunch Agenda:
12:45 p.m.	Luncheon begins
1:30- 1:35 p.m.	**Introductions:** Corlis Moody, Director, Office of Economic Impact and Diversity, U.S. Department of Energy
1:35- 1:55 p.m.	**South African Perspective:** Empowerment issues as they relate to finance, training, and environment; Denisa Baloyi, Executive Director, National Black Business Caucus
1:55- 2:15 p.m.	**U.S. Perspective:** Opportunities for joint implementation in South Africa: Dan Dudek, Senior Economist, Environmental Defence Fund
2:15- 4:30 p.m.	**Concurrent Breakout Sessions, Continued**

E-3
10L

REPORTING PLENARY

4:30- 6:00 p.m.	**Reporting Plenary Session** Cape Town Room
4:30- 4:40 p.m.	**Introductions:** Bud Annan, Special Assistant to the Secretary, U.S. Department of Energy
4:40- 4:50 p.m.	**Report by Rapporteur:** Urban Household Energy Use and Supply
4:50- 5:00 p.m.	**Report by Rapporteur:** Rural Energy Use and Supply
5:00- 5:10 p.m.	**Report by Rapporteur:** Conventional Approaches to Electricity Generation
5:10- 5:20 p.m.	**Report by Rapporteur:** New Approaches to Electricity Generation
5:20- 5:30 p.m.	**Report by Rapporteur:** Energy Efficiency
5:30- 5:40 p.m.	**Report by Rapporteur:** Liquid Fuels and Gas Market Development
5:40- 5:50 p.m.	**Closing Summary:** U.S. Secretary of Energy Hazel R. O'Leary
5:50- 6:00 p.m.	**Closing Summary:** Minister of Minerals and Energy Affairs R. W. Botha
6:00- 8:00 p.m.	**Reception (all participants):** Hosted by Secretary O'leary Top of the Carlton (30th floor)

South Africa/United States Summit
on Sustainable Energy Development

August 23, 1995
Carlton Hotel, Johannesburg

BREAKOUT SESSION MEETING ROOMS

- Urban Household Energy Use and Supply; **Durban Room (4th floor)**
- Rural Energy Use and Supply; **Pretoria Room (4th floor)**
- Conventional Approaches to Electricity Generation; **Lecture Room #3 (29th floor)**
- New Approaches to Electricity Generation; **Lecture Room #4 (29th floor)**
- Energy Efficiency; **International Suite (4th floor)**
- Liquid Fuels and Gas Market Development; **East London Room (4th floor)**

Meeting with Minister Sigcau, Department of Public Enterprises

Location: TBD
Date/Time: Wednesday, August 23, time TBD

Participants: Secretary of Energy, others TBD

Issues:

- To what extent will the Ministry promote privatization of ESKOM assets?
- How will the Ministry support private investment in the electricity sector: generation, transmission, distribution?
- ESKOM's debt/equity ratios and any concern over ESKOM damaging its credit rating by trying to do all of the transmission and distribution expansion itself.
- Views regarding efforts by ESKOM to expand its market base by Southern Africa grid expansion and power pooling.
- Has the Ministry supported a needs assessment? Perception of the need for privatization of ESKOM to supply revenue to meet increased transmission and distribution goals?
- Does the Ministry support rationalization of the local distribution sector of the industry?
- What is the role of the National Electricity Regulator with regard to oversight of ESKOM and the broader electricity industry?
- The relationship with DMEA with regards to oversight of ESKOM?

Talking Points:

- US industry interest in participating in So. Africa's electricity sector, and ways US companies can help address grid extension, electrification, environmental protection, and other issues.
- Offer U.S. government and industry experience to help South Africa apply lessons learned in restructuring the U.S. electricity industry to South Africa's situation.
- Note ESKOM's continuing position as an electricity monopoly will discourage investment and reduce prospects for competition.
- Privatization of ESKOM will provide significant money for gov't infrastructure efforts. Underscore companies' interest that ESKOM be privatized in pieces so as not to continue to overwhelm the market.
- Emphasize our position that the Ministry should implement policies that support competitive markets and private investment in South Africa's electricity sector.

Outcomes:

- Timeline for commercialization options under consideration by the Ministry
- Agreement on how U.S. government and private sector experience can be applied to South Africa.
- Support for designation of fast track energy projects for use as models.

Meeting between Secretary and ESKOM Chairman Dr. John Maree

Location: ESKOM Headquarters - Johannesburg
Date/Time: Thursday, August 24, 1995, 12:00 - 1:00 p.m.
(followed by lunch with Maree)
Participants: Secretary O'Leary
Other DOE representatives and delegation members TBD
Issues:

- ESKOM's views regarding repowering, retrofit, and new power construction to meet the current and future electrical power needs of the RSA.
- Meeting RSA and regional power needs and diversifying the resource base supplying those generation needs.
- Environmental regulations within the RSA associated with electric power generation not consistent with those in other developed/developing parts of the world. Air quality associated with energy consumption is of particular concern.
- Best use of DOE technical expertise to assist EPRI in implementing their joint center with ESKOM to address environmental and community needs.

Talking Points:

- Obtain ESKOM's views on : Electrification, environmental needs, diversifying the generation base in South Africa, capacity building, and future markets for South Africa and region.
- Underscore importance of government & private partnerships
- Explain Clean Coal Technology Program & Oil & Gas Program
- Emphasize opportunities for U.S./RSA cooperation on energy resource development: Government to government (list of projects will be attached), private sector to private sector.
- Discuss importance of regional energy collaboration-- SADC energy resource and electrical grid development. Increased employment = economic development
- Note possibilities for science & technology cooperation: DOE national labs & RSA counterparts
- Explore role of ESKOM in capacity building: training & career development of indigenous people, general public outreach/communications. DOE has great experience to share: TVA, HBCU Program, DOE/ESKOM cooperation on training, and energy management.
- Inquire as to efforts for RSA/SADC alternative energy resource planning: sustainable energy design & commercialization, environmental policy/technology planning.
- Support DOE involvement in EPRI/ESKOM Center and areas for possible DOE participation

E-3
110

Outcomes:

- Understanding of ESKOM views and plans re: electrification, environmental requirements, diversifying generation base, and capacity building.
- Assessment of future markets for electricity in South Africa and Southern Africa.
- Assessment of role for natural gas & clean coal technologies in meeting electricity demand.
- U.S. public and private sectors interface with ESKOM to meet demand from electrical grid expansion in the RSA and southern Africa.
- Clarify DOE role in ESKOM-EPRI Center for Essential Community Services

E-3
111

American Chamber of Commerce Dinner

Date: August 24, 1995, 7:30 - 9:30 p.m.

Where: Highveld and Lowveld Ballrooms
Carlton Hotel, Johannesburg, South Africa

Participants: Secretary O'Leary, Minister Pik Botha
Members of US Delegation
75-100 representatives from South African companies and businesses

Program:

7:00 pm	Arrival and registration	
	7:25 pm	Arrival of Ambassador Lyman
	7:35 pm	Arrival of Minister Pik Botha
	7:45 pm	Arrival of Secretary O'Leary
8:00 pm	Welcome by Bill Mallory of the American Chamber of Commerce	
8:05 pm	Blessing of food by Willem Dereksen Starter course is served	
8:20 pm	Toast to South Africa/US Bilateral Relations by Bill Mallory Dinner is served	
8:45 pm	Introduction of Minister Botha by Bill Mallory Dessert and coffee is served	
8:50 pm	Minister Botha welcomes Secretary O'Leary and Delegation	
9:05 pm	Introduction of Secretary O'Leary by Ambassador Lyman	
9:05 pm	Secretary O'Leary delivers remarks	
9:30 pm	Closing comments by Roger Crawford, Immediate Past President American Chamber of Commerce	

Issues

Approximately 75 South African business representatives who might not otherwise be able to attend will be invited to attend at no cost. Their attendance will be subsidized by the other guests in an effort to provide both South African and US businesses with access to potential business partners.

Outcomes

Development of mutually beneficial business relationships among US and South African companies. The emphasis on inviting representative of small and developing businesses supports the capacity building goals of the RDP.

E-3
113

POD EVENT

ELECTRICITY AND OIL & GAS

EVENT:	Business meeting with SASOL. SASOL is South Africa's synthetic fuels company for conversion of coal to oil, gas, and chemicals.The meeeting will be held at SASOL facility in Johannnesburg. The meeting addresss is : SASOL LIMITED; 1 Sturdee Avenue Rosebank 2196; Johannesburg.
TIME:	Tuesday, August 25; 1995 : 1:00-2:30pm
EVENT FORMAT:	Discussion of SASOL's facilities, management structure, marketing, technologies, opportunities, and areas of cooperation. See attached.
COMMENTS:	Event should be of interest to electricity, oil and gas, energy efficiency, and environmental and finance pods.
CONTACT:	Art Baldwin or Charles Brown

NUMBER OF ATTENDEES: Unlimited

E-3

Meeting with Minister for Trade and Industry Trevor Manuel

Location: TBD
Date/Time: Friday, August 25, 1995 , 9:00-10:00 a.m.
Participants: Secretary O'Leary, Others TBD

Issues:

- Outside Investment. Current policy and regulatory frameworks in South Africa, combined with protected and oligopolistic markets make it less attractive. Controls on prices make South African markets closed and provide less competitive opportunity. The current South African tax structure has also been raised as a constraint to investment.
- Protection for intellectual property. There are two problems: providing adequate protection for internationally well-known trademarks, and recognition of special circumstances for non-use of registered trademarks during the sanctions era.
- Licensing and registration requirements slow bilateral agreements; domestic credit allocations for foreign owned businesses, expropriation laws, royalty payment limitations, reserve bank screening of foreign loans, foreign exchange controls on foreign residents, industry performance requirements(not applicable to energy) and the fact that South Africa is not a party to the International Center for Settlement of Investment Disputes (see BIT paper).

Talking Points:

- Outline goals for trip, culminating in binational commission, focusing in on identifying priority projects for focus on encouraging investment.
- Explain capacity building initiatives, and further cooperation in science and technology.
- Explore ideas for creating greater competition in South Africa and how privatization of parastatals fits with more open markets.
- Reinforce U.S. concerns over intellectual property rights and trademark infringements.
- Note that completion of a bilateral investment treaty would encourage U.S. investors by assuring them of a secure investment climate

Outcomes:

- Understanding of the current framework for trade and investment in South Africa.
- Agreement on using targeted energy projects as models for investment.
- Capacity building/empowerment goals and agreement on exchange programs for capacity building.
- Agreement on Sustainable Energy Committee's goal and workplan for Binational Commission.
- Better understanding of U.S. positions on intellectual property rights and trademark infringement.
- Update on progress in U.S.-South Africa bilateral investment treaty negotiations.

E-3
115

Meeting of Sustainable Energy Development Committee of the U.S. - South Africa Binational Commission

Location: Union Building, Pretoria, South Africa

Time: August 25, 1995, 10:00 a.m. - 11:30 a.m.

Participants: Secretary O'Leary, Others TBD

Issues:

- Multiple committees under the Binational Commission and crosscutting issues require close coordination.
- The U.S. - South African Science and Technology Agreement is still being negotiated.
- The South African consensus approach and approval process for agreements could present delays.

Talking Points:

- The exchange of letters between Minister Botha and the Secretary established a broad and challenging agenda.
- Structuring cooperation to address objectives outlined in the Reconstruction and Development Program is important.
- International cooperation is envisaged to be an important component to the successful transformation of South Africa's social, political, and economic systems.
- The U.S. is positioned to be a key partner and sustainable energy development will be a critical element.
- Capacity building, through enhanced participation of the previously disenfranchised majority, is a major cornerstone to successful cooperation and a strong, long-term relationship.

Outcomes:

- Sign the Terms of Reference.
- Promote cooperation in private investment, capacity building, and economic and environmental equity.
- Establish agenda for December meeting and work plans for implementing projects with specific dates and working groups.
- Agree on policies to mobilize capital and projects and identify energy projects to be used as models.

E-3
116

Roundtable on Renewables, Mining, and Financing with Provincial Premiers

Location: Kimberley, Northern Cape

Time: 11:00 AM - 12:30 PM, 26 August 1995

Participants: Premier Dipico of the Northern Cape, other Provincial Premiers (tbd),other VIPs (tbd), DMEA representative , US Embassy representative (tent.), US AID representative (tent.), South African renewable energy industry representatives, Renewable Energy Pod and other interested delegation members (bios forthcoming).

Issues: Discussions have been tentatively focused on the following issues:

- The newly formed provincial governments are attractively positioned to create the framework for programs that would complement and accelerate the RDP sustainable development goals. Definition of provincial and community level policies and financial vehicles will be crucial in securing successful implementation.
- Renewable energy resources offer practical solutions to the energy, environmental, economic and social challenges rural South Africans face. *What role can provincial level programs play in accelerating sustainable development in rural communities, with a specific emphasis on electrification, potable water and value-added rural business development?*

- Mining consumes more than 8% of the total South African net energy use. Efficient operation of mining facilities will afford increased energy supply to all South Africa and open new avenues for value-added, rural industries.

Talking Points: These include:

- The Department has the opportunity to highlight successful US programs which encourage state-level initiatives and positive working relationships between the Federal and State agencies.
- As population density decreases, low maintenance, self-reliant renewable energy technologies become increasingly economically viable for continuous, sustainable development programs, including rural electrification, potable water supply and value-added industries.
- Provincial governments are optimally situated to attain comprehensive community level education, training, ownership, and acceptance of technology assistance.

Outcomes:

- Recognition and definition of Provincial level initiatives to complement and accelerate RDP goals.
- Increased in-country awareness of the benefits and application of U.S. expertise and experience based on successful Federal/State run initiatives.
- Potential energy efficiency programs developed in the mining sector and identification of new, value-added industries for sustainable rural development.

Document Number 49

TO ME

DOE billing/collection & payment status at

08/11/95 C:\QPRO\FILES\DOE-B
13:09:42

Passengers: Last	First	Agency/ Firm	Total Bill	DOE Billed/Paid	Agency Bill/Paid	Federal Paid	Private Sector Billed	Paid	Unpaid	DOE Exec Fee	Refund Amount
A	B	C	D	E		F					
Aboud	Monica	DOE	$1,289.00	$1,289.00		$1,289.00					
Alcock	Frank	DOE	$6,477.00	$6,477.00		$6,477.00					
Arman	Bud	DOE	$6,477.00	$6,477.00		$6,477.00					
Arora	Ram	Hydrovision Inc	$6,477.00				$6,477.00		$6,477.00		
Bernstein	Mark	DOE - Consultant	$1,289.00	$1,289.00		$1,289.00					
Bhattachar	Kumar	DOE - Consultant	$6,477.00	$6,477.00		$6,477.00					
Biddison	J Michael, Co	Ohio PUC	$6,477.00	$6,477.00		$6,477.00					
Bloss	Douglas	Armstrong International	$3,238.50				$3,238.50		$3,238.50		
Browning	Andrew	DOE	$1,289.00	$1,289.00		$1,289.00					
Buford	Dennis	DOE Security	$6,477.00	$6,477.00		$6,477.00					
Dixon	Dale	DOE Security	$6,477.00	$6,477.00		$6,477.00					
Dottori	Johannah	DOE	$6,477.00	$6,477.00		$6,477.00					
Forrister	Dirk	DOE	$6,477.00	$6,477.00		$6,477.00					
Grizzle	Sam	DOE	$6,477.00	$6,477.00		$6,477.00					
Hicks	Patsy	DOE	$6,477.00	$6,477.00		$6,477.00					
Laney	Tim	DOE Security	$6,477.00	$6,477.00		$6,477.00					
Marin	Ramon	Fulton Industries	$6,477.00				$6,477.00		$6,477.00		
Massey	William, Comm	FERC	$6,477.00		$6,477.00	$6,477.00					
McAtee	John	Smith Barney, Inc	$6,477.00				$6,477.00		$6,477.00		
Newman	Bob	DOE Security	$6,477.00	$6,477.00		$6,477.00					
O'Leary	Secretary	DOE	$6,477.00	$6,477.00		$6,477.00					
O'Neill	Richard	FERC	$6,477.00		$6,477.00	$6,477.00					
Ochoa	Gloria	DOE	$3,238.50	$3,238.50		$3,238.50					
Paracha	Saeedullah Kh	Habibullah	$6,477.00				$6,477.00		$6,477.00		
Parker	Ken	Argonaut Corp	$6,477.00				$6,477.00		$6,477.00		
Perry	Dean	BPA	$6,477.00		$6,477.00	$6,477.00					
Pitman	Bob	DOE Security	$6,477.00	$6,477.00		$6,477.00					
Profozich	Russ	DOE	$1,289.00	$1,289.00		$1,289.00					
Robert	Jim	DOE Security	$6,477.00	$6,477.00		$6,477.00					
Rosenzweig	Rich	DOE	$6,477.00	$6,477.00		$6,477.00					
Salmon-Cox	Peter	DOE	$3,238.50	$3,238.50		$3,238.50					
Schrepel	Dawn	DOE	$6,477.00	$6,477.00		$6,477.00					
Shareef	Anwar	Alpha Gamma Technologies, Inc	$6,477.00				$6,477.00		$6,477.00		
Siddiqi	Furqan	Synergics	$6,477.00				$6,477.00		$6,477.00		
Smith	Pete	NRECA	$6,477.00	$6,477.00		$6,477.00					
Snyder	Ralph	Energy Power Systems	$6,477.00	$6,477.00		$6,477.00					
Spiller	Reggie	DOE	$1,289.00	$1,289.00		$1,289.00					
Stalon	Charles	Consultant	$6,477.00	$6,477.00		$6,477.00					
Thorn	Terry	ENRON	$3,238.50				$3,238.50	$3,238.50			
Tierney	Susan	DOE	$6,477.00	$6,477.00		$6,477.00					
Vitali	Andy	Commerce	$6,477.00		$6,477.00	$6,477.00					
Wallace	Carolyn	DOE	$6,477.00	$6,477.00		$6,477.00					
Wiel	Steve	Lawrence Berkeley Laboratory	$6,477.00	$6,477.00		$6,477.00					
Yoshimura	Henry	La Capra Associates	$6,477.00	$6,477.00		$6,477.00					
Steward	Leighton	1 Louisiana Land Exploration (LLE)	$6,477.00				$6,477.00	$7,000.00	($523.00)	$100.00	$423.00
Lethard	Peter	2 VECO	$6,477.00				$6,477.00	$6,477.00			
Craig	Mickey	3 Westinghouse	$6,477.00				$6,477.00	$6,477.00			
Hart	Robert	4 Coastal Corp	$3,238.50				$3,238.50	$6,477.00			
Farmer	Larry	5 Brown & Root	$6,477.00				$6,477.00	$6,477.00			
Chang	Joyce	6 Salomon Brothers	$6,477.00				$6,477.00	$6,477.00			
Scoville	John	7 Harza International	$6,477.00				$6,477.00	$6,477.00			
Roberts	Bruce	8 CS First Boston	$12,954.00				$12,954.00	$12,954.00			

C-6

...ection & payment status at

08/11/95 C:\QPRO\FILES\DOE-P
13:09:42

Passengers: Last	Fi	Agency/ Firm	Total Bill	DOE Billed/Paid	Agency ...d/Paid	Federal Paid	Private Sector Billed	Paid	Unpaid	DOE Exe... Fee	Refund Amount
Johannson	Thora	9 Occidental Petroleum	$6,477.00				$6,477.00	$6,477.00			
Ogletree	Terry	10 Entergy Enterprises	$6,477.00				$6,477.00	$6,577.00	($100.00)	$100.00	
Mansour	Amal	11 MTCI	$6,477.00				$6,477.00	$6,477.00			
Menendez	Adolfo	12 K&M Engineering	$6,477.00				$6,477.00	$6,477.00			
Avery	George	13 Cadwalader, Wickersham & Taft	$6,477.00				$6,477.00	$6,477.00			
Bakke	Dennis	14 AES	$6,477.00				$6,477.00	$6,477.00			
Sperling	Gil	15 Andrews & Kurth	$6,477.00				$6,477.00	$6,477.00			
Castillo-B	Lori	16 ENTEK, Inc	$6,477.00				$6,477.00	$6,477.00			
Smith	James C.	17 Systems Engrg & Mgmt (SEMA) Inc	$6,477.00				$6,477.00	$6,477.00			
Kelley	Hanette	18 Agrilectric	$6,477.00				$6,477.00	$6,477.00			
Zeltman	Eugene	19 GE Power Systems	$6,477.00				$6,477.00	$6,477.00			
		20 CS First Boston						$200.00	($200.00)	$200.00	
Wu	Susan	21 ERC, Inc	$6,477.00				$6,477.00	$6,477.00			
Kendall	Don	22 Cogen Technologies	$3,238.50				$3,238.50	$3,238.50			
Conn	Dennis	23 Cyprus Amax Coal	$6,477.00				$6,477.00	$6,477.00			
Smith	Paul	24 Tenaska International	$6,477.00				$6,477.00	$6,477.00			
Sarkar	Ashish	25 CMS Generation	$6,477.00				$6,477.00	$6,477.00			
Tranen	Jeff	26 New England Electric Svc Co	$6,477.00				$6,477.00	$6,477.00			
Muller	Nicholas	27 AMPAK	$6,477.00				$6,477.00	$5,400.00	$1,077.00		
White	Charles	28 Raytheon	$6,477.00				$6,477.00	$6,477.00			
Trabandt	Charles	29 Merrill Lynch	$6,477.00				$6,477.00	$6,477.00			
		Total shares	$427,450.00	$168,370.00	$25,908.00	$194,278.00	$233,172.00	$184,340.50	$48,831.50	$400.00	$423.00
				31	4	35	37	30			

22

Applications:	
Payment to Broker	$415,000.00
OAS Administrative Fee	$12,450.00
Total applications	$427,450.00
Sources:	
Private Sector Receipts	($184,340.50)
OPAC to Fed Agencies	($194,278.00)
Private sector unpaid billings	($48,831.50)
Diff.	
Summary of Billings:	
Private sector, collected	$184,340.50
Private sector, uncollected	$48,831.50
Billed to FERC, 11/94	$12,954.00
Billed to BPA, 11/94	$6,477.00
Billed to Commerce, 11/94	$6,477.00
Billed to DOE, 11/94, bill 1049CN2	$168,370.00
Total Billed	$427,450.00
Total collected	$378,618.50
Difference, to be billed to DOE	* $48,831.50

billed to DOE

* unpaid private sector

C-6
2

Document Number 50

TO PI I-4

facsimile
TRANSMITTAL

to: Christopher Lewis
fax #: 202 414-3826
re: DOE Revised Budget Information
date: July 28, 1995
pages: 2, including cover sheet.

Chris--

In response your request at the recent TPCC Budget Committee meeting, I am attaching the revised budget information covering the Department of Energy's export promotion activities.

In addition, the only change to the output and outcome information that was provided to you in our original submission is the downward revision of gross export jobs created by our export promotion activities. Our previous estimation of 390,000 potential jobs to be created from the $19.5 billion of business deals signed during the Department's trade missions to India, Pakistan and China was based on a $1 billion = 20,000 job assumption. Applying the OMB $1 billion = 16,000 job assumption, will decrease our earlier number to 312,000 jobs.

If you have any further questions, please call me at 586-0836.

From the desk of...

Steven Lee
Senior Policy Analyst
U.S. Department of Energy, Energy Export Office
1000 Independence Avenue, SW
Washington, DC 20585

202 586-0836
Fax: 202 586-0823

[illegible] are expected to continue until about 2022. DOE estimates that the cleanup will cost $2.1 billion.

EG&G's Mound announcement means that once it finishes its current commitments there, EG&G, one of the oldest and largest of DOE M&O contractors, will have completed its exit from the department's complex.

Science and Technology

CEBAF HITS FULL ENERGY LEVEL JUST SIX WEEKS BEHIND ORIGINAL SCHEDULE

DOE's Continuous Electron Beam Accelerator Facility achieved a major milestone last week when it reached its full design energy of 4 billion electron volts (4 GeV), just six weeks behind a schedule set when planning for the machine began 10 years ago.

CEBAF's beam of electrons made five complete passes around the accelerator's nearly one-mile circumference May 9. The beam is now ready to be transported to a target in the first of CEBAF's three experimental halls, where experiments are scheduled to get underway this summer.

"Great physics work will be done as the result of this accomplishment," said CEBAF Director Hermann Grunder. "CEBAF will answer many important questions regarding the ultimate quark structure of matter."

CEBAF, funded by DOE's nuclear physics program and located in Newport News, Va., is expected to help researchers answer such physics puzzles as what happens when a "strange" quark — a particle that does not exist in ordinary matter — is inserted into the nucleus of an atom.

Because of the better than anticipated performance of its superconducting radio frequency cavities, which are used to accelerate the electrons, CEBAF is now expected to reach 6 GeV, one-third higher than its original design specification. The higher energy operation is expected in about a year.

Also last week, a team of 13 reviewers, led by David Cheney, of DOE's office of the deputy under secretary for technology partnerships, traveled to CEBAF to review the lab's proposal to build a $47-million free electron laser user facility based on the superconducting cavity technology. The review is considered to be a major step forward for CEBAF's proposal, which would require $27 million from DOE. The lab has already obtained commitments valued at $20 million from a number of blue chip industry partners, the state of Virginia and the city of Newport News.

DOE officials until now had not formally reviewed the CEBAF proposal, although a review panel convened by NASA, which has no jurisdiction over CEBAF, last year strongly endorsed proceeding with a small-scale demonstration of the FEL proposal.

O'LEARY SAYS HOUSE VIEW OF DOE IS DISTORTED ..... begins on page 1

O'Leary, who has spent much time in the past year traveling abroad to promote exports of U.S. energy technologies, said over the last nine months she has helped sell some $20 billion worth of U.S. technology abroad. Much of that technology, she added, was developed by DOE in conjunction with the private sector.

Every $1 billion in U.S. goods sold overseas translates into 20,000 new domestic jobs. "This ... budget will wipe out the future. In five or six years there will be no new fossil or efficiency technologies. ... It is a sad day for the U.S. economy and U.S. workers," O'Leary said.

In an unusual Tuesday night briefing, Budget Committee Chairman John Kasich, R-Ohio, and other Republicans on the panel outlined for reporters the proposal, which is designed to balance the budget in seven years. Pennsylvania Republican Rep. Robert Walker, who chairs the Science Committee and is vice chairman of the budget panel, defended the committee's action, arguing that the proposal would "preserve a strong fundamental research base."

Funding for basic research conducted by the National Science Foundation would continue to grow under the plan and while DOE would be abolished, its general science programs (presumably transferred to another federal agency) would increase to $1 billion and would drop gradually to $900 million by 2002.

Funding for energy supply r&d, Walker said, would be slashed by $500 million below the FY-95 baseline. But Walker, unlike O'Leary, questions the value of such research. "If you are looking for examples of corporate welfare, you'll find it here," he said.

According to policy assumptions released by Budget Committee staff Thursday, budget authority for energy supply r&d would be cut by $630 million next year, from a $3.3 billion base in FY-95. Spending for departmental administration would be cut by $40 million from the FY-95 base of $282 million, and the agency's Energy Information Administration would see its funding more than halved, dropping $44 million next year from the FY-95 base of $84 million. Fossil energy r&d and conservation research would also be

From Steve Lee
2/10/96

©1995 McGraw-Hill. Reproduction prohibited without permission.

U.S. Department of Energy
Law Library
MAY 15 1995

Inside Energy with Federal Lands

For Reference
Not to be taken from this room

An exclusive weekly report on the U.S. Department of Energy

May 15, 1995

Inside this Issue

Energy

- DOE labs can expect 10% staff cuts 2
- DOE officials are worried Congress will slash nuclear waste funds 4
- Groups propose think tank to make case for renewable energy 5
- GOP will find it difficult to eliminate agencies, AEI fellow says 7
- White says DOE has proposed greater cuts than House or Senate Budget panels 8
- Conferees agree to rescind $139 million from DOE energy and water programs 8
- O'Leary orders a freeze on new hiring 9

Environmental Management

- O'Leary lays out consequences if EM budget is cut by $1 billion 3
- Report finds many barriers to commercialization of new technologies 9
- Coalition lobbies against additional cuts in cleanup budget 10

Federal Lands

Environment

- Babbitt attacks endangered species bill 14
- GOP House Resources members aim to draft endangered species legislation next month 15
- Debate heats up on wetlands as House considers clean water changes 16

Interior Organization

- House and Senate Budget committees call for abolishing NBS, opening ANWR 18

OCS

- MMS says added data helped Gulf sale 15

Royalty Management

- Industry groups eye alternatives to Interior's plan for moving royalty collections out of MMS . 13

Surface Mining

- U.S. agrees to pay $200 million settlement to coal company, Wyoming charity 13

O'LEARY: BUDGET PLAN WILL HURT ECONOMY

Energy Secretary Hazel O'Leary last week attacked the House Budget Committee plan, which recommends eliminating her agency, as an ill-conceived document that will damage the U.S. economy and hurt American workers.

O'Leary told reporters Wednesday that the committee's FY-96 budget, which calls for deep spending cuts across nearly all DOE programs and assumes that the department will be disbanded, was based on a "dismally limited look" at DOE and its functions.

The House budget proposal, which was approved by the committee last week, "takes a snapshot of DOE in the 1970s and presumes the only things DOE does and ever did is set prices and allocate supplies of crude oil," O'Leary said. "And that is something we never did."

Committee members who developed the recommendations for DOE did not "do much research," the secretary said, adding that the proposed reductions will "directly impact the long-term economic position of U.S. citizens."

"This budget fails to recognize the need to continue work in basic and applied sciences ... [and] it wipes out work in fossil energy and energy efficiency r&d. I am amazed that there is no understanding of DOE here."

(continued on page 11)

WALKER SAYS SCIENCE DEPT. STILL ALIVE

House Science Committee Chairman Robert Walker last week said he has not given up on his idea to create a Department of Science from r&d programs at DOE and other federal agencies, even though the proposal was rejected by other Republicans on the Budget Committee.

"It seems to me that it makes pretty good sense when you're trying to balance the budget," Walker, R-Pa., told reporters Thursday. "I didn't win."

Earlier in the week, the House Budget Committee voted to shut down DOE and cut back or eliminate a number of the department's programs as part of its plan to balance the federal budget over the next seven years (related story above).

Walker, who also is the vice chairman of the Budget Committee, acknowledged that he thought his proposal to consolidate federal science programs was consistent with the budget's theme of trimming the government.

Walker said he even showed the Budget Committee a finding by the Congressional Budget Office that combining science programs in one agency would save the government as much as $4 billion over seven years, to no avail. "The committee decided it wanted to be in the position of eliminating departments, not creating them," he said. Nevertheless,

...immary Analysis

				FY 19..			FY 1994 - actual			FY 1995 - actual			FY 1996 - ...		d
				Budget	Admin. Co...	TOTAL	Budget	Admin. Cost	TOTAL	Budget	Admin. Cost	TOTAL	Budget	dmin. Cost	:OTAL
				($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)	($x1000)
1	Negotiating Opening Markets		TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
		Multi-Lateral Participation	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Bilateral/Regional Participation	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Challenging Unfair Trade Pract	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
2	Combatting Foreign Export Subsidies		TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
		Countervailing Subsidies	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Tied Aid Policy, Common Lines	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
3	Finance Insurance - US Trade and Investment		TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
		Finance	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Insurance	sub-total	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
4	Provide Info., Counceling and Export Assistance Se		TOTAL	449	49.9	498.9	1101.1	132	1233.1	3694.6	412	4106.6	6616.3	955	9574.3
		Couseling	sub-total	120	13.3	133.3	293.7	31	324.7	327.7	37.7	365.4	484.6	53.6	538.2
		Energy Efficiency		120	13.3	133.3	293.7	31	324.7	327.7	37.7	365.4	484.6	53.6	538.2
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Generating-Providing informati	sub-total	270	29.3	299.3	657.7	73	730.7	2752.8	305.9	3058.7	5877.1	651.6	6528.7
		Energy Efficiency		270	29.3	299.3	657.7	73	730.7	2752.8	305.9	3058.7	5877.1	651.6	6528.7
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
		Trade Events	sub-total	59	7.3	66.3	149.7	28	177.7	614.3	68.4	682.7	2254.6	249.8	2504.4
		Energy Efficiency		59	7.3	66.3	149.7	28	177.7	614.3	68.4	682.7	2254.6	249.8	2504.4
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
5	Government-to-Government Advocacy		TOTAL	0	0	0	0	0	0	637	64	701	2690	292	2982
		Energy Efficiency		0	0	0	0	0	0	577	64	641	2630	292	2922
		Energy Export		0	0	0	0	0	0	60	0	60	60	0	60
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
6	Feasibility Studies		TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
		Energy Efficiency		0	0	0	0	0	0	0	0	0	0	0	0
		Energy Export		0	0	0	0	0	0	0	0	0	0	0	0
		Fossil Energy		0	0	0	0	0	0	0	0	0	0	0	0
7	Develop Foreign Markets for US goods & services		TOTAL	4484	174	4658	7871.7	451.3	8323	8762	677.4	9439.4	15724	1410.3	17134.3
		Energy Efficiency		1569	174	1743	4064.7	451.3	4516	6101	677.4	6778.4	12685	1410.3	14095.3
		Energy Export		445	0	445	806	0	806	540	0	540	540	0	540
		Fossil Energy		2470	0	2470	3001	0	3001	2121	0	2121	2499	0	2499
			GRAND TOT.	4933	223.9	5156.9	8972.8	583.3	9556.1	13093.8	1153.4	14247.2	27030.3	2657.3	29687.6

25/98

2-11 / 5

U.S. Government
Trade Promotion Expenditures by [illegible]
(Budget Authority in Thousands)

Activity	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimated	FY 1996 Request
Promoting Open Markets and Lowering/Removing Trade Barriers	107,369	134,072	131,932	134,295
Multilateral Participations	33,900	40,484	39,295	38,400
Commerce	12,211	8,552	8,515	7,463
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	18,770	21,850	21,110	21,410
US Information Agency	0	0	0	0
Department of Agriculture	1,775	1,803	1,589	2,380
US Trade Representative	0	7,333	6,963	6,963
Department of Transportation	0	0	0	0
Department of Treasury	823.6	923.6	913.6	875.9
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	220	222	182	186
Bilateral Participations	68,842	81,408	78,992	82,109
Commerce	26,711	23,299	23,110	24,254
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	38,990	47,430	46,890	47,900
US Information Agency	0	0	0	0
Department of Agriculture	2,414	2,453	2,181	2,217
US Trade Representative	0	7,333	6,963	6,963
Department of Transportation	0	0	0	0
Department of Treasury	[illegible]9.4	852	773.7	784.6
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	188	222	274	290
Challenging Unfair Trade Practices	4,719	12,979	12,846	12,897
Commerce	0	0	0	0
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	4,330	5,190	5,110	5,200
US Information Agency	0	0	0	0
Department of Agriculture	0	0	0	0
US Trade Representative	0	7,333	6,963	6,963
Department of Transportation	0	0	0	0
Department of Treasury	316	378	472	432
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	73	79	81	82
Combating Foreign Export Subsidies	1,279,881	1,687,830	1,222,106	1,878,178
Commerce	0	0	0	0
Trade Development Agency	0	0	0	0
Export Import Bank	258,300	437,800	308,000	800,200
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	1,023,483	1,200,228	913,860	1,077,720
US Trade Representative	0	0	0	0
Department of Transportation	0	0	0	0
Department of Treasury	108	211	245	249
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	0	0	0	0
Financing and Insuring U.S. Trade & Investment	1,134,589	1,231,830	1,118,187	1,293,323
Finance	1,054,389	1,150,030	945,387	1,105,923
Commerce	0	0	0	0
Trade Development Agency	0	0	0	0
Export Import Bank	299,200	387,800	293,800	542,900
OPIC (Not Included in Totals)	9,390	58,450	66,715	0
Small Business Administration	0	9,036	13,370	3,748
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	755180	698302	638307	611675
US Trade Representative	0	0	0	0
Department of Transportation	0	47,100	50,000	48,600
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	0	0	0	0

OK OK OK OK OK

Activity	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimated	FY 1996 Request
Financing and Insuring U.S. Trade and Investment (continued)				
Insurance	80,200	81,300	172,800	187,400
Commerce	0	0	0	0
Trade Development Agency	0	0	0	0
Export Import Bank	80,200	81,300	172,800	187,400
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	0	0	0	0
US Trade Representative	0	0	0	0
Department of Transportation	0	0	0	0
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	0	0	0	0
Providing Information/Counseling/Export-Assistance Services	185,459	225,795	248,132	264,701
Counseling	58,737	62,078	78,784	88,592
Commerce	50,301	61,318	66,180	73,847
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	800	2,900	3,200
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	117	141	143	150
US Trade Representative	0	0	0	0
Department of Transportation	42	43	48	50
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	~~[illegible]~~ 133.3	~~[illegible]~~ 324.7	~~[illegible]~~ 365.4	~~[illegible]~~ 632.2
Department of Labor	0	0	0	0
Generating & Providing Information	93,492	105,717	111,011	118,513
Commerce	35,875	47,333	51,872	50,825
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	25,080	20,618	20,432	29,080
Department of Agriculture	27,809	29,154	29,136	34,224
US Trade Representative	0	0	0	0
Department of Transportation	42	43	48	50
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	~~[illegible]~~ 2497.3	~~[illegible]~~ [illegible]	~~[illegible]~~ 3058.7	~~[illegible]~~ 6526.7
Department of Labor	0	0	0	0
Trade Events	45,231	57,190	64,320	67,595
Commerce	44,306	55,974	62,100	62,947
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	606	612	647	1,253
US Trade Representative	0	0	0	0
Department of Transportation	42	43	48	50
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	~~[illegible]~~ 663	~~[illegible]~~ 177.7	~~[illegible]~~ 082.7	~~[illegible]~~ 2504.1
Department of Labor	0	0	0	0

OK

Activity	FY 1993 Actual	FY 1994 Actual	FY 1995 Estimated	FY 1996 Requested
Providing Government-to-Government Advocacy on behalf of U.S. Business	25,564	37,920	41,121	47,735
Commerce	13,524	19,570	21,689	25,060
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	12,020	18,330	18,510	19,010
US Information Agency	0	0	0	0
Department of Agriculture	0	0	0	0
US Trade Representative	0	0	0	0
Department of Transportation	30	30	30	270
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	0	0	~~[illegible]~~ 701	~~2915~~ 2982
Department of Labor	0	0	0	0
Funding Feasibility Studies on Major Infrastructure and Development Projects	42,741	58,551	66,700	67,000
Commerce	0	0	0	0
Trade Development Agency	42741	58551	66700	67,000
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	0	0	0	0
US Trade Representative	0	0	0	0
Department of Transportation	0	0	0	0
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	0	0	0	0
Department of Labor	0	0	0	0
Developing Foreign Markets for U.S. [illegible]	244,927	220,725	150,290	188,434
Commerce	2500	2500	2500	4820
Trade Development Agency	0	0	0	0
Export Import Bank	0	0	0	0
OPIC (Not Included in Totals)	0	0	0	0
Small Business Administration	0	0	0	0
Department of State	0	0	0	0
US Information Agency	0	0	0	0
Department of Agriculture	230100	210383	130812	183675
US Trade Representative	0	0	0	0
Department of Transportation	1	0	1	1
Department of Treasury	0	0	0	0
Environmental Protection Agency				
Department of Energy	~~[illegible]~~ 4658	~~[illegible]~~ 8325	~~[illegible]~~ 9439.4	~~[illegible]~~ 17134.3
Department of Labor	0	0	0	0
Totals	2,835,821	3,070,445	2,978,453	3,063,098
Commerce	185,420	210,355	230,174	249,610
Trade Development Agency	42,741	58,551	66,700	67,000
Export Import Bank	635,000	830,700	726,400	1,328,100
OPIC (Not Included in Totals)	9,390	58,450	66,715	0
Small Business Administration	15,291	9,844	16,270	6,948
Department of State	74,110	92,620	91,420	93,210
US Information Agency	25,080	20,618	20,432	29,080
Department of Agriculture	2,049,303	2,150,073	1,722,745	1,795,303
US Trade Representative	0	22,000	20,949	20,949
Department of Transportation	148	47,249	50,107	48,422
Department of Treasury	1,867	2,162	2,400	2,441
Environmental Protection Agency	0	0	0	0
Department of Energy	8,157	~~[illegible]~~ 9556.1	14,247	~~[illegible]~~ 29687.6
Department of Labor	489	523	537	548

I-4
6

MEMORANDUM

to: Chris Lewis, OMB

cc: 202 395-1198

from: Steven Lee

re: DOE Output/Outcome Data

date: June 15, 1995

As promised, I am providing you with what information I have received to date from the various program offices of the Department. I will continue to feed you any additional information as it is developed. The information is preliminary and not considered final. If you have any questions, please call me at 586-0836.

from the desk of...

Steven Lee
Senior Policy Analyst
U.S. Department of Energy, Policy Office
1000 Independence Avenue, SW
Washington, DC 20585

202 586-0836
Fax: 202 586-0823

6/15/95

I-4
7

PRELIMINARY
DEPARTMENT OF ENERGY TRADE PROMOTION
OUTPUT AND OUTCOME MEASURES

ACTIVITY CLASSIFICATION	OUTPUTS	OUTCOMES
Negotiating Opening Markets	Not Applicable	Not Applicable
Combatting Foreign Export Subsidies	Not Applicable	Not Applicable
Financing & Insuring U.S. Trade & Investment	Not Applicable	Not Applicable

I-4
8

ACTIVITY CLASSIFICATION	OUTPUTS	OUTCOMES
Providing Information, Counseling and Export Assistance Services		
Counseling	The Department does respond to private sector inquiries on DOE programs, foreign market opportunities and programs of other TPCC agencies. We are unable to provide the total number of inquiries responded to at this time. This cability will be developed in the future.	Unable to respond at this time due to unavailability of reliable data
Generating & Providing Information	The DOE's Energy Information Administration (EIA) prepares and distributes several hundred energy related reports. In addition, each of the various DOE Program Offices also prepares industry specific reports. For instance, our Office of Fossil Energy prepared the following custom reports: Clean Coal Technology Export Finance Programs (9/93); Directory of U.S. Coal & Technology Export Resources (1/94); Foreign Markets for US Clean Coal Technologies (5/94). We are unable to provide an exact number of reports prepared and distributed at this time.	We are unable to provide any useful information at this time due to the unavailability of reliable data.
Trade Events	The DOE does not actively participate in trade events solely for the purpose of information dissemination	Not Applicable

ACTIVITY CLASSIFICATION	OUTPUTS	OUTCOMES
Government-to-Government Advocacy	Letters to foreign government officials supporting US firms. We are unable to provide a total number due to the unavailability of information. Some recent examples include advocacy letters in support of US firms bidding on projects in India, Vietnam, China.	Results of advocacy letters have been to raise the viability of US bidders; increased the likihood of equitable treatment of US firms; and influence change in foreign government policies that have negatively affected US exporter and investers.

ACTIVITY CLASSIFICATION	OUTPUTS	OUTCOMES
Feasibility Studies	Several DOE Program Offices are involved in conducting feasibility, market assessments, and demonstration projects. We are still attempting to capture the relevant information. Some initial citations include: - Developing business plans for Integrated Gasification Combined Cycle technology in India - Conducting a brine disposal demonstration project in Poland - Working with the renewable energy industry through the Committee on Renewable Energy Commerce & Trade (CORECT) to conduct world-wide market assessments and development activities for renewable energy technologies. - Working with the energy efficiency industry through the Committee on Energy Efficiency Commerce & Trade (COEECT) to conduct world-wide market assessments and development activities for energy efficiency technologies.	We are unable to estimate or develop the # or % of US firms wining contracts, gross exports, or gross jobs at this time. Many of the Department's feasibility and market assessments while completed, have not yet resulted in successful market opportunities for US industry. We will continue to develop a process whereby we can begin to track and measure both outputs and outcomes in this area.

ACTIVITY CLASSIFICATION	OUTPUTS	OUTCOMES
Developing Foreign Markets for U.S. Goods & Services	To date, 139 business agreements have been signed by US companies as a result of DOE trade missions (1991-1995) The average satisfaction rate = 85% To date, the DOE has conducted 40 trade missions and reverse trade missions (1991-1995) Total number of US companies participating = 1472 (1991-1995)	To date, the total potential $ value of business agreements signed as a result of DOE missions = $19.5B. This figure is the result from Secretarial trade missions to India and Pakistan in 1994, and China in 1995. # potential gross jobs to be created = 390,000. The export-to-jobs formula used: $1 billion exports = 20,000 jobs

Department of Energy
Washington, DC 20585

I-12

September 11, 1995

To: Dan Reicher
Deputy Chief of Staff

From: Jack Riggs
Acting Assistant Secretary for Policy

Subject: Trade Policy Coordinating Committee Principals Meeting, September 12th, at 2:00-3:00pm in Room 5430 at the Department of Commerce

The Trade Policy Coordinating Committee (TPCC) will hold a principals meeting on September 12th at 2:00pm in Room 5430 in the Department of Commerce. The formal agenda is to approve the TPCC Annual Report (a copy is at Tab 1). Staff from the agencies are generally agreed on the report's content and tone. DOE's suggestions, also covered in Tab 1, on emphasis and nuclear export controls were accepted.

Of more importance, will be a Commerce led effort for the Principal's to reach some consensus to shift the public emphasis on USG trade activities, to mobilize political forces in support of continued USG trade promotion activities and to promote a more activist and coherent political strategy by the Administration in the face of possible agency dismantlement and/ or severe reductions in appropriated funds for trade promotion and policy activities. Commerce, particularly the International Trade Administration, headed by Undersecretary Jeff Garten, is particularly concerned over its near term viability in light of the appropriations' bills.

For those reasons, Garten suggested at the Deputies meeting on September 7th, to add three additional agenda items for discussion. The Deputies agreed to the following:

(I) A round table discussion on the Congressional efforts at agency dismantlement generally, and with regard to trade policy and promotion specifically. All recognize that the Administration's position supports the existing structure and that his conversation should not be seen as an effort to change policy.

Nevertheless, many in Commerce are concerned about the prospects for either dismantlement legislation being attached to existing legislation or, and perhaps more importantly, severe cuts imposed on Agencies' trade activities through language or, more likely, through reduced appropriations for departmental administration and related accounts. This latter approach may have more appeal substantively to certain Members if the votes for dismantlement do not exist, although the appropriation approach has less public political impact than a major dismantlement.

T-U
13

The appropriation issue is a major concern of the International Trade Administration (ITA) which Garten supervises. ITA is unloved by some industries since it has a free trade inclination and is often at odds with the International Trade Commission with its protectionist mandate. If ITA disappeared, the ability of industries to obtain protection would increase.

DOE has a similar concern over appropriations in light of the proposed Senate reductions in the appropriation account for departmental administration Also, there is an undercurrent of feeling that the Administration lacks a political forum for effectively and coherently dealing with Congressional efforts at Agency restructuring, although this is not explicitly stated (Tab 2 contains a paper prepared by Congressional Relations on DOE dismantlement legislation.

(2) A briefing on foreign competition. This year's TPCC report articulates in detail the types of foreign competition US companies face in foreign markets. It also measures USG support for US companies against this country's major industrial country competitors. By all quantifiable measures, USG support for US industry and technology lags significantly foreign government support for their industry. The basic argument is that rather than doing less, the USG should do more.

Treasury is more agnostic about this conclusion, reflecting its view that currency relationships and domestic policies are more important than trade promotion efforts, The Treasury representative may argue that the TPCC report appears to argue that when foreign governments support their industry, it is wrong and when the USG supports its industry it is right. This argument does not have any currency among the other agencies.

In fact, to buttress the TPCC argument for doing more, Commerce will likely present a classified briefing and seek agreement on publicly stating that US companies lost out on 200 projects, worth $25 billion and costing 500,000 jobs. This report has yet to be circulated. Commerce will also ask for individual agencies to provide illustrations of foreign competition that led to the loss of contract by a US company.

For DOE, given the lack of resources and since other agencies are geared to this undertaking, we do not systematically track projects lost. The only one of which we are aware is one in Turkey where the Japanese Government reportedly supported a successful Mitsubishi bid for construction of the Bursh Power Project at the expense of a US company.

More important than the argument of foreign competition will be the Commerce effort to convince Principals that the evidence shows that the Administration needs to pursue is a National Economic Security Strategy, in light of the changed nature of foreign competition. There has been no discussion of adopting this strategy by the staff or the Deputies.

DOE staff is hesitant to place international commercial competition on a war-footing, although we understand the compelling congressional arguments in favor.

There is always a danger in completely politicizing foreign commercial relations: (1) to administration officials who are easily blamed for the smallest glitch in commercial contracts such as India; and (2) to US companies who might be more easily leveraged by foreign governments as a means to pressure the USG.

In addition such politicization increases pressure on the USG to provide more project financial assistance, often for projects of dubious economic merit. Finally, US companies are wary of what the government might do. Companies prefer to maintain the discretion of having the initiative in approaching the USG rather than having the USG actively and perhaps independently pursuing major efforts in support of US commercial entities.

For those reason, while we support a major Commerce led effort to counter both foreign competition in third markets and political competition in the Congress, we are hesitant to pursue a more aggressive and political USG trade promotion effort.

3) Commerce plans to ask other agencies to briefly discuss their trade promotion programs. SBA is likely to lead off. DOT is also likely to contribute. DOE has also been asked. While you are under no obligation to speak, the following talking points are geared to our trade promotion activities.

* DOE is impressed with the excellent interagency coordination led by Commerce. It is a marked departure from previous Administrations and is something we should publicly note.

* We have also been impressed with the cooperation between agencies. For example, for DOE, our cooperation with Commerce has been two way and mutually beneficial. Likewise, we have worked effectively with TDA and OPIC and EXIM.

* This cooperation has not only proved efficient in support for the private sector, it has been instrumental in the Administration's trade promotion strategy. Nothing like success to increase challenges to our activities!

* Within DOE our trade promotion strategy contains four elements. They are based on our effort to support US energy, environmental and related technology exports and US energy companies' export and international investment objectives. The four elements follow:

- First, Presidential missions undertaken by the Secretary to the Big Emerging Markets (BEMs) as well as to other countries.

  Within the last year, the Secretary and Deputy Secretary have traveled to India, Pakistan, China, South Africa, Mexico Venezuela, Central Asia, Costa Rica, the

I-11
15

Czech Republic, Azerbaijan and Italy, usually accompanied by US businessmen and women;

- Second, political support for US companies by written and personal intervention with foreign leaders; and,

- Third, ongoing and longer term support for US industry to break-into or expand in niche and other markets. The DOE office of Energy Exports, in cooperation with Commerce, TDA, EXIM, AID and OPIC, carried out, and continues to carry out ten missions with US companies interested in particular markets and in promoting particular technologies; and,

- Fourth, actively promoting policy reforms by foreign governments in such fields as regulation, accelerated project approvals, open procurement, and finance, in conjunction with the trade promotion effort.

4) Other issues: TPCC report and OMB presentation

(A) DOE made two major suggestions for the TPCC report covering a new theme and one addition to the issue of nuclear export controls.

On the theme, we suggested and the TPCC accepted, developing a theme that reflects the need for continuous USG support for US companies activities since commercial negotiations and transactions are time consuming and difficult. Our attempt was to supplement the TPCC report's major theme of high level political and financial support for industry. While this is necessary, this type of support is insufficient to promote long term US international competitiveness.

On the question of nuclear controls, the TPCC accepted DOE language which states that the DOE has amended its nuclear technology control regulations to relieve the licensing burden for a number of US trading partners in recognition of the positive steps taken by these countries in nonproliferation.

(B) OMB is engaged in quantifying the amounts of money spent by the Agencies on trade promotion and in attempting to judge results by seven performance measures. Both undertakings are fraught with danger and error prone although the political system requires the effort be undertaken.

DOE submitted its FY 93-95 export promotion expenditures broken down between three offices; 1) Policy's Office of Energy Export; 2) Fossil Energy; and 3) Energy Efficiency. The total expenditures for the three offices grew from $5.2 million to $14.3 million.

The individual offices broke down as follows:" (1) Office of Energy Exports from $445K to $600K in the three years; (2) Fossil Energy's budget increased from $2.47M to 3.0M in FY 94 but

dropped to $2.12M in FY 95, and, (3) Energy Efficiency, from $2.242M to$11.526M in the three years. OMB's measures includes the following seven categories: negotiating open markets; combatting foreign export subsidies; financing and insuring US trade and investment; providing information and export assistance services; providing government-to-government advocacy; funding feasibility studies; and developing foreign markets for US goods and services.

Performance measures were developed for four of categories that are directly applicable to DOE's export promotion activities particularly the work of the Office of Energy Exports. These four are (1) providing information and export assistance services, (2) providing government-to-government advocacy, (3) feasibility studies, and (4) developing foreign markets for US goods and services.

September 9, 1995

I-4
17

Tab 2
DOE Dismantlement
(From Congressional Relations)

Status of Legislation:

House: Congressman Tiahrt (R-KS) has introduced H.R. 1993, which would abolish the Department, terminate some functions, and scatter the balance -- including those dealing with nuclear weapons and cleanup of weapons production sites -- among other agencies. Title II, dealing with the DOE labs, was part of the agenda at a September 7 hearing by the House Science Committee. No other action on this bill has occurred. Congressman Solomon (R-NY) has introduced H.R. 1923, which would also abolish DOE, among other agencies. No action has occurred on this bill although there may be an attempt to attach a version of this legislation to the reconciliation bill this month.

Senate: No companion bill to the above House bills has been introduced to date, although a Republican task force is developing such legislation. Senator Roth (R-DE) has introduced S. 929 which would dismantle the Commerce Department and create a bipartisan commission to reorganize the federal government and reduce the number of Cabinet agencies from 14 to 10. It does not specifically mention DOE. This bill was marked up by the Governmental Affairs Committee on September 7.

DOE Strategy for Dealing with Dismantlement Legislation:

The Department has agreed with our critics that steps need to be taken to streamline our operations and reduce spending, and have taken a number of initiatives to meet those goals. We do not agree that dismantlement is an appropriate step or that it would save taxpayer dollars. The Secretary's initiatives include reducing spending by $14.1 billion over 5 years, including:

- Strategic Realignment of functions, resulting in savings of $1.7 billion and 3788 employee reductions;
- Sale of Assets, including four power marketing administrations and the Naval Petroleum Reserves; and
- Implementation of most of the recommendations of the Galvin Commission on reduced oversight of the DOE laboratories.

We have argued that a Cabinet-level department dealing with energy issues is necessary from both a national and energy security standpoint, because of the importance of these issues domestically and internationally.

Ten ongoing initiatives

1) US and Japanese utilities effort to increase levels of Japanese procurement of US electric power goods and services.

2) US and Korean utilities effort to position US companies to take advantage of Korean partial privatization of its electric power sector and to increase US power and electrical equipment sales.

3) US companies discussion with Indonesian government and private sector officials to increase sales of US renewable technologies and to open the Indonesian sector to private investment and use of natural gas domestically.

4) Russia--4 major projects

*First ever meeting involving US companies, the US government and Gazprom over private sales of pipeline, safety and enviromental equipment

*An effort involving the US private sector, the Russian government, the US government and the oil and gas sector in Russia to design and implement an effective environmental system to protect the Arctic during oil and gas exploration and production.

*Electric power sector program with RAO, EES Rossi, (primary electric power company in Russia) on financing, management and related issues.

*Initial cooperation with Rosugol to promote US clean coal technology.

5)Ongoing efforts to promote both electric power and environmental technologies with China through the JCCT process.

6) Annual Eastern European electric power conference involving a growing list of US companies.

7) Follow up initiatives involving the Middle East countries signing the Amman agreement

I-4
19

International Energy Development Council

1050 Thomas Jefferson Street, N.W., Seventh Floor, Washington, D.C. 20007 *Phone: 202-298-1910*

Co-Chairmen:

Thomas G. Boren
President
Southern Electric International, Inc.

Edward R. Muller
President & CEO
Vision Energy Company

Executive Director:

Ben Yamagata

Bank of America
Bechtel Corporation
Black & Veatch Power Development
Brown & Root
Chemical Bank
Citicorp Securities, Inc.
Cogen Technologies, Inc.
[illegible] Corporation
[illegible]ser Corporation
Foster Wheeler Power Systems, Inc.
General Electric Corporation
McDermott/Babcock & Wilcox
Merrill Lynch
Vision Energy Company
Morrison Knudsen Corporation
Southern Electric International
The AES Corporation
Westinghouse Corporation

May 2, 1994

file

The Honorable Kenneth Brody
President and Chairman
Export-Import Bank of the United States
811 Vermont Avenue, N.W.
Washington, DC 20571

Raymond J. Albright, Ph.D.
Senior Vice President, International Lending
Export-Import Bank of the United States
811 Vermont Avenue, N.W.
Washington, DC 20571

RE: Project Finance for Overseas Power Projects

Gentlemen:

This letter, with attachments, responds to an invitation from Dr. Ray Albright to provide suggestions to the EXIMBANK regarding a new guarantee structure based upon an expanded definition of political risk as well as the contents of a letter of interest (LI) to an applicant for EXIM project financing of an overseas power project. Attached is a proposed LI response that EXIM would provide to sponsors and U.S. equipment and engineering/construction services suppliers of power projects in overseas markets. Also, we have included a summary of the "Comprehensive Political Risk" (CPR) guarantee we propose EXIM make available to cover the construction (pre-completion period), and, where appropriate, post-completion period, as well.

This CPR guarantee would expand the current definition of political risk (expropriation, political violence, currency conversion) to include additional political risks which prohibit large private sector commercial lenders (banks and capital markets) from participating in infrastructure projects in many emerging market countries. These additional risks are arbitrary contract default by the power purchaser and government/regulatory interference or

From Steve Lee
2/13/96

obstruction (defined below). Coverage under the proposed CPR guarantee would enable properly structured projects to attract private sector lenders to provide all debt funds and to take those project commercial risks (including failure or contract default of the project) that lenders would expect to take in a U.S. power project.

The CPR guarantee would be available as the principal form of coverage during a project's pre-completion stage (although, presumably for a lower fee, the current, more narrowly defined political risk cover would still be available). During the post-completion period a sponsor could choose to select a comprehensive guarantee cover, or could select a CPR guarantee as an alternative.

Where the CPR is utilized, EXIM could limit its scope of consideration and analysis to comprehensive political risks. Lenders with large staffs and in-house expertise will be evaluating the projects from a commercial standpoint. Because these lenders retain the commercial risks, EXIM will not have to take these risks and could choose not to expend the time and resources to evaluate them. The CPR program would only be available to projects that ultimately obtained commitments from private sector lenders.

Secondly, the proposed letter of interest is designed to be adaptable to whatever combination of coverages the applicant requests, which most likely would include the CPR during the pre-completion period and comprehensive, CPR or direct credit during the post-completion period. Our draft also contemplates that a customized paragraph -- proposed by the applicant -- could be included to emphasize particular features of EXIM programs that are responsive to the applicant's specific marketing or competitive needs.

DISCUSSION

Eximbank support for private power projects should reflect the market realities of political risks and include project interference or default caused by the actions (or inactions) of a host government or entities it controls. Such political risk cover recognizes a key risk of the international private power market place wherein the host government or its national utility play a central role in determining whether contract terms will be met. This risk is particularly troublesome for private power projects located in emerging markets and the existence of this risk is one of the principal reasons why private power project financing is difficult to obtain.

Project interference which results in the frustration of contract(s) has been classified as a commercial risk by EXIM; however, in the context of an international privately financed power project where the host government and/or the national utility play a central role, those entities can frustrate the terms of contracts by actions or inactions that would not otherwise trigger Eximbank's current coverage of expropriation. In general, the proposed CPR guarantee (both pre-completion and post-completion) would protect private sector lenders

against project interference or default caused by the host government or buyer utility that results in insolvency, postponement, termination or effective expropriation of the project.

To provide clarity for applicants for such Eximbank coverage this proposed category of "comprehensive political risk" needs to be defined both by specific language and by including examples (illustrative, not definitive) of those circumstances under which the coverage would apply. The following are examples:

- There is no evidence that the project will not operate as planned, but the buyer utility wrongfully delays, cancels, or expropriates the project or, simply refuses to pay or fails to comply with contract requirements to pay in hard currency. Because the utility is state owned, or controlled, any significant actions the utility takes are essentially political decisions, just as actions taken by the government directly would be. The CPR cover would protect the project and lenders from increased costs or loss of cash flow resulting from such actions.

- Political mischief in the form of confiscatory regulation, confiscatory taxation or interference with the acquisition of permits or the completion/operation of the project. Other examples include unscheduled changes in tariff levels, disruptions in fuel supply, labor unrest, lack of capital for maintenance and operations of interconnecting transmission lines, or other issues that are mainly determined by government political or economic policies or actions.

- Currency inconvertibility would continue to be covered, whether caused by political or economic reasons. This risk particularly manifests itself through the creation or adoption of new government regulations or restrictions not present when the project was first undertaken.

The World Bank ECO Program is designed to cover government project interference and inconvertibility for projects that otherwise fit that Bank's lending goals. Consequently, the concept we are proposing may be in use, or under consideration, by other international lenders.

We believe the CPR guarantee for the pre-completion period, together with a CPR guarantee or comprehensive guarantee coverage in the post-completion period, as appropriate, would attract significant amounts of debt capital from the private sector for well structured projects in the overseas infrastructure markets, while meeting your objective of not duplicating private sector activity.

We are eager to develop this concept and the associated formal documentation and definitions with you and look forward to meeting at your earliest convenience.

Sincerely,

/s/

David Haug
President, Enron Global Capital
Chairman of the IEDC Project
Finance Task Force

cc: Carol Hessler
Policy, Planning & Program Development

[Proposed draft of EXIMBANK fast response letter of interest]

[EXIM LETTERHEAD]

RE: (Country) LI No ( )

Dear _____;

We have received your letter of (DATE) requesting that EXIM provide financing and/or guarantees for the project described below (the "Proposed Project"):

[NOTE to EXIM: the following summary would be copied from the applicant's letter and could include some or all of the following categories depending upon the transaction.]

Project Name:	
Project Description:	(This would be a very brief description)
Project Sponsor(s):	
Project Location:	
Borrower:	(Insert name of project company)
Principal Off-taker:	(Insert name of power purchaser)
Principal Fuel Supplier:	
Principal Operation & Maintenance Contractor:	
Principal Host Country Suppliers/Contractors:	
Exporter:	(The name of exporter would be inserted if the LI is being provided to the exporter. If the LI is for the benefit of a sponsor, this would simply state "various U.S. companies" or "to be designated")
Project Value:	(This would be an estimate)
U.S. Export Value:	(This would be an estimate)
Amount Supported by EXIM:	1) 85% of U.S. Content 2) Local costs up to 15% of U.S. Content 3) Interest during the construction period

This Letter of Interest is to inform you that based upon our preliminary review of your representations regarding the Proposed Project, the following EXIM financing or guarantee covers could be considered:

[NOTE to EXIM: Because certain projects will want to emphasize different covers for competitive and/or marketing reasons, ideally EXIM would list the paragraphs describing such covers in the order requested by the applicant. The following would be the descriptions of such covers].

- Comprehensive Political Risk Guarantee. EXIM confirms to you that the Comprehensive Political Risk guarantee is available for the Proposed Project [(i) during the Construction Period and (ii)] is available for a period of ____ years from the start of commercial operations. The terms of the CPR guarantee are described in Attachment A. We specifically call your attention to the requirement that construction and/or permanent financing commitment(s), conditioned only on the applicability of the CPR guarantee to the Proposed Project, is a prerequisite to the effectiveness of the CPR, as is EXIM's confirmation that the Proposed Project actually achieves the Material Assumptions set out in your letter with respect to the nature, content, and structure of the Proposed Project. Although final terms would be subject to the issuance of a final commitment, indicative rates for the CPR guarantee for your Proposed Project would be as follows:

  Indicative Exposure Fee:
  (based upon preliminary risk assessment)

  Indicative Commitment Fee:

  Letter of Interest Effective Period: 24 months from LI issuance date

- Direct Loans/Debt Guarantees/Comprehensive Cover. EXIM will be prepared to consider issuing a Final Commitment to support the transaction following EXIM's satisfactory determination of the Borrower's ability to repay all of it's debt obligations. Based upon current market conditions, EXIM would consider issuing a direct loan or debt guarantee for:

  Repayment Period: (___Semiannual Principal Payments beginning six months after commercial completion)

  Exposure Fee:

  Interest Rate for Direct Loan:

  Fee for Loan Guarantee:

- Comprehensive Political Risk Guarantee/Comprehensive Debt Guarantee. EXIM confirms to you that the Comprehensive Political Risk guarantee is available for the Proposed Project during the Construction Period and (ii) and that the Comprehensive Debt Guarantee is available for a period of ___ years from the start of commercial operations [NOTE: cover requests will vary from project to project.]

  [NOTE TO EXIM: We expect that for a number of projects, many applicants may request Comprehensive Political Risk cover during the construction period but continue to seek comprehensive cover during the post-completion period.]

ABOUT THE INTERNATIONAL ENERGY DEVELOPMENT COUNCIL

The IEDC is an ad hoc group of U.S. private power developers, equipment manufacturers and engineering/construction firms organized to promote the development of U.S.-led private power projects in overseas markets. Increased participation by U.S. firms in the burgeoning overseas private power markets can create U.S. jobs, recapture U.S. competitiveness, invigorate exports and economic growth, and significantly contribute to the protection of the global environment. These markets are now being concentrated in the private (as opposed to public) power sector. This turn to market-based power generation gives U.S. power developers, already actively involved in private projects, an enormous advantage over foreign competitors. The current focus of the IEDC is an examination of obstacles that exist to the successful development and ultimate completion of private power projects abroad. The Council has reviewed the programs and policies of various U.S. federal agencies and departments involved in the promotion of exports of U.S. goods and services and is seeking appropriate modifications to those programs and policies to better insure assistance to industry efforts in development of overseas private power markets.

Benefits and Advantages of Promoting U.S. Private Power Industry In Overseas Markets

- The U.S. share of the projected total export potential of power equipment and services could be as high as $100 billion during the next 20 years, or $20 to $25 billion over the next 5 years.
- Promoting U.S. private power developers overseas directly complements the Clinton Administration pledge to "step up" the U.S. commitment to assist U.S. industry and promote U.S. jobs by increasing U.S. exports while also protecting the global environment as technologies commonly utilized by U.S. developers are, in most cases, more advanced than those of developing nations.
- Each 1 billion dollars of increased exports creates 20 thousand U.S. jobs.

Opportunities for Supportive Federal Policies

- Enhance U.S. Export-Import Bank programs to insure that U.S. private power developers have access to competitive project financing (non-sovereign financing) on a timely basis.
- Implement mechanisms which allow OPIC to expand their lending programs for large U.S.-led infrastructure projects.
- Increase expertise in federal export agencies to better support project financing structures of U.S. private power developers.
- Coalesce industry and government efforts to establish a partnership between industry and government to pursue a coherent strategy for U.S. overseas power development.
- Promote U.S.-backed private power projects in developing countries as part of a U.S. environmental action plan.

urther information, contact Ben Yamagata or Susan Steinberg at (202) 298-1910.

Document Number 51

TO ME

BILL DISPLAY/UPDATE SCREEN

BILL NUMBER : B5051505 DEBTOR CODE: D-PUBENRON
CONTACT PHONE NO : - - DEBTOR NAME: Enron
RECORD STATE : CLOSED

DATE BILLED : 02/01/95
DATE DUE : 03/03/95
(ENTER DATE AS MM/DD/YY)
DATE DUE MODIFIED : / /

FIRST DUNNING NOTICE : 03/03/95
SECOND DUNNING NOTICE : 04/02/95
THIRD DUNNING NOTICE : 05/02/95
FOURTH DUNNING NOTICE : 06/01/95
FIFTH DUNNING NOTICE : / /
SIXTH DUNNING NOTICE : / /

AMOUNT OF BILL : 3238.50
AMOUNT COLLECTED : 100.00
AMOUNT CANCELLED : 3138.50
AMOUNT WRITTEN-OFF: 0.00
RESCHEDULE : N
COLLECTION BUREAU :

AMOUNT OF INTEREST : 0.00
AMOUNT OF PENALTIES: 0.00
AMOUNT OF ADMIN FEE: 0.00
IRS :
JUSTICE DEPT :
CREDIT BUREAU :
BILL SUSPENDED:

COMMENTS

CANCELLATION MEMO DATED 6/9/95

Paid other Agency

6

10265

MG PAKISTAN ZN1919030
NFG2 TRF893220

Department of Energy
Washington, DC 20585

07292541

B5051505

ENRON
ATTN: Senior Vice President, Terence Thorn
P.O. Box 1188
1400 Smith Street
Houston, TX 77251

JAN 06 1995

Rec'd Check No. 0112122610 1/12/9
Deposit C.D. No. 64413 1/20/95
$100.00

Dear Mr. Thorn:

In September 1994, you or a representative of your company traveled to Pakistan and participated in the Presidential mission on energy investment. In the spirit of partnership, there were commitments made by all participants to share in the cost of the travel and related expenses. While other participants have made full payment to settle their commitments, our records show that your account is still open.

We request that you make a check payable to the U.S. Department of Energy (DOE) in the amount of $3,238.50 and reference Pakistan trip. Please send the check expeditiously to the address provided below. Do not send payment to Boise, Idaho as instructed previously by the Office of Secretary.

U.S. Department of Energy
Office of Headquarters Accounting Operations
P.O. Box 500
Germantown, MD 20875-0500

To ensure the travel to Pakistan is free of any adverse criticism, the DOE is very anxious to achieve a full settlement as soon as possible. We request your full cooperation in this matter. If payment is not forth coming soon, please provide us information as to why a settlement cannot be achieved.

If there are any question, please call me at 301-903-4934 or Sandy Isemann at 301-903-5335.

Sincerely,

Gary M. Singer
for Philip R. Pegnato
Accounting Division

4-6
1-2

(6)

Page No. 1
01/19/95

04413

DATE RECEIVED: 01/18/95

OHAO DAILY RECORD OF REMITTANCES

BILL	TYPE	CHECK#	PAYER	AMOUNT	DATE OF CHECK
** CATEGORY MISC					
PHONE	CK	135	CURTIS, CHARLES	1.75	01/10/95 X
B5021028 AGEN 57 [illegible]	CK	662304547745	DEFENSE FINANCE AND	4659.33	01/13/95 — Steve
PAKISTAN	CK	0112122610	ENRON CORP	100.00	01/12/95 X — Pakistan
PHONE	CK	3581	HEATH, ELAINE	1.07	01/11/95 X
MIL SVC PROLL	CK	1765	HUDSON, GARRY	355.19	01/03/95 X
FOI	CK	2474	MCNEIL TECHNOLOGIES	29.00	01/17/95 X
EEO PAYROLL	CK	4631	MOMERO, DANIEL	1978.80	12/31/94 X
PHONE	CK	1813	O'LEARY, HAZEL	8.03	01/10/95 X
SHARE REBATE	CK	267947	OMEGA TRAVEL	31692.69	01/16/95 X
SHARE REBATE	CK	267945	OMEGA TRAVEL	32013.60	01/16/95 X
China	CK	2668	OXBOW POWER CORP	300.00	01/16/95 X — china
PHONE	CK	3220	PESYNA, GAIL M.	0.68	12/16/94 X
PAKISTAN	CK	143906	RAYTHEON	100.00	01/06/95 X — Pakistan
PHONE	CK	723	SIMPSON, C. KYLE	19.82	01/10/95 X
PHONE	CK	8166	TEMPLE, ALBERT D.	8.94	01/05/95 X
PHONE	CK	3466	WALLACE, CAROLYN	30.93	01/10/95 X
PHONE	CK	616	WERNER, JAMES D	14.88	01/30/94 X
** Subtotal **				71314.71	
** CATEGORY TRAVEL					
TV510152	CASH		BUSSLER, B.	50.00	/ / X
TV509795	TC	HE225660227	DANIESL, JANET	120.00	01/18/95 X
TV507065	MO	563320113320	HALL, BARBARA	272.59	12/21/94 X
TV508888	MO	04543990406	LAMEY, T.	1248.85	01/03/95 X
TV510681	CASH		PATRINOS, A	270.00	/ / X
[illegible]264	CASH		POST, KIM	140.00	/ / X
[illegible]691	TC	HC342522519	REICHER, DAN	500.00	/ / X
TV510332	CASH		SMOOT, WENDY	130.00	/ / X
** Subtotal **				2731.44	
*** Total ***				74046.15	

STANDARD FORM 215 (REV. 5-90)
PRESCRIBED BY DEPT. OF TREASURY
I TFM 5-3000 215-103

DEPOSIT TICKET

DEPARTMENT OF THE TREASURY
FINANCIAL MANAGEMENT SERVICE
NSN 7540-01-019-9452

DEPOSIT NUMBER	DATE PRESENTED OR MAILED TO BANK (M M D D Y Y)	8-DIGIT OR 4-DIGIT AGENCY LOCATION CODE (ALC)	AMOUNT
(1) 890215	(2) 01-20-95	(3) 89-00-0001	(4) 74,046.15

(6) AGENCY USE

DCS 04413

Pete Ciullio
U.S. Department of Energy
Ofc. of Bqtrs Actg Operations
P.O. Box 500
Germantown, Md. 20875-0500

(7) NAME AND ADDRESS OF DEPOSITARY
Nations Bank
Fox Chapel Branch

THIS COPY CANNOT BE CONFIRMED

(9) DEPOSITORS TITLE, DEPARTMENT OR AGENCY AND ADDRESS

DEPOSITOR RETAIN THIS COPY FOR INTERNAL USE.
DO NOT SUBMIT THIS COPY TO DEPOSITARY.

AGENCY COPY

4-6
1-3

TRAVELER: TERENCE THORN

$238.50

...NDUM
...CALL

Previous editions usable

...INDA JENKINS

...ERE CALLED BY— ☐ YOU WERE VISITED BY—

...ENRON SEPT. 94

...ation) TO

...POKE- FRANCIS

...E PHONE ▶ ☐ FTS ☐ AUTOVON

M. Dillon's office

CALL AGAIN ☐ IS WAITING TO SEE YOU

...RNED YOUR CALL ☐ WISHES AN APPOINTMENT

...y on short leg of
...p. Did NOT travel all
the way.
...13 - 853-6623

...IME

...v. 8-81)

1-10-95

I INFORMED MARILYN DILLON THAT ERON DOES NOT FEEL OBLIGATED TO PAY BECAUSE MR. THORN FLEW ONLY ONE SHORT LEG OF TRIP AND THE PLANE BROKED DOWN. MARILYN WILL INFORM US LATER WHAT SHOULD BE DONE. GEORGE

H-6
1-4

REMITTANCE STATEMENT

CHECK NO. 0112122610

ENRON CORP.

PAY ENTITY 011

VENDOR NO. *11116510000

PAGE 001 OF 001

VOUCHER NO.	INVOICE DATE	INVOICE NUMBER	PURCHASE ORDER	AMOUNT GROSS	AMOUNT DISCOUNT	AMOUNT NET
9501000830	102494	94-37236		100.00	0.00	100.00
					TOTAL	100.00

apply to Bill

Special Instructions

151

P. O. BOX 1188, HOUSTON TEXAS 77251-1188

DETACH STATEMENT BEFORE DEPOSITING. ENDORSEMENT OF CHECK ATTACHED ACKNOWLEDGES PAYMENT IN FULL OF ALL ITEMS SHOWN ABOVE. IN CASE OF ERROR OR OMISSION RETURN BOTH CHECK AND STATEMENT

E1260 01/94

Document Number 53

4/3/95

G-13
1

STATUS OF BUSINESS AGREEMENTS SIGNED DURING

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

September 21-24, 1994

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
		RENEWABLES POD		
	Agrilectric Power (LA)	2X5 MW pilot project biomass from rice hulls	$10.0M	Agrilectric has traveled to Pakistan to continue negotiations since the trade mission. Initial cost of rice hulls at $5 per ton is cost effective for their process. However, currently farmers actually want $20 per ton. This is not cost-effective, and has currently stalled Agrilectric's progress.

Source: [illegible]

G-13
2

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
Power Gencorp Ltd.	Synergics Energy Developmemt Inc (MD)	75 MW hydropower at 3 sites	$150.0M	Synergics has made the appropriate applications to the GOP for the development of the three projects that were the subject of the MOU.
Power Gencorp Ltd.	ENTECH (TX)	Solar power projects	$40.0M	ENTECH is currently seeking financing for the project, however, the standard 6.5 cents/kwh does not appear to be enough to make the project economically viable.
		SUBTOTAL	**$200.00M**	
		EFFICIENCY POD		
Greaves Cotton	Armstrong (FL)	Steam traps for industrial steam efficiency	$1.0M	Pakistani engineer completed training in US in steam management practicies during March 95. Marketing programs are being introduced into Pakistan market

G-13
3

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
SUI Northern Gas Pipeline (SNGPL)	Solar Turbines (DC)	High efficiency gas compressor stations	$7.0M	4 compressors received and being installed Purchase order for additional 5 compressors has been received and negotiations underway
		SUBTOTAL	**$8.0M**	
		OIL & GAS POD		
Government of Pakistan	Union Texas (TX) - Badin II Project	Oil & gas exploration & production license	$175.0M	Work progressing per schedule Extension & revision signed during S-2 mission.
Government of Pakistan	Occidental Petroleum (CA) - Ratana Project	Gas & petroleum development and production license	$100.0M	No Change
		SUBTOTAL	**$275.0M**	
		ELECTRICITY POD		

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
Lal Pir project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M	- PPA signed 11/3/94 - FSA signed 11/8/94 - Financing arranged from Japan EXIM/Bank of Tokyo ($200M); ICF ($90M); Equity $100M - Underwriting signing with Bank of Tokyo 1/25/95 - Supplemental IA signed 1/12/95 - Indemnity Agreement to be signed during PM visit
Sidhnai project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M	- Sponsors allowed to shift project to Lalpir to allow them to add flue gas desulphurization unit. - Implementation Agreement to be signed during PM visit.

G-13
5

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
	Enron (TX), Bechtel (CA), GE Capital (CT) - Chenab River Project	Implementation Agreement for a 760 MW natural gas combined cycle power plant	$740.0M	- Purchase Power Agreement being negotiated - discussions over whether to use oil-fired unit or naptha fired combined cycle unit as originally proposed.
Sepco	GE Capital (CT) - Jamsboro Project	Agreement to develop a 310 MW natural gas combined cycle project	$174.0M	Negotiations preceeding
Fauji Foundation	Intraq, Sceptre Power Company - Kabirwala Project	Implementation Agreement for a 144 MW low Btu natural gas combined cycle power plant	$175.0M	- FSA signed 9/29/94 - PPA signed 1/12/95 - Sponsors working to obtain consents from various GOP departments. - Deadline for financial closure is 9/12/95.

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
Habibullah Energy Ltd.	Ogden Power Systems, GE - Quetta Project	Implementation Agreement to build a 104 MW natural gas combined cycle power plant	$105.0M	- ISO capacity increased from 104 MW to 140 MW to allow compensation for derating due to high altitude. - Company to provide confirmation on gas availability for increased capacity after which LOS to be revised. - Revised IA/PPA to be submitted. - MP&NR has not allocated requisite quantity of gas.

#1

G-13/7

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
Hassan Associates	Tenaska (NE), Entergy (AR), GE Capital (CT) - Uch Project	Implementation Agreement for a 585 MW low Btu natural gas combined cycle power plant	$660.0M	- PPA signed 7/9/94 - GSA signed 8/5/94 - Financial agreement still being negotiated with issue on the Oil & Gas Development Corp of the GOP ability to deliver supply of natural gas. - Possible signing of MOU affirming GOP commitments to be signed during PM visit.
WAK (Pvt) Ltd.	Orient Point (NY), Caterpillar (IL), Marine Energy Systems Corp	Implementation Agreement for a 800 Mw (16X50 MW) barge mounted diesel fired power plant	$800.0M	- IA signed 12/17/94 - PPA signed 1/18/95 - FSA signed 2/12/95 - IA signed for 800 MW while FSA and PPA signed for 1st phase of 400 MW - Financing and consents from GOP agencies in progress.
First Capital Securities	Smith Barney (NY)	Energy capital development fund	$100.0M	Waiting for response
		SUBTOTAL	**$3,454.0M**	

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)	STATUS
		TOTAL	$3,937.000	

G-13
9

STATUS OF BUSINESS AGREEMENTS SIGNED DURING

FOLLOW UP MISSION TO PAKISTAN ON ENERGY INVESTMENTS LED BY DEPUTY SECRETARY WILLIAM WHITE

December 12-17, 1994

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
RENEWABLE AND ENERGY EFFICIENCY POD				
	Synergics Hydro Asia (MD)	Memornadum of Understanding to develop a 97 MW hydropower project on the Punch River in Kashmir	$187.0M	No change

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
	Kenetech Wind Power (CA)	Memorandum of Understanding to develop a 100 MW wind power project in Baluchistan	$100.0M	- Required feasibility study currently underway. - Wind companies have recently learned that the GOP may be backing away from its intention to pay 6.5 cents/kwh for wind generated electricity. Instead, since wind power may not be available 24 hours per day, they were only willing to pay 5.5 cents/kwh.

G-13
11

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
Karachi Power Company/ Omega Pvt Ltd	Omega Zond Wind Energy (CA)	Memorandum of Understanding to develop a 150 MW wind power project in Sindh	$138.0M	- Required feasibility study currently underway. - Wind companies have recently learned that the GOP may be backing away from its intention to pay 6.5 cents/kwh for wind generated electricity since wind power may not be available 24 hours per day, they were only willing to pay 5.5 cents/kwh.
	Condyne Enercon Energy Efficiency	Agreement to conduct a pilot study of its energy efficiency technologies to reduce electricity consumption by refrigerators and air conditioners	$.4M	Currently negotiating with Ministry of Water & Power for 100,00 microprocessor units. Condyne will finance this investment itself and receive payment based on energy savings.
		SUBTOTAL	$425.4M	

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
		ELECTRICITY POD		
Hong Pak/Defense Housing Authority	American United Machinery Co. (OH)	Memorandum of Understanding to supply equipment to develop a 1350 MW coal-fired power project in Sindh	$1700.0M	- Ground breaking ceremony held 1/19/95 - IA and PPA to be signed within 6 months of MOU. - Agreements will be signed by Private Power & Infrastructure Board after coal availability is confirmed. - No futher action required at this time.
Sindh Coal Authority	BBI/Brooklyn Marine & Oil, Inc. (NY)	Memorandum of Understanding to develop a 200 MW coal-fired plant near Hyderbad in southern Sindh	$200.0M	- IA and PPA to be signed within 6 months of MOU. - Agreements will be signed by Private Power & Infrastructure Board after coal availability is confirmed. - No futher action required at this time.

G-13
13

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
Sindh Coal Electric Power Company	Leesburg Financial (DC)	Agreement to develop a 100 MW coal-fired power plant in Sindh	$100.0M	- IA and PPA to be signed within 6 months of MOU. - Agreements will be signed by Private Power & Infrastructure Board after coal availability is confirmed. - No futher action required at this time.
Model Town	Altern Energy (CO)	Memorandum of Understanding to develop a 20 MW thermal power project based on flared gas	$18.0M	- Project has been alloctaed required quanity of gas by MP&NR. - Case to issue LOI was deferred by GOP on 2/6/95. - No further action required at this time.
		SUBTOTAL	**$2018.0M**	
OIL & GAS POD				

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
	Union Texas Petroleum (TX)	Extension and Revision on Concession agreements in lower Sindh (Badin I and Badin II)	**	Progressing on schedule
	Union Texas Petroleum (TX)	Concession agreement in Eastern Sindh	$3.8M	Geologic and geophysical data currently being evaluated GOP awarded new exploration license on 12/7/94 to be signed on 4/6/95 in Washington, DC
	Occidental Petroleum (CA)	Zamurden concession agreement	$15.5M	Focus shifting from exploration to production
	Occidental Petroleum (CA)	Shaiwal concession agreement	$2.1M	Focus shifting from exploration to production
	Occidental Petroleum (CA)	Kamalia concession agreement	$2.1M	Focus shifting from exploration to production

G-13/15

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE	
	Occidental Petroleum (CA)	Bahawalnagar concession agreement	$2.1M	Focus shifting from exploration to production
	Occidental Petroleum (CA)	Mehar concession agreement	$3.8M	Focus shifting from exploration to production
Hydrocarbon Development Institute	Improved Petroleum Recovery International (TX)	Agreement to conduct dry hole study	$.4M	
	Ferrell North American (TX)	Memorandum of Understanding to develop a LPG terminal at Port Qasim near Karachi	$25.0M	Feasibility study ongoing
Pakistan State Oil	VECO (AK)	Pipeline service contract	$3.0M	No change
Pak-Arab Refinery Ltd.	Willbros Group, Inc (OK)	Turnkey construction project of a pipeline, storage, pumping and terminal facilities	$79.0M	Currently negotiating a $71M contract extension of PARCP pipeline
		SUBTOTAL	**$136.8M**	
		TOTAL	**$2443.4M**	

NOTE: ** = $175M included in Secretary O'Leary agreements

Document Number 54

SUMMARY OF TOTAL BUSINESS AGREEMENTS SIGNED DURING DEPARTMENT OF ENERGY TRADE MISSIONS

1994 - PRESENT

Prepared by

OFFICE OF ENERGY EXPORTS

March 20, 1995

From FOIA File

A-2
2

TABLE OF CONTENTS

	PAGE(S)
INTRODUCTION	I
SUMMARY OF ALL MISSIONS	1
INDIA 1	2 - 4
INDIA 2	5 - 10
PAKISTAN 1	11 - 13
PAKISTAN 2	14 - 16
CHINA	17 - 23

A-2/3

INTRODUCTION

As the U.S. prepares to enter the 21st Century, Secretary O'Leary and Deputy Secretary White have undertaken a series of trade missions over the past year and one-half, to establish stronger relationships between the United States and the nations who represent the world's largest emerging markets. There is little doubt that U.S. energy technology represents some of the best in the world and many countries prefer to do business with American companies. Many developing countries recognize this, however, our principal competitors are in many cases more aggresive in marketing their countries firms and technologies. The missions are designed to encourage and promote continued development of commercial partnerships in an economic climate with an eye to sustainable development and environmentally sound technologies. Three basic tenets have focused each of the missions to-date. These include:

- The promotion of trade and investment partnerships that will deliver clean, affordable energy sources of fueling economic growth using U.S. technology, capital and expertise.
- To facilitate cooperation on sustainable development policies that offer environmental and economic benefits for both countries and the global condition.
- To establish a structure for bilateral problem-solving on energy, environment and science and build a long-term mutually benefiflical relationship.

In an effort to communicate the results of each of these missions to a wider DOE audience, the Office of Energy Exports has prepared this report which summarizes the number and types of business agreements signed during the following Secretarial and Deputy Secretarial trade missions:

- Presidential Mission on Sustainable Energy & Trade to India, July 7-15, 1994
- Return Journey to India, February 11-14, 1995
- Presidential Mission on Energy Investment to Pakistan, September 21-24, 1994

3/A-2

A-2
4

- Follow up Mission to Pakistan on Energy Investments, December 12-17, 1994
- Presidential Mission on Sustainable Energy & Trade to China, February 15-24, 1995

Included in this report is a summary of the total dollar value signed during each mission broken out by energy sectors or "POD" which to-date totals over $19.5 billion. Also attached is a trip-specific matrix detailing the specific business agreements by POD.

This information is intended to provide a snap shot of the Department's trade missions, and to be a living document that will be revised as future trade missions are completed and existing agreements develop, mature and expand.

The Office of Energy Exports would be pleased to hear your suggestions on this document. Please forward any comments to Steven Lee at telephone: 202 586-0836 or fax: 202 586-0823.

4 | A-2

A-2
5

TAB A

SUMMARY OF TOTAL SIGNED BUSINESS AGREEMENTS

BY ENERGY SECTOR AND TRADE MISSION

A-2
6

DEPARTMENT OF ENERGY TRADE MISSIONS
TOTAL BUSINESS AGREEMENTS SIGNED
BY
ENERGY SECTOR & TRADE MISSION

($ MILLION)

MISSION	RENEWABLES	EFFICIENCY	OIL & GAS	COAL	POWER	TOTAL
INDIA 1	$202.3M			$100.0M	$4870.0M	$5172.3M
INDIA 2	$1274.3M	$50.0M				$1324.3M
PAKISTAN 1	$200.0M	$8.0M	$275.0M		$3454.0M	$3937.0M
PAKISTAN 2	$425.0M	$.4M	$136.8M		$2018.0M	$2580.2M
CHINA	$630.5M	$428.8M	$31.5M	$1750.0M	$3669.0M	$6529.79
TOTAL	$2,732.10	$487.20	$443.30	$1,850.00	$14,011.00	$19,543.59

A-2
7

TAB B

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE

TO INDIA

JULY 7-15, 1994

A-2
Y

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO INDIA

July 7-15, 1994

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
Baharat Electronics	Spire Corporation (MA)	Sale of PV manufacturing equipment for Indian production	$2.0M
Pentafour Solec Technology, Ltd.	Solec International, Inc. (CA)	Sale of PV cells for module assembly in India	$6.5M
Bangor Group	Cannon Power Corp (CA)	Opening of Cannon office in India & signing agreement on 25 MW wind farm	$75.0M
ESVIN TECH	MTCI (MD)	Licensing US gasification technologies for Indian waste to energy market	TBD
Bhoruka	SRC International (PA)	Efficiency & demand side management contract for Bombay textile firms	$3.8M
Emgee Solar	Martin Marietta (CO)	Develop PV systems and begin joint venture manufacturing	$66.0M
Siemens India	Siemens Solar Industries (CA)	Assemble & sell solar lanterns with components manufactured in US	$40.0M

A-2
9

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Tata Energy Research Institute	Lockheed Environmental Services (TX), Econergy Int'l, Duke Engineering & Services, Environmental Defense Fund, TransAlta Utilities, Niagara Mohawk Power	Develop a bagasse-fired cogeneration facility at 4 Indian sugar mills as joint implementation pilot project	$TBD
Delton Cable	Ovonic Battery Company (OH)	Sale of production equipment and license for Indian production of advanced batteries	$9.0M
		SUBTOTAL	$202.30
		ELECTRICITY POD	
Dabhol Power Company	Enron, GE, Bechtel		$2100.0M
No Indian partners	AES, Raytheon, Foster Wheeler, GE		$650.0M
	Spectrum Power Generation, Ltd (NY)	Power Purchase agreement	$245.0M
Ajinkyatara Cooperative Sugar Factory	ThermoChem, Inc		$400.0M
Thermax Ltd.	Proven Alternatives (CA)		$400.0M
Raunaq Group	Cogentrix		$275.0M
Raunaq Group	US Environment Systems		$600.0M
	CMS Generation Company (MI)		$200.0M

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		SUBTOTAL	$4,870.00
COAL POD			
Jaya Foods, Spectrum Washeries	Spectrum Technologies (NY), Elgin Industries (IL)	Consortia agreement to demonstrate coal washing technology	$100.0M
		SUBTOTAL	$100.0M
		TOTAL	$5,172.30

A-2
11

TAB C

RETURN JOURNEY TO INDIA

FEBRUARY 11-14, 1995

A-2
12

RETURN JOURNEY TO INDIA

February 11-14, 1995

BUSINESS AGREEMENTS SIGNED BY POD

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
RENEWABLES POD			
Swasti Power Engineering Ltd.	Acres International Corporation (NY)	Memorandum of Understanding to form a joint venture for developing a series of small hydro projects in Uttar Pradesh state	$40.0M
KEI Energy, Ltd., Indian Renewable Energy Development Agency	Bechtel Corporation (CA)	Memorandum of Understanding to establish joint venture to create a facility to accelerate commercial use of renewable energy technologies in India	TBD
Madhya Pradesh State Electricity Board	Dodson-Lindblom International, Inc. (OH)	Memorandum of Understanding to develop 5 small hydro projects (5.1 MW total) in the Madhya Pradesh state, through DLI's Indian subsidiary (Ascent Hydro Projects Ltd.)	$9.0M
Financial Assistance Agreement with OPIC (no Indian partner)	Dodson-Lindblom International (OH) /Overseas Private Investment Corp. (D.C.)	Provide funding of pre-investment analysis for developing 5 small hydro projects in Madhya Pradesh state.	$.100

A-2
13

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Bharat Heavy Electricals Ltd.	Donaldson Company, Inc. (MN)	Commercial sales agreement for DI Filter Systems (joint venture of Donaldson and Munradtech of India) to manufacture air filtration modules for gas turbines, in Haryana state	$.115
Mokul International Private Ltd.	EHF Corporation (PA)	Memorandum of Understanding to form a joint venture for developing an integrated energy production/community development project involving a solar thermal energy, a coal-preparation facility, and a fluidized bed coal combustion power generating unit.	$750.0M
Ministry of Nonconventional Energy Sources	Electric Power Research Institute (EPRI) (CA)	Memorandum of Understanding to establish a partnership for evaluating renewable energy sources in India (i.e., wind, photovoltaics, and biomass)	N/A
Bombay Suburban Electric Supply Ltd.	EPRI (CA)	Memorandum of Understanding to establish partnership to evaluate EPRI electricity transmission/distribution technologies in India	TBD

A-2
14

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Larson & Toubro Ltd. - Sargent & Lundy, Ltd.	EPRI (CA)	Memorandum of Understanding to establish joint venture partnership for marketing and technology support for "State of the Art Power Plant" computer model and related products jointly developed by EPRI and Sargent & Lundy through their **SEPRIL** jointly-owned subsidiary.	TBD
Renewable Energy Systems Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for design, installation and evaluation of a 2 MW photovoltaic power project	N/A
Thermax Ltd.	EPRI (CA)	Memorandum of Understanding to establish a partnership for development of electricity-utilizing applications such as water purification, medical waste sterilization, and food processing	N/A
Indian Renewable Energy Development Agency	EPRI (CA)	Memorandum of Understanding to establish a partnership for evaluation and technology transfer in the area of renewable energy.	N/A
Solaris Systems Ltd.	Intech Global Resources Inc (TX)	Memorandum of Understanding to develop a 2-MW photovoltaic energy power plant in Kerala state	$10.0M

A-2
15

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Udhaya Semiconductors Pvt. Ltd.	Intech Global Resources, Inc. (TX)	Memorandum of Understanding to develop inverters and allied hardware for grid interaction of non-renewable energy schemes with the conventional grid	TBD
Energy Management Centre of GOI Ministry of Power	J. Makowski Company (MA) Apollo Hospital Group	Memorandum of Understanding to develop a 200-MW combined fossil energy/renewable energy power generating facility with energy efficiency center, in Delhi state	$300.0M
ABAN Lloyd Chiles Offshore Ltd.	Kenetech Windpower (CA)	Sales contract for delivery of 600 advanced wind turbines (equivalent to approx. 200 MW generating capacity).	$150.0M
Tata Energy Research Institute (TERI)/OPIC	Lockheed Environmental Systems and Technologies (TX)/Econergy International Corp (CO)	Partnership to develop two 50-MW bagasse-fueled cogeneration power plants, in Uttar Pradesh state.	$.100
NEPC Micon Ltd.	Omnion Power Engineering Company (WI)	Sales agreement to supply and install a 100 kilowatt grid-interactive photovoltaic power plant in Tamil Nadu state, at an existing wind power site	TBD

A-2
16

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Pentafour Solec Technology, Ltd.	Zond International Development Corp. (CA)/Blue Chip Technologies	Memorandum of Understanding to establish a joint venture specializing in wind energy. The first project will be a 60 MW wind energy project in Tamil Nadu state.	$15.0M
		SUBTOTAL	**$1,274.315**
		EFFICIENCY POD	
Energy Management Centre of the Ministry of Power	Oak Ridge National Laboratory (TN)	Memorandum of Understanding to promote scientific and technological cooperation betwen India and U.S. in area of energy efficiency	TBD
First Custodian Fund Ltd.	Oxford Consultants Int'l (MD)	Memorandum of Understanding to establish a joint venture (**First Oxford Technologies India Ltd.**) for the purpose of improving industrial and commercial energy efficiency in India	$50.0M
Energy Consultants Private Ltd.	TENSA Inc. (TX)	Memorandum of Understanding to establish a joint venture in India in areas of energy conservation, process integration, cogeneration, and renewable energy	N/A

A-2
17

23

INDIAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Thermax, Ltd.	Tennessee Valley Authority (TN)	Memorandum of Understanding to establish a joint venture to provide specialty welding services and technologies for the utility industry	TBD
		SUBTOTAL	**$50.0M**
		TOTAL	**$1324.315**

A-2
18

TAB D

PRESIDENTIAL MISSION ON ENERGY INVESTMENT

TO PAKISTAN

SEPTEMBER 21-24, 1994

A-2
19

PRESIDENTIAL MISSION ON ENERGY INVESTMENT TO PAKISTAN

September 21-24, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		RENEWABLES POD	
	Agrilectric Power (LA)	2X5 MW pilot project biomass from rice hulls	$10.0M
Power Gencorp Ltd.	Synergies Energy Developmemt Inc (MD)	75 MW hydropower at 3 sites	$150.0M
Power Gencorp Ltd.	ENTECH (TX)	Solar power projects	$40.0M
		SUBTOTAL	**$200.00M**
		EFFICIENCY POD	
Greaves Cotton	Armstrong (FL)	Steam traps for industrial steam efficiency	$1.0M
SUI Northern Gas Pipeline	Solar Turbines (DC)	High efficiency gas compressor stations	$7.0M
		SUBTOTAL	**$8.0M**

A-2
20

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
		OIL & GAS POD	
Government of Pakistan	Union Texas (TX)	Oil & gas exploration & production license	$175.0M
Government of Pakistan	Occidental Petroleum (CA)	Gas & petroleum development and production license	$100.0M
		SUBTOTAL	**$275.0M**
		ELECTRICITY POD	
Lal Pir project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
Sidhnal project - New Muslim Town	AES (VA)	Implementation Agreement for a 360 MW oil-fired power plant	$350.0M
	Enron (TX), Bechtel (CA), GE Capital (CT)	Implementation Agreement for a 760 MW natural gas combined cycle power plant	$740.0M
Sepco	GE Capital (CT)	310 MW natural gas combined cycle	$174.0M
Fauji Foundation	Intraq, Sceptre Power Company	Implementation Agreement for a 144 MW low Btu natural gas combined cycle power plant	$175.0M
Habibullah Energy Ltd.	Ogden Power Systems, GE	Implementation Agreement to build a 104 MW natural gas combined cycle power plant	$105.0M

A-2
21

PAKISTAN PARTNER	US PARTNER	DESCRIPTION	TOTAL VALUE ($ Million)
Hassan Associates	Tenaska (NE), Entergy (AR), GE Capital (CT)	Implementation Agreement for a 585 MW low Btu natural gas combined cycle power plant	$660.0M
Wakgas (Pvt) Ltd.	Orient Point (NY), Caterpillar (IL)	Implementation Agreement for a 800 Mw (16X50 MW) barge mounted diesel fired power plant	$800.0M
First Capital Securities	Smith Barney (NY)	Energy capital development fund	$100.0M
		SUBTOTAL	**$3,454.0M**
		TOTAL	**$3,937.0M**

A-2
22

TAB E

FOLLOW UP MISSION TO PAKISTAN

DEPUTY SECRETARY WHITE

DECEMBER 12-17, 1994

A-2
23

FOLLOW UP MISSION TO PAKISTAN ON ENERGY INVESTMENTS

LED BY DEPUTY SECRETARY WILLIAM WHITE

December 12-17, 1994

BUSINESS AGREEMENTS SIGNED BY POD

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
		RENEWABLE AND ENERGY EFFICIENCY POD	
	Synergics Hydro Asia (MD)	Memornadum of Understanding to develop a 97 MW hydropower project on the Punch River in Kashmir	$187.0M
	Kenetech Wind Power (CA)	Memorandum of Understanding to develop a 100 MW wind power project in Baluchistan	$100.0M
Karachi Power Company/ Omega Pvt Ltd	Omega Zond Wind Energy (CA)	Memorandum of Understanding to develop a 150 MW wind power project in Sindh	$138.0M
	Condyne Enercon Energy Efficiency	Agreement to conduct a pilot study of its energy efficiency technologies to reduce electricity consumption by refrigerators and air conditioners	$.4M
		SUBTOTAL	**$425.4M**

A-2
24

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
		ELECTRICITY POD	
Hong Pak/Defense Housing Authority	American United Machinery Co. (OH)	Memorandum of Understanding to supply equipment to develop a 1350 MW coal-fired power project in Sindh	$1700.0M
Sindh Coal Authority	BBI/Brooklyn Marine & Oil, Inc. (NY)	Memorandum of Understanding to develop a 200 MW coal-fired plant near Hyderbad in southern Sindh	$200.0M
Sindh Coal Electric Power Company	Leesburg Financial (DC)	Agreement to develop a 100 MW coal-fired power plant in Sindh	$100.0M
Model Town	Altern Energy (CO)	Memorandum of Understanding to develop a 20 MW thermal power project based on flared gas	$18.0M
		SUBTOTAL	**$2,018.0M**
		OIL & GAS POD	
	Union Texas Petroleum (TX)	Extension and Revision on Concession agreements in lower Sindh (Badin I and Badin II)	**
	Union Texas Petroleum (TX)	Concession agreement in eastern Sindh	$3.8M
	Occidental Petroleum (CA)	Zamurden concession agreement	$15.5M
	Occidental Petroleum (CA)	Shalwal concession agreement	$2.1M
	Occidental Petroleum (CA)	Kamalia concession agreement	$2.1M
	Occidental Petroleum (CA)	Bahawalnagar concession agreement	$2.1M

A-2
25

PAKISTAN PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	$ VALUE
	Occidental Petroleum (CA)	Mehar concession agreement	$3.8M
Hydrocarbon Development Institute	Improved Petroleum Recovery International (TX)	Agreement to conduct dry hole study	$.4M
	Ferrell North American (TX)	Memorandum of Understanding to develop a LPG terminal at Port Qasim near Karachi	$25.0M
Pakistan State Oil	VECO (AK)	Pipeline service contract	$3.0M
Pak-Arab Refinery Ltd.	Willbros Group, Inc (OK)	Turnkey construction project of a pipeline, storage, pumping and terminal facilities	$79.0M
		SUBTOTAL	**$136.8M**
		TOTAL	**$2580.2M**

NOTE: ** = $175M included in Secretary O'Leary agreements

A-2
26

TAB F

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE

TO CHINA

FEBRUARY 15-24, 1995

A-2
27

PRESIDENTIAL MISSION ON SUSTAINABLE ENERGY & TRADE TO CHINA

February 15-24, 1995

BUSINESS AGREEMENTS SIGNED BY POD

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
RENEWABLE POD			
State Science & Technology Commission's Department of Industrial Technology - Shi Dinghuan	AMOCO (IL)/ENRON (TX) - Robert Kelly/Garry Mihaichuk	Letter of Intent to conduct a feasibility study for a 10 MW thin film photovoltaic manufacturing facility and a 150 MW solar electric generating facility	$290M
Inner Mongolian Provincial Electricity Board - Zhao Fengshan	FloWind Corporation (CA)- Harold Koegler	Agreement for Joint Venture for a 100 MW Wind Power Plant	$85M
Zhejiang Wind Energy - Zhang Bao Kang	FloWind Corporation (CA) - Harold Koegler	Letter of Intent to form a joint venture for a 30 MW Wind Power Plant	$29.5M
Inner Mongolian Electric Power Company - Zhao Feng Shan	ZOND Systems (CA) - Ken Karas	Letter of Intent to build one wind power plant	$110M
Guangdong Nanao Zhen Neng Wind Power Development Company - Zhang Zhen Gui	ZOND Systems (CA) - Ken Karas	Letter of Intent for the sale of 54 unit wind turbine generators for the Nanao Island Wind Power Project	$21M

A-2
28

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Zhejiang Wind Power Development Company - Zhang Bao Kang	**ZOND Systems (CA)** - Ken Karas	Letter of Intent for the sale of 128 unit wind turbine generators for the Dachen Island Wind Power Project	$51M
China Chang Jiang Energy Corporation - Yu Zhian	**New World Power (CT)**- John Kuhns	Share Purchase Agreement with China Chang Jiang Energy Corporation to install a 39 MW wind farm for the Fujian Wind I project	$30M

A-2
29

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Great Asia Industrial Development Company, Shanghai General Building Materials Group Corporation - Chung King Yan/Zhu Ge Tei Zhi	**Owens-Corning** - Ben Yau	Memorandum of Intent to build an insulation plant in Shanghai	$25M (plant) $30M/year (sales)
Yueyang General Petrochemical Works - Du Zu Gao	**Honeywell (MN)** - Mannie Jackson	Letter of Intent for the Yuehua SBS & BUT Distributed Control System Upgrade Project	$400M
Yangzi Petrochemical Company - Tang Min	**Honeywell** (MN) - Mannie Jackson	Commercial Sales Agreement	$3.8M
		SUBTOTAL	**$428.8M**
OIL & GAS POD			
China National Offshore Oil Corporation - Wang Yan	**Chevron (CA)** - Richard Matzke	Offshore Oil & Gas Exploration, Development and Production sharing agreement for South China Sea Block 62/23	$30M
Liaohe Petroleum Exploration Bureau - Li Ming Yi	**Halliburton / Brown & Root (TX)** - Dale Jones	Agreement to form a joint venture company to manufacture high technology flow measurement products	$850,000

A-2
30

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Daqing Petroleum Administration Bureau - Li Xaio Fang	Halliburton/ Brown & Root (TX) - Dale Jones	Contract to establish a perforating charge API facility	$638,000
		SUBTOTAL	$31.5M
		COAL POD	
Lu Mao Jiang Coal Mine Company, Hunan State Government - Li Jianzin	EFH Coal (PA) - Robert Eggleston	Memorandum of Understanding on a 50 MW coal-fired co-generation project	$50M
Shanghai Coking & Chemical Plant - Qui Guang Pei	Institute of Gas Technology (IL) - Bernard Lee	Memorandum of Understanding to install a gas turbine to produce 70 MW of power using clean gas from previously installed gasifiers	$70M US share $$35-46M
Huamei Coal Mixture Technology Center - Hao Feng Yin	Ahlstrom Development Corporation (CA) - Doug Wert	Memorandum of Understanding to build 2X125 MW power plants using Circulating Fluidized Bed combustion technology	$500M US share $100-200M
Guizhou Power Investment Company - Chen Shi	Ahlstrom Development Corporation (CA) - Doug Wert	Memorandum of Understanding to build 2X200 MW power plants using Circulating Fluidized Bed combustion technology	$280M
Ministry of Chemical Industry, SINOPEC - Wang Xinlang/Wang Xin Ming	Texaco Inc. Alternative Energy Group (NY) - David Crikelair	Multi-Plant License Agreement for 9 Texaco gasifiers	$500M

A-2
31

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Beijing MinMetals & China Nuclear Industry REM Company - Pan Xu Dong	Carbon Fuels Corporation (CO) - Lee Meyer	Memorandum of Understanding to establish a joint venture for the exclusive development of the Charfuel coal refining process in China	$300M
		SUBTOTAL	$1,750.0M
ELECTRICITY POD			
Shanghai Municipal Electric Power Bureau	WING Group (CO) - Larry Haab	Project Development Proposal to replace coal-fired power plant with first large scale LPG power plant (650 MW)	$700M US Share $560M
China National Aero-Engine Corporation, Wuxi New Energy Investment Company - Zhou Xiao Qing/Ye Yong Fu	Coastal Corporation (TX) - David Arledge	Letter of Intent to establish the Wuxi City Peaking Project Phase I and Phase II project	$25M US share $15M
Zheqian Thermal Power Plant - Dai Jun Sheng	Enserch Development (TX) Corporation, East Wind Power Partners - Frank Maier/Joel Mize	Cooperative Joint Venture and Articles of Association to develop a 3X12 MW coal-fired plant	$27M US share $18.8M
Zheqian Thermal Power Plant - Dai Jun Sheng	Enserch Development (TX) Corporation, East Wind Power Partners - Frank Maier/Joel Mize	Letter of Intent to jointly develop a 100 MW combined-cycle power plant near Shaoxing City	$80-100M

A-2
32

CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
Shanghai Jinqiao Heat Power Corporation - Liu Jia Qiang	Community Energy Alternatives Inc. (NJ) - Colin Tam	Joint Venture Agreement to establish the Meiya Jinqiao Energy Company Ltd to provide a centralized steam, hot water and cooling system in the Jinqiao export Processing Zone in Pudong, Shanghai	$28M US share $16.8M
North China Power Group - Jiao Yi An	ENTERGY (AR)- Terry Ogletree	Long Term Cooperative Agreement	N/A
Sichuan Electric Power Authority - Ma Huai Xin	InTeSol/Energy Initiatives (CA) - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X600 MW coal-fired power plant	$1.2B US share $1B
Jilin Province Energy & Transportation Company, Jilin Province Power Company - Zhang Yan/Guo Xue Chong	InTeSol/Energy Initiatives (CA) - Barclay Lew/Richard Guy	Letter of Intent to establish a joint venture to build a 2X300 MW coal-fired plant	$300M US share $150M
China Nuclear Energy Industry Corporation - Liu Xue Hong	Westinghouse Electric Corporation (PA) - Nat Woodson	Sales Contract for components of two 600 MW turbine generator units	$24M
Shanghai Municipal Electric Power Corporation Company Ltd., Shenergy Company Ltd. - Yu Ping/Wu Jia Hua	Cogen Technologies (TX), AIG-Asian Infrastructure Fund - Bob Sherman/Richard Sun	Memorandum of Understanding to expand the Wu Jing Project (2X600 MW) in Shanghai	$1.2B US share $150M
Beijing District Heating Company - Chen Ming	Cogen Technologies (TX) - Bob Sherman	Agreement on the Eastern Heating Plant	$65M US share 45.5M

A-2
33

1	2	3	4
CHINESE PARTNER	U.S. COMPANY	TYPE OF DOCUMENT SIGNED	TOTAL VALUE ($ Million)
		SUBTOTAL	$3,669.0M
		ENVIRONMENTAL POD	
31 National Environmental Protection Agency - Liu Yi	Energy Resources International (DC) - Jack Siegel	Joint Statement of Intent on controlling emissions from energy facilities in China	N/A
32 China International Engineering Consulting Corporation - Zhang Wang	CH2M Hill International - Raymond Yep	Association Agreement to form a new entity (CIECC/CH2M Hill Environmental Associates) to carry out projects identified in China's Agenda 21 plan	$20M
		SUBTOTAL	$20M
		TOTAL	$6,509.8M

Document Count

18 India Trade Mission (A-2/10)
23 Return To India (A-2/17)
1 Pakistan Trade Mission (A-2/21)
19 Follow up To Pakistan (A-2/25)
33 China Trade Mission (A-2/33)

108 Agreements