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Geothermal Power Plants, Worldwide Status — 1986

by
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Abstract

This paper presents a survey of geothermal power plants around the world as of 1986. The data are given mainly in tables. The current state of affairs is relatively unchanged from that reported by DiPippo at the 1985 International Symposium on Geothermal Energy.⁽¹⁾ The slowdown in expansion predicted by DiPippo at the 1985 IIE/EPRI Geothermal Conference and Workshop⁽²⁾ is already becoming evident. In fact, the installed capacity worldwide has remained essentially unchanged from 1985 to 1986: projected capacity at the end of 1985 — 4763.981 MW;⁽¹⁾ projected capacity at the end of 1986 — 4733.446 MW. The slight drop is due to late completion of some plants scheduled for 1985. This paper contains a country-by-country tabulation plus a summary of plants by type of energy conversion system.

Summary By Country

Table 1 shows the growth in installed geothermal capacity dating from 1979. The 17% annual growth rate that applied until 1984-85 will not continue. DiPippo predicted a growth rate of 6.1% from 1986 to 1990.⁽²⁾ The effect of the drastically depressed price of oil on the expansion of geothermal plants will be severe if oil prices remain low, i.e., in the \$10-15/barrel range, for a prolonged period. Sustained geothermal growth requires countries such as the United States, the Philippines, Mexico, and Indonesia to continue their steady building programs. A relaxation of the target dates for completion of new plants or delays caused by the

inability to arrange financing for new plants or delays caused by the inability to arrange financing for new projects will result in a postponement of construction or a stretching out of the schedule for completion of plants. The outcome will be a very low effective annual growth rate. Indeed the rate may even become negative; some geothermal plants (in the United States, Italy and New Zealand) are more than 25 years old and might reasonably be expected to be retired from service in the near future.

Table 2 lists the countries with active geothermal plants and gives the number of operating power units and the installed capacity for plants of four types of energy conversion system: dry steam, single-flash, double-flash, and binary.

In all, there are 190 operating units and 4733.446 MW expected by the end of 1986. The United States operates 57 units (or 30% of the total) with a combined capacity of 2006 MW (or 42% of the total). It is interesting to note that the power complex at The Geysers accounts for about 38% of the worldwide capacity, and that California alone has about 41% of the world's geothermal capacity. The United States is also the only nation to have in operation plants of all four types.

The average size of power plants varies widely: 33 MW for dry steam units, 22 MW for single-flash units, 35 MW for double-flash units, and 2.5 MW for binary plants. If the Heber Binary Demonstration Plant (45 MW) is excluded from the averaging process, then binary units would average only 1 MW. There has been a

recent proliferation of small, modular, factory-assembled binary units, as for example at East Mesa (OR-MESA Project), Mammoth Hot Springs (Mammoth-Pacific and Chance Ranch), Wabuska Hot Springs, Steamboat Springs, Hammersly Canyon, Wendel Hot Springs (Wineagle), and Cove Fort/Sulphurdale, all in the United States.

Tables 3-21 summarize the status of plants in all countries with operating geothermal plants.

Future Prospects

Table 22 lists countries that have the potential to become producers of geothermally-generated electricity in the near- to mid-term. The most certain of these are Costa Rica and Guatemala where the first plants should be under construction within a year. It is likely that at least one additional unit will follow in each country.

Some of the other countries are reported to have sizable geothermal power potential (e.g., Djibouti - 300 MW), but plans for construction of plants are indefinite.

References

- (1). DiPippo R., "Geothermal Electric Power, The State of the World—1985,; 1985 International Symposium on Geothermal Energy, International Volume, C. Stone, ed., Geoth. Resources Council, Davis, CA, 1985, p. 3-18.
- (2). DiPippo, R., "Worldwide Geothermal Power Development," *Proc. 1985 IIE/EPRI Geothermal Conference and Workshop*, to be published.

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TABLE 1
RECENT GROWTH IN
WORLDWIDE GEOTHERMAL PLANT CAPACITY

Date	Capacity, MW
Mid 1979	1758.9
Mid 1980	2110.536
Mid 1981	2493.086
Mid 1982	2558.886
Mid 1983	3190.286
Mid 1984	3769.686
End 1985	4763.981
End 1986	4733.446

TABLE 2
GEOTHERMAL POWER PLANTS ON LINE AS OF 1986

Country	Type of Power Plant								Totals	
	Dry Steam		1-Flash		2-Flash		Binary		NPU	MWe
	NPU	MWe	NPU	MWe	NPU	MWe	NPU	MWe		
United States	26	1788	3	33	4	109.5	24	75.81	57	2006.31
Philippines	0	0	23	894	0	0	0	0	23	894.0
Mexico	2	10	7	165	5	470.0	0	0	14	645.0
Italy	41	499.7	1	4.5	0	0	0	0	42	504.2
Japan	1	22	6	88.1	2	105	0	0	9	215.1
New Zealand	0	0	1	10	9	157.2	0	0	10	167.2
El Salvador	0	0	2	60	1	35	0	0	3	95.0
Kenya	0	0	3	45	0	0	0	0	3	45.0
Iceland	0	0	4	11	1	28	0	0	5	39.0
Nicaragua	0	0	1	35	0	0	0	0	1	35.0
Indonesia	2	30.25	1	2	0	0	0	0	3	32.25
Turkey	0	0	1	20.6	0	0	0	0	1	20.6
China	0	0	6	4.866	3	9	6	0.7	15	14.586
Soviet Union	0	0	1	11	0	0	0	0	1	11.0
France (Guadeloupe)	0	0	0	0	1	4.2	0	0	1	4.2
Portugal (Azores)	0	0	1	3	0	0	0	0	1	3.0
Greece	0	0	1	2	0	0	0	0	1	2.0
Totals:	72	2349.95	62	1389.086	26	917.9	30	76.51	190	4733.446

Note: NPU = Number of power units; MWe = Installed megawatts-electric.

TABLE 3
GEOHERMAL POWER PLANTS AT THE GEYSERS, CA, U.S.A.

Plant ⁽¹⁾	Year	MW	Status
PG&E GEYSERS:			
Unit 1	1960	11	Operational
Unit 2	1963	13	Operational
Unit 3	1967	27	Operational
Unit 4	1968	27	Operational
Unit 5-6	1971	2 x 53	Operational
Unit 7-8	1972	2 x 53	Operational
Unit 9-10	1973	2 x 53	Operational
Unit 11	1975	106	Operational
Unit 12	1979	106	Operational
Unit 13	1980	133	Operational
Unit 14	1980	109	Operational
Unit 15	1979	59	Operational
Unit 16	1985	113	Operational
Unit 17	1982	113	Operational
Unit 18	1983	113	Operational
Unit 19	n.a.	55	Preliminary planning
Unit 20	1985	113	Operational
Unit 21	1988	140	Advanced planning
Unit 22	n.a.	140	Preliminary planning
Unit 23	n.a.	114	Preliminary planning
Unit 24	n.a.	114	Preliminary planning
Thermal-4 ("Wild Well")	n.a.	2	Preliminary planning
NCPA 2	1983	2 x 55	Operational
SMUDGE No. 1	1983	72	Operational
Bottle Rock	1985	55	Operational
OXY 1	1984	80	Operational
NCPA 3:			
Unit 3	1985	55	Operational
Unit 4	1986	55	Operational
Modesto GEO	n.a.	110	Preliminary planning
South Geysers	—	55	Cancelled
SMUDGE No. 2	1987	55	Preliminary planning
CCPA No. 1:			
Coldwater Creek	1988	2 x 65	Under construction
	Totals:	1788	Operational
		2648	Oper., u.c., or planned

⁽¹⁾ All units are of the drysteam type.

TABLE 4
GEOHERMAL POWER PLANTS IN THE IMPERIAL VALLEY, CA, U.S.A.

Plant	Year	Type	MW	Status
East Mesa:				
B.C. McCabe No. 1	1979	Binary	12.5	Operational
Magma Unit 2	n.a.	Binary	25.0	Planned
Magma Unit 3	n.a.	Binary	25.0	Planned
ORMESA (Ormat)	1986	Binary	26 x 0.77	Under construction
Salton Sea:				
Geothermal Electric Project (Union/SCE/SPLC/MPC)	1982	1-Flash	10.0	Operational
Vulcan Power Plant (Magma/SCE)	1985	2-Flash	34.5	Operational
Niland (NPN Partnership)	n.a.	2-Flash	49.0	Planned
Niland Geothermal Energy Program (Parsons):				
Phase 1	1986	2-Flash	38.6	Under construction
Phase 2	1988	2-Flash	31.4	Planned addition
Heber:				
Binary Demo Plant	1985	Binary	45.0	Operational
Flash Plant (HGC)	1985	2-Flash	49.0	Operational
North Brawley	1980	1-Flash	10.0	Decommissioned
Westmorland	1988	Binary	15.0	Planned
South Brawley (CU I)	n.a.	Flash	49.0	Planned
	Totals:		151.0	Operational
			209.62	Operational or u.c.
			414.02	Oper., u.c., or planned

TABLE 5
 GEOTHERMAL POWER PLANTS IN THE UNITED STATES
 (EXCLUDING THE GEYSERS AND THE IMPERIAL VALLEY)

State/Plant	Year	Type	MW	Status
California				
Coso:				
Unit 1 (Cal. Energy)	1987	1-Flash	25.0	Under construction
Unit 2-3	n.a.	1-Flash	2x25.0	Advanced planning
Mammoth:				
Mammoth-Pacific Chance Ranch	1984	Binary	2x3.5	Operational
(Wood & Associates)	1987	Binary	12x0.833	Advanced planning
Honey Lake	1987	Hybrid: wood-geothermal	20.0	Under construction
Wendell Hot Springs:				
Wineagle Project	1985	Binary	2x0.30	Operational
Hawaii				
Puna No. 1	1982	1-Flash	3.0	Operational
Idaho				
Raft River	1982	Binary	5.0	De-commissioned 1982
Nevada				
Wabuska Hot Springs	1984	Binary	0.6	Operational
Beowawe	1985	2-Flash	17.0	Operational
Brady Hot Springs:				
Phase 1	1987	Binary	2.8	Under construction
Phase 2	1987	Binary	5.5	Under construction
Steamboat Springs	1986	Binary	7x0.77	Operational
Fish Lake	1986	Binary	15.0	Planned
Big Smokey Valley	1986	Flash (?)	10.0	Planned
Desert Peak	1985	Total Flow/ 2-Flash	9.0	Operational
Spring Creek	1987	2-Flash	20.0	Planned
Dixie Central	1987	Flash	20.0	Planned
Oregon				
Hammersly Canyon:				
Unit 1-3	1983	Binary	3x0.30	Operational
Unit 4-6	1984	Binary	3x0.37	Operational
Utah				
Milford:				
Blundell Unit I	1984	1-Flash	20.0	Operational
Wellhead No. I	n.a.	Total Flow/	14.5	Advanced planning
Cove Fort-Sulphurdale:				
Phase 1	1985	Binary	4x0.675	Operational
Phase 2	1986	Binary	2x1.0	Advanced planning
Phase 2	n.a.	Dry steam	2.3	Advanced planning
			Totals:	Operational*
				Operational or u.c.
				Oper., u.c. or planned

*Includes plants under construction and scheduled for completion in 1986.

TABLE 6
GEOHERMAL POWER PLANTS IN THE PHILIPPINES

Plant	Year	Type	MW	Status
Tongonan:				
W.H. Unit	1977	1-Flash	3.0	Operational
Unit 1-3	1983	1-Flash	3x37.5	Operational
Unit 4	1989	1-Flash	37.7	Planned
Unit 5-19	n.a.	Flash	15x55.0	Planned
Tiwi:				
Unit 1-2	1979	1-Flash	2x55.0	Operational
Unit 3-4	1980	1-Flash	2x55.0	Operational
Unit 5-6	1982	1-Flash	2x55.0	Operational
Unit 7-10	n.a.	Flash	4x55.0	Planned
Mak-Ban (Makiling-Banahaw):				
Unit 1-2	1979	1-Flash	2x55.0	Operational
Unit 3-4	1980	1-Flash	2x55.0	Operational
Unit 5-6	1984	1-Flash	2x55.0	Operational
Palimpinon:				
W.H. Unit 1-2	1980	1-Flash	2x 1.5	Operational
W.H. Unit 3-4	1984	1-Flash	2x 1.5	Operational
Unit 1-3	1983	1-Flash	3x37.5	Operational
Unit 4-5	n.a.	Flash	2x55.0	Planned
Bac-Man (Bacon-Manito):				
Unit 1	1988	Flash	55.0	Planned
Unit 2	1989	Flash	55.0	Planned
			Totals:	
			894.0	Operational
			2196.5	Oper., u.c. or planned

TABLE 7
GEOHERMAL POWER PLANTS IN MEXICO

Plant	Year	Type	MW	Status
Pathe	1959	1-Flash	3.5	De-commissioned
Cerro Prieto I:				
Unit 1-2	1973	1-Flash	2x37.5	Operational
Unit 3-4	1979	1-Flash	2x37.5	Operational
Unit 5	1981	2-Flash	30.0	Operational
Cerro Prieto II:				
Unit 1-2	1984	2-Flash	2x110	Operational
Cerro Prieto III:				
Unit 1	1985	2-Flash	110	Under construction
Unit 2	1985	2-Flash	110	Under construction
Cerro Prieto IV:				
Unit 1-2	1992	2-Flash	4x55.0	Planned
Los Azufres:				
W.H. Unit 1-2	1982	Dry Steam	2x5.0	Operational
W.H. Unit 3-5	1982	1-Flash	3x5.0	Operational
Unit 1	1986	2-Flash	50	Under construction
W.H. Unit 6-12	1987	1-Flash	7x5.0	Advanced planning
Unit 2	1988	2-Flash	55	Advanced planning
Unit 3	1989	2-Flash	55	Advanced planning
Unit 4	1990	2-Flash	55	Advanced planning
W.H. Unit 13-22	1993	1-Flash	10x5.0	Advanced planning
Los Humeros:				
W.H. Unit 1-3	1987	1-Flash	3x5.0	Under construction
Unit 1	1990	2-Flash	55	Advanced planning
Unit 2	1991	2-Flash	55	Advanced planning
			Totals:	
			425	Operational
			710	Operational
			1290	Oper., u.c. or planned

TABLE 8
GEOHERMAL POWER PLANTS IN ITALY

Plant	Year	Type	MW	Status
Larderello:				
Larderello 2(4)*	n.a.	Dry Steam	58.0	Operational
Larderello 3(5)	1969	Dry Steam	113.0	Operational
Gabbro	1969	Dry Steam	15.0	Operational
Castelnuovo (4)	n.a.	Dry Steam	50.0	Operational
Serrazzano (5)	n.a.	Dry Steam	47.0	Operational
Sasso Pisano (3)	n.a.	Dry Steam	19.2	Operational
Lago (3)	n.a.	Dry Steam	33.5	Operational
Monterotondo	n.a.	Dry Steam	12.5	Operational
Vallonsordo	1961	Dry Steam	0.9	De-commissioned
Molinetto 1	1960	Dry Steam	3.5	De-commissioned
Lagoni Rossi 1	1960	Dry Steam	3.5	Operational
Lagoni Rossi 2	n.a.	Dry Steam	3.0	De-commissioned
Lagoni Rossi 3	1981	Dry Steam	8.0	Operational
San Martino 1	1980	Dry Steam	9.0	Operational
La Leccia	1983	Dry Steam	8.0	Operational
Molinetto 2	1982	Dry Steam	8.0	Operational
San Martino 2	1985	Dry Steam	15.0	Operational
Pianacce	1985	Dry Steam	15.0	Operational
Bellavista	1985	Dry Steam	15.0	Operational
Others	1995	Dry Steam	360.0	Planned
Travale/Radicondoli:				
Travale 2	1946	Dry Steam	3.0	Operational
Travale 2	1973	Dry Steam	15.0	Operational
Radicondoli (2)	1979	Dry Steam	30.0	Operational
Others	1995	n.a.	80.0	Planned
Monte Amiata:				
Bagnore 1	1945	n.a.	3.5	Operational
Bagnore 2	1945	n.a.	3.5	Operational
Piancastagnaio	1969	n.a.	15.0	Operational
Others	1995	n.a.	140.0	Planned
Latium:				
Latera	1984	1-Flash	4.5	Operational
Others	1995	Flash	45.0	Planned
Unspecified	1995	n.a.	30.0	Planned
			Totals:	
			504.2	Operational
			1159.2	Oper. or planned

*No. of units in parentheses; only one unit otherwise.

TABLE 9
GEOHERMAL POWER PLANTS IN JAPAN

Plant	Year	Type	MW	Status
Matsukawa	1966	Dry-Steam	22.0	Operational
Otake	1967	1-Flash	12.5	Operational
Onuma	1973	1-Flash	10.0	Operational
Onikobe	1975	1-Flash	12.5	Operational
Hatchobaru	1977	2-Flash	55.0	Operational
Kakkonda	1978	1-Flash	50.0	Operational
Otake Pilot	1978	Binary	1.0	Dismantled
Nigorikawa Pilot	1978	Binary	1.0	Dismantled
Suginoi Hotel	1981	1-Flash	3.0	Operational
Mori	1982	2-Flash	50.0	Operational
Kirishima				
Kokusai Hotel	1984	1-Flash	0.1	Operational
Hatchobaru II	n.a.	2-Flash	55.0	Advanced planning
Kakkonda II	n.a.	Flash	50.0	Advanced planning
Suginoi II	n.a.	1-Flash	3.0	Early planning
			Totals:	
			215.1	Operational
			323.1	Oper. or planned

TABLE 10
GEOHERMAL POWER PLANTS IN NEW ZEALAND

Plant	Year	Type	MW	Status
Wairakei:				
Unit 1	1959	SCSF-IP-NC	11.2	Operational
Unit 2	1958	SCSF-HP-NC	6.5	Dismantled
Unit 3	1959	SCSF-HP-NC	6.5	Dismantled
Unit 4	1959	SCSF-IP-NC	11.2	Operational
Unit 5-6	1962	SCSF-HP-NC	2x11.2	To be installed at Ohaaki
Unit 7-8	1959	SCSF-LP-C	2x11.2	Operational
Unit 9-10	1960	SCSF-LP-C	2x11.2	Operational
Unit 11	1962	2-Flash	30.0	Operational
Unit 12-13	1963	2-Flash	2x30.0	Operational
Kawerau	1961	1-Flash	10.0	Operational
Ohaaki:				
Unit 1	1988	2-Flash	2x11.2	Under construction
			<u>2x46.9</u>	
		Totals:	167.2	Operational
			283.4	Operational or under construction

TABLE 11
GEOHERMAL POWER PLANTS IN EL SALVADOR

Plant	Year	Type	MW	Status
Ahuachapan:				
Unit 1	1975	1-Flash	30.0	Operational
Unit 2	1976	1-Flash	30.0	Operational
Unit 3	1980	2-Flash	35.0	Operational
Berlin:				
WH Unit 1-2	n.a.	1-Flash	2x5.0	Planned
Unit 1	n.a.	Flash	55.0	Planned
Chipilapa:				
WH Unit 1-2	n.a.	1-Flash	<u>2x5.0</u>	Planned
		Totals:	95.0	Operational
			170.0	Operational or planned

TABLE 12
GEOHERMAL POWER PLANTS KENYA

Plant	Year	Type	MW	Status
Olkaria:				
Unit 1	1981	1-Flash	15	Operational
Unit 2	1982	1-Flash	15	Operational
Unit 3	1985	1-Flash	15	Operational
Olkaria Hill	1991-92	Flash	55-60	Planned
Eburru	Future	—	—	Exploration
		Totals:	45	Operational
			105	Operational or planned

TABLE 13
GEOHERMAL POWER PLANTS IN ICELAND

Plant	Year	Type	MW	Status
Namafjall	1968	1-Flash	3.0	Operational
Krafla:				
Unit 1	1978	2-Flash	28.0	Operational
Unit 2	Future	2-Flash	30.0	On hold
Svartsengi:				
Unit 1	1978	Flash	1.0	Operational
Unit 2	1979	Flash	1.0	Operational
Unit 3	1980	Flash	6.0	Operational
		Totals:	39.0	Operational

TABLE 14
GEOHERMAL POWER PLANTS IN NICARAGUA

Plant	Year	Type	MW	Status
Momotombo:				
Unit 1	1983	1-Flash	35	Operational
Unit 2	1988	1-Flash	35	Under construction

TABLE 15
GEOHERMAL POWER PLANTS IN INDONESIA

Plant	Year	Type	MW	Status
Kamojang:				
Wellhead Unit	1978	Dry Steam	0.25	Operational
Unit 1	1982	Dry Steam	30.0	Operational
Unit 2	1987	Dry Steam	55	Under construction
Unit 3	1988	Dry Steam	55	Under construction
Unit 4-5	n.a.	Dry Steam	2x55	Preliminary planning
Dieng:				
Wellhead Unit	1980	1-Flash	2.0	Operational
Unit 1	1988-89	Flash	55	Advanced planning
Unit 2	1989-90	Flash	55	Advanced planning
Darajat:				
Unit 1	1991	Flash	55	Planned
Unit 2	1992	Flash	55	Planned
Salak:				
Unit 1	1988-89	Flash	55	Advanced planning
Unit 2	1989-90	Flash	55	Advanced planning
Unit 3	1992	Flash	55	Planned
Unit 4	1993	Flash	55	Planned
Lahendong:				
Unit 1-2	1992-93	Flash	2x15	Planned
Cisolok:				
Unit 1	1993	Flash	55	Planned
Unit 2	1994	Flash	55	Planned
Banten:				
Unit 1	1993	Flash	55	Planned
Unit 2	1994	Flash	55	Planned
Bedugal:				
Unit 1	1990-91	Flash	55	Planned
		Totals:	32.25	Operational
			142.25	Operational or u.c.
			997.25	or planned

TABLE 16
GEOHERMAL POWER PLANTS IN TURKEY

Plant	Year	Type	MW	Status
Kizildere	1974	1-Flash	0.5	Inactive
Kizildere	1984	1-Flash	20.6	Operational

TABLE 17
GEOHERMAL POWER PLANTS IN CHINA

Plant	Location	Province	Year	Type	MW	Status
Dengwu:	Fengshun	Guangdong				
Unit 1			1970	1-Flash	0.086	Operational
Unit 2			1977	Binary	0.20	Operational
Unit 3			1982	Binary	0.30	Operational
Huailai	Huailai	Hebei	1971	Binary	0.20	Operational
Wentang:	Yichun	Jiangxi				
Unit 1			1971	Binary	0.050	Operational
Unit 2			1974	Binary	0.050	Operational
Huitang	Ningxiang	Hunan	1975	1-Flash	0.03	Operational
Chingshui	Yilan	Taiwan	1981	1-Flash	3.0	Operational
Xiongyue:	Yingkou	Liaoning				
Unit 1			1977	Binary	0.100	Operational
Unit 2			1982	Binary	0.100	Operational
Yangbajing:	Yangbajing	Xizang				
Unit 1			1977	1-Flash	1.0	Operational
Unit 2			1982	2-Flash	3.0	Operational
Unit 3			1981	2-Flash	3.0	Operational
Unit 4			1986	2-Flash	3.0	Under const.
Zhaoyuan	Zhaoyuan	Shandong	1981	1-Flash	0.20	Operational
Tuchang	Tuchang	Taiwan	n.a.	Binary	0.30	Uncertain
Tong'an	Tong'an	Fujian	n.a.	Binary	0.30	Uncertain
Fuzhou	Fuzhou	Fujian	n.a.	Binary	n.a.	Uncertain
Totals:					11.316	Operational
					14.586	Oper. or u.c.
					15.186	Oper., u.c. or uncertain

TABLE 18
GEOHERMAL POWER PLANTS IN THE U.S.S.R.

Plant	Location	Year	Type	MW	Status
Paratunka	Kamchatka	1967	Binary	0.68	Dismantled
Pauzheskaya	Kamchatka	1967	Flash	11	Operational
Mutnovskaya:	Kamchatka				
Unit 1		1986-90	Flash	50	Under construction
Unit 2		Future	Flash	50	Planning stage
Unit 3		Future	Flash	50	Planning stage
Unit 4		Future	Flash	50	Planning stage
Neftekumsk	Stavropol	1986-90	Hot Rock	10	Under construction
(Un-named)	Dagestan	1986-90	Hot Rock	10	Under construction
(Un-named)	Ukraine	1986-90	Hot Rock	10	Under construction
Totals:				11	Operational
				91	Oper. or u.c.
				241	Oper. u.c., or planned

TABLE 19
GEOHERMAL POWER PLANTS IN GUADELOUPE

Plant	Year	Type	MW	Status
LaBouillante	1984	2-Flash	4.2	Operational

TABLE 20
GEOHERMAL POWER PLANTS IN THE AZORES

Plant	Year	Type	MW	Status
Pico Vermelho:				
WH Unit	1979	1-Flash	3.0	Operational
Unit 1	n.a.	1-Flash	10.0	Planned

TABLE 21
GEOHERMAL POWER PLANTS IN GREECE

Plant	Year	Type	MW	Status
Milos:				
Pilot unit	1985	1-Flash	2	Operational
Unit 1	1991	1-Flash	60	Planned
Unit 2	1994.	1-Flash	60	Planned

TABLE 22
POSSIBLE FUTURE GEOHERMAL PRODUCING COUNTRIES

Country/Field	Year (Est.)	Plant Type and Size
Argentina/ Copahue	n.a.	Flash, 50 MW (est.)
Bolivia/ (several possible)	1990	Flash, 30 MW (est.)
Chile/ El Tatio	n.a.	1-Flash, 15 MW (est.)
Columbia/ (several possible)	1990	Flash, 3 MW (est.)
Costa Rica/ Miravalles I	1990	1-Flash, 55 MW (est.)
Miravalles II	1992	1-Flash, 55 MW (est.)
Djibouti/ Lake Asal	n.a.	Flash, 10 MW (est.)
Ethiopia/ Lake Langano	n.a.	Flash, 15 MW (est.)
Guatemala/ Zunil I	1990	1-Flash, 15 MW (est.)
Zunil II	n.a.	1-Flash, n.a.
Amatitlan	n.a.	1-Flash, n.a.
India/ Puga Valley	n.a.	Flash, 1 MW (est.)
Romania/ (site n.a.)	n.a.	Binary, 1 MW (est.)
St. Lucia/ Soufriere	n.a.	Flash, 10 MW (est.)