GEOTHERMAL PIPELINE

Progress and Development Update
Geothermal Progress Monitor

MEETINGS

European Geothermal Conference, Basel, Switzerland, September 20-30, 1999

Co-sponsored by the German and Swiss Geothermal Association, Geothermal Conference, Basel '99 will be held at the Kongresszentrum Messe Basel. The purpose of the conference is to provide a forum for a European exchange of scientific, technological and economic information on geothermal resources and their development and utilization. All aspects of the state-of-the-art will be examined, as well as the new market situations presented by electric restructuring and privatization. Field trips are planned to Poland, Germany, Italy, France and within Switzerland. For more information, contact: OC Secretary EGC Basel '99, Bureau Inter-Prax, Dufourstrasse 87, CH-2502 BIEL/BIENNE. Phone/Fax: +44/ 32 341 45 65. E-mail: interprax@bluewin.ch.

Geothermal Resources Council Annual Meeting - Reno Hilton Hotel, Reno, NV, October 17-20, 1999

The meeting will feature a thematic opening session, special and technical session on a broad range of geothermal resource and development topics, workshops, field trips and the Geothermal Energy Association Trade Show. Deadline for first draft of papers is May 3, 1999. Further information can be obtain from the Geothermal Resources Council, PO Box 1350, Davis, CA 95617-1350, phone: 530-758-2360, email: grc@geothermal.org.

World Geothermal Congress 2000, Kyushu - Tohoku, Japan, May 28 - June 10, 2000

The World Geothermal Congress 2000 will be co-convened in Japan by the International Geothermal Association (IGA) and the Japanese Organizing Committee for WGC2000 (JOC). The main purpose of WGC2000 is to provide a forum for exchange of scientific, technical and economic information on geothermal development. The Congress will offer opportunities to learn about recent scientific results and state-of-the-art technologies for geothermal energy development and for exchanges of information with worldwide experts in the field. The IGA and JOC invite the participation of all persons with an interest in geothermal resource development; countries, organizations and enterprises of countries engaged in the research, development and use of geothermal energy; and the manufactures of geothermal-related equipment.

The technical sessions will be held in two separate locations: Beppu City on Kyushu from May 31 to June 2 and in Morioka City, Tohoku on Honshu from June 5 to 7. Transportation will be provided between the two sites by JOC. The call for papers has been issued and the receipt of abstracts is by December 31, 1998. Draft papers will be received by July 31, 1999 and receipt of the final papers is January 31, 2000. The abstract form can be obtained from the WGC2000 official web site. For further information, contact the Secretariat of the WGC2000, % New Energy and Industrial Technology Development Organization (NEDO), 3-1-1 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-6028, Japan, phone: 81-3-3987-5793, fax: 81-3-3987-5796 and email: info@wgc.or.jp, or webpage: www.wgc.or.jp.

CALIFORNIA

CalEnergy to Break Ground for New Geothermal/Zinc Recovery Facility

CalEnergy Company will break ground in early 1999 on its new geothermal facility and zinc recovery plant near the Salton Sea in Imperial County, CA. The $285 million, 49-megawatt geothermal facility and zinc recovery plant represent the largest single renewable energy investment in the U.S. in nearly a decade. Approximately two-thirds of the electricity generated by the plant will be sold into California's emerging "green" electricity market, while the remaining one-third will be used onsite to provide power for the zinc recovery plant. "The minerals recovery program will bring several major benefits to California, more renewable energy at lower prices, more jobs, environmentally benign mining, and enhanced economic security," according to Jonathn Weisgall, VP of GEA. (Geothermal Energy News, GEA, Vol. 1, No. 7, Oct/Nov 98)

Stone and Webster of Boston have been authorized to proceed on two contracts with an estimated combined value of $141 million for geothermal power projects owned by affiliates of CalEnergy Co., in the Salton Sea geothermal area of Imperial Valley. The contracts cover engineering, procurement and construction of the new 49-megawatt geothermal plant and additional facilities. The new power plant will be located near CalEnergy's existing Salton Sea units 3 and 4. It is being built to support a zinc-recovery facility scheduled for completion in June 2000. (CE - News, Oct. 1998)

Calpine Grows Greener

Calpine Corp's proposal to buy most of the Geysers, announced on January 19, puts the San Jose company on track to become the state's largest producer of green electricity in the new world of electricity deregulation. The purchase will add about 800 MWe of green power to the company (a MWe powers about 1,000 households). Calpine currently owns interest in 4 of the 21 power plants there and 6,100 acres of the steam fields that supply the power plants. If it successfully completes its proposed acquisitions, it will own 18 of the power plants and 16,600 acres of the steam fields. The company has just signed a contract to wholesale some of its Geysers energy to a retailer that is telling its customers the green power they're getting is from The Geysers – the first time the Geysers en-

ergy will be marketed directly to consumers for its environmental qualities. The retailer is the Commonwealth Energy Corp. of Austin. (Mary Fricker, Santa Rosa Press Democrate, Jan. 1999)

NEBRASKA

CalEnergy Sells Unit Ownership to El Paso

Power company CalEnergy Co. Inc. on February 23 said it agreed to sell 50 percent of its ownership in CE Generation LLC, the holding company for 14 of its U.S. generating facilities, to an affiliate of El Paso Energy Corp. for about $259.6 million. CalEnergy said it would retain the remaining 50 percent ownership interest in the facility. The sale is scheduled to close on March 3, according to CalEnergy.

Last month, CalEnergy said it agreed to sell its minority stake in the Coso geothermal power projects to Caithness Energy LLC for $277 million, including the assumption of $67 million in debt. (NYSE:EPG - news, 23 Feb. 1999).

NEVADA

Nevada's Mineral Production in 1997

Nevada's 1997 mineral production (including petroleum and geothermal energy) is estimated at $3.3 billion, a 4% decrease from 1996. Gold production was the largest mineral source, extracting 7.83 million troy ounces worth about $2.54 billion. Silver production was 24.6 million troy ounces worth $114 million.

Nevada's geothermal electric power sales in 1997 were 1,348,000 megawatt-hours worth $107 million, about the same as in the four previous years. Total geothermal power generating capacity of Nevada's 14 plants (on the sites) stands at 237 megawatts, also about the same as during the past four years. No new plants have been installed in the past five years. (Nevada Geology, No. 34, Nov. 1998)

NEW MEXICO

Sandia Receives Patent

Sandia recently received a U.S. Patent for a well-pump alignment system. The line-shaft pump alignment system is an acoustic device for measuring the axial alignment of the drive shaft on downhole geothermal pumps. The present measurement method does not work when the shaft is turning requiring the pumps to run with more impeller clearance than would otherwise be necessary and results in increased maintenance costs. Sandia and Johnson/Paco, a pump manufacturer, are planning a field test in a commercial production well in 1999 and if successful, Sandia and Johnston/Paco plan to initiate patent licensing negotiations. This device will double pump life from 18 to 36 months and save over $100,000 per well. These pumps are used in the majority of geothermal power plants built in the last decade. Overall this project will result in a 50:50 cost share with industry. (Lew Pratsch, Nov. 1998)

VIRGINIA

Geothermal System to be Installed at Fort Eustis, VA

EVANTAGE, a division of Virginia Power, has started a $2.2 million energy efficiency project at the 260,000-sq. ft. training facility at Ft. Eustis, VA. To heat and cool the building, EVANTAGE will install a 240-ton geothermal heat pump system with an earth-coupled, ground-loop heat exchanger. It will also install energy-efficient lighting in offices and classrooms and a direct digital control energy-management system for all mechanical equipment.

"In the earth-coupled, ground-loop system, a series of 200 wells with underground pipes will use energy stored in the earth to cool and heat the buildings" said Bob Andrus, EVANTAGE's staff engineer for the project. The annual energy saving in the building is estimated at more than $150,000. Projected operating and management savings are $47,000 each years. EVANTAGE estimates the projected payback through energy savings is 7.4 years. The project is slated for completion in March 1999. (Business Wire, Dec. 17, 1998)

GeoExchange Earns "A Place in History"

Several of the buildings in the historic district of Williamsburg, Virginia are using geothermal heat pumps for heating and cooling (GeoExchange). The largest system can be found at the Shields Tavern, a reconstruction of a tavern originally built in the early 1700's. The reason for selecting geothermal heat pumps, is that they are hidden from sight, unlike traditional air conditioning units that hang from windows. In addition, is their virtual silence, geothermal heat pumps do no rely on noisy pumps and exhaust fans to heat and cool interior space.

"It's an ideal technology for an historical district, when you can't afford to have any outdoor air source cooling equipment humming," said Clyde Kestner, director of engineering for the Colonial Williamsburg Foundation. "The overriding concern is authenticity. You don't want to see these modern systems, hear them, or even know that they are there. You just want them to do their jobs quietly behind the scenes."

Aesthetics aside, GeoExchange installations are also very flexible, therefore they are generally the easiest systems to incorporate into an historic building, " explained Conn Abnee, executive director of the Geothermal Heat Pump Consortium. "One successful strategy is to use smaller heat pumps installed in closets, basements, and attics to provide space conditioning and ventilation with minimal ducting." (Geothermal Heat Pump Consortium - PRNewswire, Oct. 28, 1998)

WASHINGTON

2 Companies Settle Mount St. Helens Claim

Nearly two decades after Mount St. Helens blew its top, two corporate landowners are getting $4.2 million for geothermal development rights they never planned to exercise. The settlement with Weyerhaeuser Co. and Burlington Resources Oil & Gas Co. that took effect in mid-December was designed

to resolve a dispute stemming from creation of the Mount St. Helens National Volcanic Monument. Rather than cash, the government is paying in credits the companies can either sell or apply toward acquisition of mineral, oil or geothermal rights on other federal lands.

Officials at both companies admit they had no plans to tap the heat beneath the mountain before it erupted in May of 1980. In 1982, congress established the monument on 110,000 acres, including 11,000 acres that Weyerhaeuser and Burlington Resources agreed to exchange for timberland elsewhere in Washington state. The land deal did not include underground mineral and energy rights, but Paul Tittman, chief appraiser for the U.S. Forest Service, said the agency was nonetheless surprised when the two companies filed a claim in 1986 for compensation of energy rights. The claim, based on calculations that heat beneath the 8,355-foot mountain could be tapped for a 55-megawatt electrical generating plant, was "not supported" and contained questionable "assumptions," Tittman said. A private appraisal done for the companies in 1991 set the negotiating range at $5.6 to $6.9 million, Weyerhaeuser spokesman Fran Mendizabal said. (The Associated Press - Oregonian, Dec. 28, 1998)

INTERNATIONAL

China's Geothermal Energy Resources to be Tapped

China will energetically tap geothermal energy resources in the southwest region and Tibet. In western Yunnan and western Sichuan a number of medium-scale geothermal energy plants will be established in the next two decades. China will erect power plants with unit capacity of 3 to 5 kW in west Yunnan and primarily Ruili. Geothermal energy resources in Tengchong and western Sichuan will be tapped in 2000. China has discovered over 3,000 geothermal springs, of which there are over 2,200 with water temperature exceeding 250 degree Celsius. (AsiaPort Daily News, Nov. 1998)

Oxbow, Marubeni, Costa Rica Celebrate Power Project Ground Breaking

Oxbow Power Corporation announced that business and government leaders from the U.S., Japan and Costa Rica, including President Miguel Angel Rodriquez, met today to formally kick-off active construction of the Miravalles III Geothermal Power Project. The 27.5 MWe geothermal power plant is located in the Costa Rican province of Guanacaste, and will provide clean, reliable and low-cost electricity to Instituto Costarricense de Electricidad (ICE), the Costa Rican national utility. (Business Wire, Feb. 8, 1999)

World Renewable Energy Capacity and Production

A new "Survey of Energy Resources 1998" was published in connection with the World energy Congress in Houston, TX, in September 1998. The table below is complied from the survey. The installed capacities are at the end of 1996 and the electricity generation is for the year 1996 for all the four energy sources:

	Installed Capacity		Production per Year	
	MWe	%	GWh/yr	%
Geothermal	7,049	52.0	42,053	79.6
Wind	6,050	44.7	9,933	18.8
Solar	175	1.3	229	0.4
Tidal	264	2.0	602	1.2
TOTAL	3,538		52,817	

The table demonstrates clearly one of the strong points of geothermal energy, i.e. that it is available day and night throughout the year and is not dependent on whether it is cloudy or whether the wind blows or not. It is often difficult to compare the advantages and disadvantages of different energy resources, as the data for these is often presented in variable forms. The good thing about the data presented in the WEC Survey of Energy Resources is that all the data is handled in the same way and all the data originates from the national energy authorities of the countries of the world. (Ingvar Fridleifsson, International Geothermal Association letter to the Board of Directors, 28 Nov. 1998).