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BRAWLEY 10 MWe GEOTHERMAL POWER PLANT

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Southern California Edison Company's Brawley Geothermal Electric Project is the first flash-steam project in the United States to successfully demonstrate the feasibility of utilizing steam from highly saline geothermal fluids for electric power generation.

The Brawley Unit 1 power plant is an experimental effort by Southern California Edison and its preceding companies which have long been interested in developing geothermal electric generating plants. In 1973, Edison began looking strongly in the California Imperial Valley area for geothermal energy development. At Brawley, wells drilled there were found to be capable of producing geothermal fluid for potential commercial electric power.

On July 14, 1978, Edison and Union Oil Company of California signed a contract which provided for the construction of the first geothermal flash-steam electric generating plant in the Imperial Valley. The Brawley 10 MWe power plant was commissioned on July 21, 1980, with commercial operating beginning on July 29, 1980. The plant, after 8 months of operation, has demonstrated an average operating availability factor of 79 percent with an average capacity factor of 51 percent.

The objective of the Brawley 10 MW Unit 1 program is to assess the technical and economic feasibility of generating electricity from steam produced from highly saline geothermal fluids. The Edison plant is designed specifically for

utilization of geothermal steam, and it employs design principles found in conventional fossil-fueled, electric generating plants.

The geothermal energy production system operated by Union Oil at Brawley utilizes a flashed steam system. Geothermal hot brine fluids are brought to the surface under pressure and moved through a succession of vessels where the pressure is reduced, allowing a portion of the fluid at each vessel to separate into steam. This steam is delivered to Edison at a design rate of 94,800 kg/hr (209,000 lbs/hr) at a single pressure of 115 psia and saturation temperature of 170°C (340°F).

The Brawley plant is designed to produce 10,000 kilowatts of gross electric power. The load to run the plant itself is just under 800 kw. The remaining 9200 kw of plant output power is sold to the Imperial Irrigation District, the local utility, for consumption in the Imperial Valley. The amount of power generated by this plant is sufficient to meet the needs of approximately 9200 residential consumers, and can save approximately 100,000 barrels of oil per year.

The Brawley 10 MW power plant is a model of a full-scale commercial plant, using systems and components which likely will be utilized in large-scale follow-on units. Evaluation of this plant will help determine the future use of geothermal energy as a viable replacement for fossil fuels in an effort to balance the use of all energy sources for electric power generation and consumption.

**ASSESSMENT PROGRAM-OPERATING DATA
BRAWLEY GEOTHERMAL PROJECT UNIT 1**

MONTH	GROSS GENERATION	AUX ENERGY	EMERG ENERGY	MAKEUP PUMPS	NET GENERATION	CAP FAC	AVAIL FAC	TOTAL DOWN TIME	FORCED OUTAGE RATE	SCHED OUTAGE RATE	AVG UNIT LOAD
	KWh	KWh	KWh	KWh	KWh	%	%	HRS	%	%	MW
1980											
JULY	2,020,000	153,600	9,600	5,220	1,851,580	27	45	408.5	21.6	33.3	6.0
AUG	3,430,000	382,600	3,520	9,860	3,034,020	46	73	203	23	4	6.6
SEPT	3,830,000	392,000	1,920	14,620	3,421,460	53	95	37	2.7	2.4	5.6
OCT	3,120,000	286,200	960	13,150	2,819,690	42	81	142	2.7	16.4	5.2
NOV	4,190,000	300,600	960	8,340	3,880,100	58	67	234.5	6.2	26.4	8.4
DEC	3,340,000	338,200	960	7,870	2,992,970	45	89	79	8	2.5	5.1
1981											
JAN	2,870,000	261,000	2,560	6,960	2,599,480	39	64	270	1.5	34.7	6.5
FEB	4,450,000	351,000	960	10,680	4,087,360	66	84	110	1.2	15.2	8.0
MAR	4,330,000	273,000	1,280	11,640	4,044,080	58	77	172	8.8	14.4	7.5
APR											
MAY											
JUNE											