



THE

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# THE GEYSERS

## GEYSERS UNIT 13 GOES ON LINE.

P.G.& E'S UNIT 13, THE LARGEST GEOTHERMAL ELECTRIC GENERATING UNIT IN THE WORLD HAS BEGUN OPERATION AT THE GEYSERS, THE NEW UNIT IS EXPECTED TO GENERATE APPROXIMATELY 135 MEGAWATTS, TWO UNITS PRESENTLY GENERATE 106 MEGAWATTS EACH AND THE REMAINDER 57 OR LESS, WITH COMPLETION OF THE NEW UNIT THE GEYSERS WILL PROVIDE APPROXIMATELY 800 MEGAWATTS, WHICH REPRESENT 7.1 PERCENT OF P.G.& E'S TOTAL NET NORMAL OPERATING CAPABILITIES, UNIT 13 IS THE FIRST UNIT TO BE LOCATED IN LAKE COUNTY, THE REMAINDER BEING SITUATED IN SONOMA COUNTY, AND IS THE FIRST TO RECEIVE STEAM FROM AMINOIL USA, INC, A TOTAL OF 21 WELLS WILL SUPPLY 2.5 MILLION POUNDS OF STEAM PER HOUR TO UNIT 13 GENERAL ELECTRIC TURBINE. TOTAL COST OF THE UNIT IS APPROXIMATELY \$52.8 MILLION BRINGING P.G& E'S CUMMULATIVE INVESTMENT AT THE GEYSER'S TO ABOUT \$191 MILLION, THE FIRST ELEVEN MEGAWATT UNIT BEGAN OPERATION IN 1960, THERE ARE PRESENTLY FOURTEEN UNITS ON LINE, TWO MORE UNDER CONSTRUCTION, TWO IN REGULATORY APPROVAL PROCESS AND ONE IN SITE SELECTION PHASE. THE UNITS ARE EXPECTED TO BE COMPLETED BY 1983, BRINGING P.G.& E'S CAPABILITIES AT THE GEYSERS TO 1242 MEGAWATTS.

## MAGMA STOCK GETTING HOTTER.

TIBURON, CA. - "THE NATIONAL REVIEW OF CORPORATE ACQUISITION" (6/9/80) REPORTS THAT THE STAGE IS SET FOR A POSSIBLE BIDDING CONTEST BY THREE POWER HOUSE FIRMS, NATOMAS CO, DOW CHEMICAL AND UNION OIL WHO OWN RESPECTIVELY 7.5 PERCENT, 7 PERCENT AND 9.5 PERCENT OF MAGMA POWER. "NATOMAS, PLEASED WITH THE RICH PROFITS IT HAS GARNERED FROM PREVIOUS GEOTHERMAL ACQUISITIONS, WILL LIKELY BE THE MOST ENTHUSIASTIC BIDDER."

## NATOMAS UPDATE.

THE GEYSERS, CA. - TEN GEOTHERMAL WELLS, INCLUDING THE MOST PRODUCTIVE WELL EVER DRILLED IN THIS AREA OF NORTHERN CALIFORNIA, HAS BEEN COMPLETED TO SUPPLY A NEW 114 MEGAWATT ELECTRICITY GENERATING FACILITY, UNIT 14 SCHEDULED TO START OPERATION LATE THIS YEAR. THERMAL POWER CO, NATOMAS' GEOTHERMAL SUBSIDIARY HOLDS A 25 PERCENT INTEREST IN THE WELLS. THE NEEDS OF 100,000 CALIFORNIA RESIDENTS WILL BE SUPPLIED FOR A SAVINGS OF MORE THAN 1.3 MILLION BARRELS OF CRUDE OIL PER YEAR. GDC10, THE RECORD BREAKING WELL RECENTLY TESTED AT A RATE OF 392,000 POUNDS OF STEAM PER HOUR, THE VOLUMETRIC EQUIVALENT OF A NATURAL GAS WELL FLOWING AT 180 MILLION CUBIC FOOT PER DAY. DRILLING CONTINUES FOR TWO MORE 114 MEGAWATT PLANTS AND EXPLORATORY DRILLING IS UNDER WAY FOR A THIRD.

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INTERNATIONAL GEOTHERMAL  
ENERGY NEWSLETTER

## MONO-LONG VALLEY KGRA GEOTHERMAL RESOURCE LEASE SALE.

U.S. DEPT. OF THE INTERIOR, BUREAU OF LAND MANAGEMENT HAS ANNOUNCED THAT EIGHTEEN PARCELS IN MONO-LONG VALLEY KGRA ARE BEING OFFERED FOR GEOTHERMAL LEASING THROUGH SEALED BIDS TO THE RESPONSIBLE QUALIFIED BIDDERS OF THE HIGHEST CASH BONUS FOR THE PRIVILEGE OF LEASING. BIDS MUST BE RECEIVED AT THE OFFICE OF THE STATE DIRECTOR, BLM U.S. DEPT. OF THE INTERIOR, 2800 COTTAGE WAY, SACRAMENTO, CA, 95825 ON OR BEFORE 10AM JULY 16, 1980. THE EIGHTEEN PARCELS IN MONO COUNTY TOTAL 27,457.09 ACRES. MAGMA POWER CO. HAS CONVERSION (GRANDFATHER) RIGHTS ON PARCELS 4, 5, 9, AND 10 TOTTALLING 7,680 ACRES; MAGMA ENERGY INC ON PARCELS 8, 12, 13, 14 AND 17 TOTTALLING 7,760 ACRES AND GEOTHERMAL RESOURCES INTERNATIONAL INC ON PARCEL 6 OF 960 ACRES. DETAILS REGARDING THE PARCELS AND FORM OF BID ARE AVAILABLE FROM BLM SACRAMENTO.

### BACA CONSTRUCTION APPROVED.

THE U.S. DEPT. OF ENERGY HAS ANNOUNCED A FORMAL GO-AHEAD TO UNION GEOTHERMAL CO AND PUBLIC SERVICE CO OF NEW MEXICO FOR CONSTRUCTION OF A 50 MEGAWATT GEOTHERMAL POWER DEMONSTRATION PLANT ON THE BACA RANCH IN SANDOVAL COUNTY, NM ALSO KNOWN AS VALLES CALDERA. CONSTRUCTION IS SCHEDULED TO COMMENCE THIS SUMMER, WITH ELECTRICITY PROJECTED TO COME ON LINE IN LATE 1982. THE AREA IS ESTIMATED TO HAVE TEMPERATURES EQUAL TO OR ABOVE 150 DEGREES CENTIGRADE. A FINAL E.I.S. WAS ISSUED IN JANUARY, INCLUDING THE POTENTIAL IMPACT OF THE PROJECT ON THE PUEBLO INDIANS LIVING IN THE AREA. THE PUEBLOS HAD CHARGED THAT THE PROJECT WOULD VIOLATE SACRED GROUND, BUT AS THEIR RELIGION IS SECRET WOULD NOT IDENTIFY THE PROBLEM AREAS. THEY ARE ALSO CONCERNED THAT THE PLANT MAY DIVERT TOO MUCH WATER FROM THE JEMEZ RIVER, THE DRAW DOWN IS ESTIMATED AT 17 ACRE-FOOT/YEAR. IN AN ATTEMPT TO MAKE UP FOR THE LOSS UNION GEOTHERMAL HAS PURCHASED 135 ACRES AT THE HEAD OF THE RIVER, NEAR LA CUEVA WHICH WILL BE WITHDRAWN FROM AGRICULTURAL USE.

### HOT DRY ROCK PRODUCES ELECTRICITY FOR FIRST TIME.

THE LOS ALAMOS SCIENTIFIC LABORATORIES FENTON HILL HOT DRY ROCK PROJECT HAS PRODUCED ELECTRICITY FOR THE FIRST TIME FROM THE GRANITE LOCATED NEARLY TWO MILES BELOW THE EARTHS SURFACE. THE RESEARCH SITE IN THE JEMEZ MTS OF NORTH CENTRAL NEW MEXICO GENERATED 60 KILOWATTS OF POWER BY FRACTURING THE ROCK BETWEEN TWIN HOLES AND CREATING A HEAT RESERVOIR. FRESH WATER IS THEN INTRODUCED INTO THE FRACTURE SYSTEM WHERE IT IS HEATED AND BROUGHT BACK TO THE SURFACE AND RUN THROUGH HEAT EXCHANGES WHICH IN TURN DRIVE A TURBINE GENERATING ELECTRICITY. LOS ALAMOS SCIENTIFIC LAB IS NEGOTIATING WITH CLAIMS ELECTRIC GENERATION AND TRANSMISSION COOPERATIVE FOR THE ESTABLISHMENT OF A COMMERCIAL POWER PLANT AT THE SITE. AS A RESULT OF LASL'S SUCCESS WITH THE FENTON HILL PROJECT DOE ASKED THE LABORATORY TO MANAGE THE NATIONAL HOT DRY ROCK GEOTHERMAL ENERGY DEVELOPMENT PROGRAM. TWO SITES GEOLOGICALLY DIS SIMILAR TO THE FENTON HILL AREA ARE BEING THOROUGHLY STUDIED TO DETERMINE THE SUITABILITY FOR HOT DRY ROCK DEMONSTRATION: THE STUMPY POINT-WALLOPS ISLAND AREA IN EASTERN MARYLAND AND A REGION NEAR MOUNTAIN HOME IDAHO ON THE WESTERN SNAKE RIVER PLAIN. LASL IS ALSO DRILLING A GEOTHERMAL EXPLORATORY HOLE TO 10,000 FOOT OR MORE AT THE SIGMA MESA SITE NEAR THE LABS MAIN TECHNICAL AREA IN AN EFFORT TO DEVELOP UNDERGROUND HEAT AS AN ENERGY SOURCE FOR THE LABS OWN USE.

## HISTORY OF BOISE GEOTHERMAL PROJECT.

IN LATE 1973, THEN-GOVERNOR CECIL ANDRUS SOUGHT THE AID OF THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA) IN EXPLORING THE POTENTIAL FOR DEVELOPMENT OF IDAHO'S GEOTHERMAL RESOURCES. THIS REQUEST RESULTED IN THE ORIGINAL BOISE GEOTHERMAL PROPOSAL TO THE ATOMIC ENERGY COMMISSION, IN FEBRUARY OF 1974, AND A SUBSEQUENT CONTRACT WITH THE IDAHO NATIONAL ENGINEERING LABORATORY FOR RESOURCE AND ENGINEERING ASSESSMENT OF GEOTHERMAL POTENTIAL FOR THE BOISE SPACE HEATING PROJECT. TWO EXPLORATORY WELLS WERE DRILLED ALONG THE BOISE FRONT FAULT, BOTH INDICATING WATER IN THE 170 DEGREE F RANGE. THE APRIL 1976 REPORT ON THIS PROJECT CONCLUDED THAT "NO MAJOR RESOURCE OR ENGINEERING DIFFICULTIES EXIST THAT WOULD PREVENT THIS PROJECT FROM BEING COMPLETED SUCCESSFULLY."

PURSuing THIS PROJECT FURTHER, THE STATE APPLIED FOR A PACIFIC NORTHWEST REGIONAL COMMISSION GRANT, AWARDED IN MAY OF 1976, TO DEVELOP A GEOTHERMAL DEMONSTRATION PROJECT AT THE STATE AGRICULTURAL AND HEALTH LABORATORY. IN JANUARY OF 1977 A CONTRACT WAS SIGNED WITH WARM SPRINGS WATER DISTRICT TO SUPPLY GEOTHERMAL WATER. AFTER RETROFIT THIS 33,000 SQUARE FOOT BUILDING WAS PLACED ON LINE IN SEPTEMBER OF 1977, THE IDAHO OFFICE OF ENERGY CONTINUES TO COORDINATE THIS DEMONSTRATION PROJECT WITH CH2M HILL AS A PRINCIPAL CONTRACTOR. SEVERAL ADJUSTMENTS WERE MADE TO THE SYSTEM AND BY THE END OF 1977 IT WAS FULLY OPERATIONAL. DATA ON HEATING COSTS FOR THE FIRST FOUR MONTHS OF 1978 INDICATE SUBSTANTIAL SAVINGS OVER THE PREVIOUS GAS-FIRED SYSTEM. THE SUCCESS OF THIS PILOT PROJECT HAS STIMULATED RENEWED INTEREST IN CONVERSION OF STATE BUILDINGS TO GEOTHERMAL ENERGY, TO THE EXTENT THAT IN NOVEMBER OF '78 THE IDAHO LEGISLATURE APPROPRIATED \$190,000 FOR RETROFIT OF STATE BUILDINGS IN THE CAPITAL MALL TO GEOTHERMAL HEAT.

IN FEBRUARY, I ASKED THE LEGISLATURE TO ALLOCATE \$21,300 OF STATE MONEY TO BE USED AS MATCHING FUNDS FOR AN ECONOMIC DEVELOPMENT ADMINISTRATION 304 GRANT OF \$85,000 FOR THE PURPOSE OF GEOTHERMAL EXPLORATION DRILLING IN THE CAPITAL MALL AREA. BIDS HAVE JUST BEEN LET FOR A DRILLING CONTRACTOR TO BEGIN A 2200 FOOT, 7-7/8 INCH WELL, BEFORE AUGUST 1. THE PURPOSE OF THIS WELL IS TO VERIFY THE EXISTENCE OF A GEOTHERMAL RESOURCE BENEATH THE CAPITAL MALL AND TO DETERMINE ITS CHARACTERISTICS WHILE FACILITATING REFURBISHMENT INTO A PRODUCTION HOLE IF A USABLE RESOURCE EXISTS.

WE ACTIVELY SUPPORT THE DEVELOPMENT OF IDAHO'S GEOTHERMAL RESOURCES AND HOPE TO MAKE THE CAPITAL MALL A SHOW PLACE FOR GEOTHERMAL SPACE HEATING.

JOHN V. EVANS, GOVERNOR IDAHO

## STATE GEOTHERMAL ENERGY NEWS.

VIRGINIA-STATE WATER CONTROL BOARD AND STATE DEPARTMENT OF HEALTH ARE DRAFTING REGULATIONS INTENDED TO INSURE PROPER INSTALLATION AND USE OF GROUND WATER HEAT PUMP. AND ESTIMATED 2000 HEAT PUMP ARE ALREADY IN OPERATION, BUT PRESENT REGULATIONS AIMED AT CONTROLLING WASTE DISPOSAL BY DEEP WELL INJECTION OFTEN COMPOUND THE PROBLEMS OF EFFICIENT USE OF GROUND WATER FOR HEATING. PERMITS FOR REINJECTING THE WATER USED IN THE HEAT PUMP ARE ALSO DIFFICULT TO OBTAIN CAUSING MOST USERS TO DISPOSE OF IT THROUGH THE SEWAGE SYSTEM, OVERBURDENING THE SEWAGE TREATMENT FACILITY. ACCORDING TO THE VIRGINIA WATER RESOURCES RESEARCH CENTER THE WIDE SPREAD USE OF HEAT PUMPS WOULD REDUCE BY 1/3 THE AMOUNT OF ENERGY THE US REQUIRES FOR HEATING AND COOLING. (GROUND WATER NEWS LETTER)

NEVADA-THE NEVADA BUREAU OF MINES AND GEOLOGY IS TESTING FEW AREAS IN THE STATE, CARSON CITY AND THE BIG SMOKEY VALLEY REGION, FOR POSSIBLE RESERVE OF MODERATE TEMPERATURE GEOTHERMAL ENERGY,

NEW MEXICO-ACCORDING TO A REPORT ISSUED BY THE US GEOLOGICAL SURVEY AND THE BUREAU OF MINES, A ZONE OF SPRING VIA GILA HOT SPRINGS IN THE GILA WILDERNESS AND GILA PRIMITIVE AREA OF SOUTHWESTERN NEW MEXICO HAVE A GEOTHERMAL ENERGY POTENTIAL.

NEW YORK-THE NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY HAS ANNOUNCED IT'S INVOLVEMENT IN FOUR GEOTHERMAL PROJECTS IN THE STATE. ACCORDING TO A GENERAL ASSESSMENT OF GEOTHERMAL RESOURCES BY DUNN GEOSCIENCE CORP ONE OR MORE CONVECTIVE GEOTHERMAL SYSTEMS ARE POSSIBLE IN AN AREA AROUND THE CITY OF ALBANY IN NORTHERN N.Y. USDOE HAS AGREED TO CONTRIBUTE \$180,000 TO ASSIST IN FUNDING AN EXPANDED STUDY OF THE POTENTIAL IN THE ALBANY/SARATOGA AREA.

MARYLAND/VIRGINIA/DELAWARE-USDOE HAS ANNOUNCED THE SOLICITATION OF PROPOSALS FOR DIRECT USE OF MODERATE TEMPERATURE WATER RESOURCES IN THE DELMARVA PENINSULA. ONLY ONE APPLICATION WILL BE APPROVED BUT UP TO \$1,000,000 WILL BE PROVIDED FOR THE DRILLING AND TESTING PORTION OF THE PROJECT IN THIS AS YET UNCONFIRMED BUT POTENTIALLY COMMERCIALY VIABLE AREA. CONTACT DR GERALD BROPHY (202) 633-9491.

TEXAS-BROOKS WELLS SERVICING INC HAS COMPLETED A SECOND WELL OF 3,900 FOOT AT NAVARRO COLLEGE IN CORSICANA. THE FOUR YEAR PROJECT, SPONSORED BY DOE IS INTENDED TO PROVIDE MUCH OF THE SPACE AND WATER HEATING FOR THE COLLEGES STUDENT UNION BUILDING AND THE NAVARRO MEMORIAL HOSPITAL.

#### NOTICES.

CALIFORNIA ENERGY COMMISSION AT IT'S BUSINESS MEETING ON JUNE 4 DECIDED TO APPROVE;

A CONTRACT WITH FORT BIDWELL INDIAN COMMUNITY FOR \$35,000 TO EVALUATE THE GEOTHERMAL POTENTIAL OF THE FT BIDWELL INDIAN RESERVATION, MODOC COUNTY CALIFORNIA. AN EXISTING THERMAL WELL WILL BE TESTED AND A NEW WELL DRILLED TO PROVIDE GEOTHERMAL HEAT TO TRIBAL RESIDENCES, THE HEALTH CENTER, FUTURE GREENHOUSES AT AGRICULTURAL FACILITIES. THE CONTRACT WILL RESULT IN LOCAL COMMUNITY DEVELOPMENTS AS WELL AT A

FINAL REPORT SUITABLE FOR USE BY OTHER ECONOMICALLY DEPRESSED AREAS IN THE STATE. CONTACT SYD WILLARD (916) 920-6051.

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