

6200609 *Toms*
U.S. DEPARTMENT OF ENERGY
memorandum

DATE: March 4, 1983

REPLY TO
ATTN OF: ER-15

SUBJECT: Salton Sea Hole, Part II.

TO: File

Ron Toms reports that Wilf Elders and Bob Rex met with HS&T Committee staff yesterday. As reported to Toms by Wilf and then to me, they jointly worked out a set of questions that HS&T will pose to DOE:

Question 1 - What are our long range intentions re systems underlying geothermal reservoirs?

DGE Answer - We consider such studies to be very important and are planning to pursue them starting in FY 1985.

Question 2 - Are you aware of the opportunity to do something now in the Salton Sea area?

DGE Answer - Yes, we are aware of the opportunity but have included no money in our FY 1984 budget request for this.

Question 3 - What priority would you give this project if you were given the green light to go ahead in FY 1984?

DGE Answer - Very high, but second to the work already budgeted.

Question 4 - Could you use extra funds for this project in FY 1983 if it were to be authorized in FY 1984?

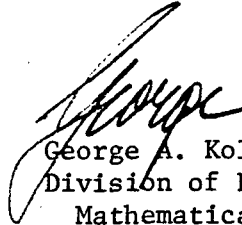
DGE Answer - Yes, certainly if the Congress were to declare its intent for FY 1984.

Question 5 - If the Congress made its funding intentions clear with respect to FY 1984, would you redirect FY 1983 moneys to do the necessary preparations?

DGE Answer - Yes, certainly, if the Congress made its intentions clear, we could find the money in FY 1983.

Toms feels that the RG hole location is better than "on structure", as recommended by Bresee and others. He feels there would be too high a "noise level" close on-structure and that the improved signal-to-noise ratio a mile or so away would provide better information about the anomaly.

Toms also said that most of the potential negotiating "snags" associated with the loan guarantee have now been resolved. He expects the agreement to be made final around April 15, 1983, with "spud-in" time about two months from now.



George A. Kolstad, ER-15
Division of Engineering,
Mathematical and Geosciences
Office of Basic Energy Sciences

cc: R. Kropschot, ER-10
J. Coleman, ER-15
E. Schreiber, ER-15
W. C. Luth, SNL/A
R. Schock, LLNL
J. Bresee, CE-324
✓ R. Toms, CE-324

4 PM
3/11/93

QUESTIONS SUBMITTED BY SENATOR HATFIELD

Hearing on Renewable Energy

Question: What long term plans does the Department of Energy have to investigate the origin, nature and ultimate future resource potential of the geothermal fields of the nation?

Answer: The determination of the ultimate future resource potential of the geothermal fields of the Nation (i.e., national resource assessment) has been the responsibility of the Geothermal Research Program of the U.S. Geological Survey. The Department of Energy is supporting generic research and the development of improved technology to enable industry to locate, define, and develop geothermal reservoirs. Site-specific projects are supported by the Department where characterization of reservoirs is critically needed as input to the generic studies.

Question: Is the Department aware of the current thinking on the resource potential of the Imperial Valley of California and that the size of this resource may be many times larger than was thought earlier and that this potential might be tapped by the drilling of very deep wells?

Answer: The resource potential of the Imperial Valley of California is known to be large. This region represents the largest known water-dominated geothermal system in the Nation, with the possible exception of Yellowstone National Park. Tapping the full resource potential of the Imperial Valley may indeed require the drilling of very deep wells.

Question: What is the position of the Department with respect to collaborating with industry in high risk experiments to drill deeper into the roots of geothermal systems, to determine how deep geothermal reservoirs extend, and to release such basic scientific information to the public domain?

Answer: Collaboration with industry in high risk experimental work is the way we prefer to pursue our objectives. It reduces the cost to the government and ensures rapid technology transfer.

For deep drilling into the roots of geothermal systems the Department considers that collaboration with industry could provide an effective way to obtain new information on the extent of hydrothermal reservoirs and their potential for supplying larger amounts of energy than presently estimated. A cost-effective approach may be to select, in collaboration with industry, a site for a dedicated scientific hole. Such a project is being considered by the Geothermal and Hydropower Technologies Division as part of its future long-range program.

Question: Is the Department aware of the proposed Salton Sea Scientific Drilling Project? This proposal, which is receiving enthusiastic support from the scientific community, would be for an add-on experiment on a 12,000 feet deep commercial steam well being drilled into what is the hottest known geothermal field in the USA. The experiment would deepen this well to 18,000 feet, making it the deepest geothermal well in the world, and test a region of higher temperatures and pressures greater than those currently being considered by industry. Is not such a project consistent with the Department's policy of supporting high-risk basic and applied research and collaboration between industry and government?

Answer: We are aware of the Salton Sea Scientific Drilling Project that was proposed recently to the National Science Foundation. The general approach is attractive, but we have not had time to fully evaluate the proposal in the Department.

We recognize that the proposed Salton Sea deep well is not over the hottest part of the Salton Sea geothermal area, but is on the edge of the system. The temperatures predicted for 18,000 feet at the proposed site are lower than those which might be encountered at shallower depths in a number of other U.S. geothermal systems. A shallower dedicated scientific well (sited and drilled in consultation and cooperation with all of the geothermal developers in the region) at the center of the Salton Sea field would conceivably provide more useful information for comparable cost without the constraints likely to be encountered in deepening a commercial well.

DUNCAN L. HUNTER
45TH DISTRICT, CALIFORNIA

COMMITTEE ON ARMED SERVICES

SUBCOMMITTEES:

MILITARY PERSONNEL
AND COMPENSATION

SEAPOWERS AND STRATEGIC AND
CRITICAL MATERIALS

SELECT COMMITTEE ON NARCOTICS
ABUSE AND CONTROL

REPUBLICAN TASK FORCE
ON AGRICULTURE

ASSISTANT REGIONAL WHIP
WESTERN AND PLAINS STATES



Congress of the United States
House of Representatives
Washington, D.C. 20515

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May 6, 1983

Mr. Robert L. San Martin
Deputy Assistant Secretary
Division of Conservation and Renewable Energy
Department of Energy
Washington, D. C. 20585

Dear Mr. San Martin:

Thank you for your comments in your letter of April 7 concerning proposed scientific drilling projects in the Salton Sea geothermal field in the Imperial Valley of California. I am pleased that the Department of Energy is considering these proposals and recognizes the high potential for economic and scientific returns of this geothermal field. It is clear from your letter that, in addition to evaluating the technical and scientific merits of the proposal to drill the world's deepest geothermal well in the eastern part of the field, you are also considering an alternative plan to drill a shallower, scientific well nearer the apparent center of this geothermal reservoir system, as presently understood. I believe that thorough consideration of the various available options is prudent.

In my opinion, when such an analysis is complete you will find that the merits of the Republic Geothermal, Inc. - University of California proposal are superior in terms of cost-effectiveness and timing to the alternative you suggest. However, as you know, to take advantage of this opportunity requires some immediate decisions on your part. Unduly protracted debates about alternative plans would preclude the Department of Energy from participating in any "add-on" experiment with industry, now or in the future.

My statement that the plan as proposed is superior to the alternative you mention is based on the following considerations:

(1) Resource Assessment

As far as the DOE is concerned, the main aim of drilling deeper into this geothermal field should be resource assessment rather than pure science. According to earlier estimates of the United States

Mr. Robert L. San Martin
Page 2
May 6, 1983

Geological Survey, the recoverable electrical energy from this field is roughly equivalent to that which would be produced by a large nuclear generating plant operating for a century. This estimate was based upon proprietary information from wells drilled to 6,000- 7,000 feet some years ago near the center of the field as it was known at that time.

Subsequently, Republic Geothermal, Inc. took the risk of drilling wells to 10,000 feet, some five miles from the apparent center of the field. These wells proved to be commercial. Step-out drilling of this kind is essential to determine the horizontal extent of the geothermal reservoir. Republic is proposing step-out drilling in depth rather than in the horizontal plane. In its planning, Republic was willing to take the risk of drilling the next well in this vicinity to 12,000 feet to test if the appropriate combination of temperature and rock permeability extends deeper. If, in fact, by deepening this well DOE shows that the resource extends to 18,000 feet deep at that location, you will have demonstrated that the amount of recoverable energy from the whole field is five or even ten times larger than the U.S.G.S. estimate.

As you know, there are difficult engineering problems in utilizing the brine from this field due to its high salinity. If we were able to show that the resource is vastly greater than is currently envisaged, this would encourage the necessary investment to overcome these problems more rapidly and bring power on line sooner. All geothermal operators in the Imperial Valley would gain from this improved climate for investment in geothermal resources.

As you mention, drilling a shallower research well in the center of the field is attractive for a number of scientific reasons, including investigating "sea-floor spreading zones." However worthy such objectives might be, they scarcely fall under the mandate of your department. Drilling a well to 12,000 feet in the center of the field simply would not provide the information on the volume of the hot reservoir that drilling to 18,000 feet towards its edge would yield.

(2) Industry Collaboration

One of the chief hindrances to study of geothermal phenomena in the U.S.A. is that wells are drilled by companies which, for good competitive reasons, tend to keep their data proprietary. Thus, as you state, the willingness of Republic Geothermal, Inc. to collaborate in the proposed "add-on" experiment is commendable. If the proposal does go forward it would be a demonstration of the very best kind of

Mr. Robert L. San Martin
Page 3
May 6, 1983

government-industry collaboration. Such a demonstration could help change the attitude of companies toward mutually beneficial collaboration between industry and government agencies in high-risk basic research on alternative energy.

Indeed, such a collaboration would be necessary in order to proceed with a 12,000 foot well nearer the center of the field, where leases are held by Union Oil Geothermal Division. According to statements from the geological staff of Union Oil, they do not plan any wells there as deep as 6,000 feet in the next two or three years. However, any plan for drilling to be performed there for scientific purposes could only be optimized if it benefits from the knowledge gained in drilling the thirty commercial wells already in this field. Thus, any well drilled for science would be either an "add-on" experiment or would be drilled blind. This would make industry collaboration essential. We should obtain from the operations firm commitments on use of proprietary data at any site before proposing alternative drilling plans.

Up to now Union Oil Geothermal Division has not released proprietary information or samples from their geothermal drilling. In contrast, Republic Geothermal, Inc. has agreed to release data obtained from earlier drilling on their lease and to make available adjacent wells for reservoir engineering tests of communication with the proposed 18,000 foot well.

(3) Cost Effectiveness and Timing

The anticipated cost to Republic Geothermal, Inc. in developing their site on the east side of the Salton Sea is reported to be approximately \$15,000,000. The incremental costs of \$6,000,000 for the "add-on" experiment will benefit directly from Republic's investment. The company will pay for drilling the well to 12,000 feet and also will provide, at their cost, brine-handling equipment and disposal wells necessary for production tests from the deepened well. Republic's investment included landowner negotiations and leasing, permitting, well site construction, engineering design, brine clarification system, and production injection systems, as well as the cost of production and injection wells.

Similar costs must be considered for a 12,000 foot well in the center of the field. In addition, if a 40 acre parcel in the center of the field is withdrawn from production to provide a well site for scientific purposes, there could be in-lieu royalty payments to the landowner and in-lieu revenue payments to the operator.

Mr. Robert L. San Martin
Page 4
May 6, 1983

The chief advantage of such a "dedicated" well is that the investigators are freer to choose the site for the well and to study it for an unlimited time. As we have seen, this freedom can be purchased only at a high cost. One estimate of the cost of operating a government-administered facility on a 40-acre reserved site in the center of the field for five years is as follows:

	\$ Thousands
Production well (12,000 feet)	4,250
Injection well (4,500 feet)	750
Land rental (five years)	360
In-lieu royalty	630
In-lieu operator revenue	2,000
Brine clarification system	2,550
Production/injection system	660
Office and yard facilities	250
Labor - Engineering, administrative and consultants (five years)	1,000
- Operations	2,000
Well reconditioning	1,000
Contract services and materials	1,000
Miscellaneous operations	<u>250</u>
TOTAL	\$16,640

This estimate excludes the scientific costs, including logging, coring, sampling and well-stimulation. It also assumes that the drilling will be performed with usual industry techniques rather than attempting a novel or experimental approach to drilling with consequently higher risks and costs. Although these numbers are only an estimate, they do indicate that additional expenditures at least equivalent to Republic's investment would be necessary for a well only two-thirds as deep nearer the center of the field.

While in the scenario discussed above, the well would be available for five years (less the time to drill it), the Republic well would be available for scientific studies for only 1 to 1.5 years before being reconditioned as a producing well. However, after a year or so of experimentation there would be diminishing returns for further scientific downhole studies. In both cases the samples and data produced could be analyzed and studied for years to come.

Mr. Robert L. San Martin
Page 5
May 6, 1983

There is another equally important aspect to timing. The Republic well would be spudded-in in August 1983, deepened to 18,000 feet in 1984 and available for study until the end of 1985. Supposing funds were in hand to drill in the center of the field, negotiations with landowner and leaseholder might take up to six months, and obtaining the necessary permits another six months. (In fact, there is no guarantee that these negotiations would be successful.) Drilling of the 12,000 foot well and injection well and construction of the necessary surface installations could begin only then. It appears that after the necessary budget authorization some two more years would elapse before the well would be ready to test.

(4) Scientific and Technical Considerations

The assumption that a 12,000 foot well nearer the supposed center of the field would be scientifically more valuable is subject to debate. An 18,000 foot well on the edge of the field should penetrate the whole of the sedimentary fill in the Imperial Valley and reach a basement of high seismic velocity. The results would be significant in the interpretation of the Salton Sea geothermal field and they would be applicable elsewhere in the valley.

The steep linear temperature gradients in the adjacent wells drilled by Republic indicate conductive heat flow. By deepening their new well, we will be able to study the transition into a deeper convective system. Wells in the center of the field are already in the convective system at 4,500 feet.

In many geothermal systems there are important zones of horizontal fluid flow. We are more likely to get significant information on the hydrodynamics of this system from this well than from a well in the center of the field. Also, we can probably learn more about the interface between hypersaline brine and fresher water by drilling on the margins of the system. This is of considerable interest to those people interested in the origin of the enormous potential resource of dissolved metals in these brines.

Because the sedimentary section has a higher ratio of shale to sandstone in this vicinity we are likely to encounter more ore-minerals than in the center of the field. Similarly, the high induration of these shaley rocks at depth will permit the well to be drilled more easily and completed "barefoot" (i.e., without a slotted protective liner). Deep drilling into the mixture of metamorphic and igneous rocks likely in the center of the field could be more difficult and unpredictable. More experience in drilling at these

Mr. Robert L. San Martin
Page 6
May 6, 1983

high temperatures in less complex environments is desirable.

If the phenomenon of "superconvection" does exist in the Salton Sea geothermal field, it could be encountered only at very high fluid pressures; which requires deep drilling.

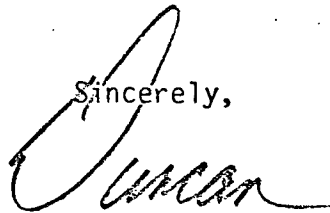
There has been no significant production from the Niland area, so the reservoir beneath the Republic lease is in a more pristine condition. In contrast, the reservoir in the center of the field has already been perturbed by production and injection. Such considerations are important in making base-line studies to monitor the future effects of production and injection.

(5) Are These Alternative or Sequential Drilling Plans?

Rather than considering these two drilling plans as alternatives, it is more logical to consider them as successive stages in the investigation of a whole host of important technical and scientific questions relating to geothermal energy. To my mind, it seems logical to carry out the deepening of the Republic well now. This experiment has the appropriate mix of high technical and scientific return, cost-effectiveness and industry-government collaboration. If the results prove to be sufficiently important to further arouse the enthusiasm of the scientific and technical community, widespread support for your ambitious drilling plan in the center of the field could result. At that stage we might even consider drilling to more deeply penetrate the roots of the geothermal system and embark on the necessary funding initiatives to support this activity. However, support for the plan to deepen Republic's well now does not mean that there would be automatic escalation into more expensive projects; the results obtained must justify such further extensions.

I appreciate your considering these arguments and await your response.

Sincerely,



Duncan Hunter
Member of Congress

DH/fc

LAW OFFICES

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July 19, 1983

Frank Cannon
Administrative Assistant to the
Honorable Duncan Lee Hunter
House of Representatives
117 Cannon Building
Washington, D.C. 20515

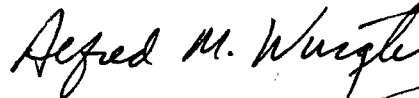
Dear Mr. Cannon:

My client, Imperial Energy Corporation, is seeking Department of Energy support for development of its downhole-heat-exchanger technology at the site of one of its leaseholdings in the Imperial Valley. I have enclosed two volumes of background and technical information about this geothermal project.

We hope to meet with Assistant Secretary Joseph Tribble to discuss this project on July 26 or 27 during the tentatively scheduled visit to the East Coast of Michael Malvin, Imperial Energy's President. Mr. Malvin's July 13 letter to Mr. Tribble is also enclosed.

I hope we will have an opportunity to discuss Congressman Hunter's support for this project in the near future.

Sincerely yours,



Alfred M. Wurglitz

Enclosures

IMPERIAL ENERGY CORPORATION

28:3:1

OCTOBER 6, 1983

MR. JOHN E. CRAWFORD
PROGRAM MANAGER
FOSSIL, GEOTHERMAL & SOLAR DIVISION
U.S. DEPARTMENT OF ENERGY
1333 BROADWAY
OAKLAND, CA. 94612

DEAR MR. CRAWFORD,

THE PURPOSE OF THIS LETTER IS TO RESPOND TO THE AUTHORIZATION FROM CONGRESS FOR \$5.9 MILLION TO BE SPENT ON THE SALTON SEA SCIENTIFIC DRILLING PROJECT. WE UNDERSTAND THAT THE PURPOSE OF THIS PROJECT IS TO OBTAIN SAMPLES FROM A UNIQUE PRESSURE/TEMPERATURE ENVIRONMENT BY DRILLING TO DEPTHS OF 18,000 FEET IN THE SALTON SEA GEOTHERMAL FIELD.

WE UNDERSTAND THAT ONE COMPANY ACTIVE IN THE AREA HAS SUBMITTED AN UNSOLICITED PROPOSAL TO PERFORM THIS WORK. THIS LETTER REPRESENTS THE FORMAL REQUEST OF IMPERIAL ENERGY CORPORATION TO BE SIMILARLY CONSIDERED TO PERFORM THE WORK AUTHORIZED BY CONGRESS.

IMPERIAL ENERGY OWNS A 760 ACRES LEASEHOLD LOCATED APPROXIMATELY MIDWAY BETWEEN THE UNION OIL/EDISON 10 MW PLANT AT THE SALTON SEA, AND THE PROPOSED PARSONS/REPUBLIC FACILITY NEAR NILAND.

WHILE ANY TWO PROPOSALS GENERALLY HAVE COMPARATIVE ADVANTAGES AND DISADVANTAGES, WE BELIEVE THAT IMPERIAL ENERGY CAN OFFER A HIGHLY COMPETITIVE PROPOSAL TO DOE TO PROVIDE TAXPAYERS WITH THE BEST POSSIBLE USE OF PUBLIC FUNDS.

WE ARE CONSIDERING TWO PROPOSAL SCENARIOS. ONE IS TO DRILL THE PROPOSED SINGLE WELL AND PERFORM ALL DOWNHOLE GEOPHYSICAL EVALUATIONS FOR SUBSTANTIALLY LESS MONEY; THE OTHER IS TO DO SIGNIFIGANTLY MORE WORK FOR ENTIRE \$5.9 MILLION, INCLUDING A POSSIBLE SECOND FOLLOW-ON DEEP WELL, OR ADDITIONAL GEOPHYSICAL WORK WHICH MAY BE DICTATED BY THE FINDINGS OF THE FIRST WELL.

IN ADDITION, WE WOULD PROPOSE TO MAKE THESE WELL(S) AVAILABLE TO THE SCIENTIFIC COMMUNITY FOR AT LEAST SEVERAL YEARS, IN ORDER TO UTILIZE THESE FUNDS FOR MAXIMUM PUBLIC ADVANTAGE.

WE LOOK FORWARD TO HEARING FROM YOU, AT YOUR CONVENIENCE, TO FURTHER DISCUSS THE LOGISTICS AND REQUIREMENTS OF PROPOSAL SUBMISSION.

SINCERELY,

IMPERIAL ENERGY CORPORATION

COPY

MICHAEL B. MALVIN
CHIEF EXECUTIVE OFFICER

memorandum

DATE: OCT 11 1983

REPLY TO
ATTN OF: CE-324 - J. Brisee

SUBJECT: Trip Report - Raleigh, Berkeley, and San Diego, October 2-6, 1983

TO: Richard A. Benson, Director
Office of Renewable Technology

The principal results of this trip were a greater appreciation of the organizational problems of the Niland deep hole experiment and a reinforcement of my conviction that a northern Nevada initiative would be very timely for GHTD. Secondary results were a general satisfaction with the progress of the Heber project and a good beginning of the summary report for the North Carolina Energy Institute.

Details

My first stop was Raleigh, NC, where I spent Monday morning with the North Carolina Energy Division Staff reviewing the status of the fifteen remaining projects of the NC Energy Institute. These fifteen (of seventy-four) were incomplete at the time of the 1982 annual report (attached), the writing of which was approved by DOE as a courtesy to the State. Approximately half have been completed, and final reports (published by the DOE's Division of Technical Information) have been issued. Progress reports are available for several of the remainder with sufficient detail to allow a summary report to be written. Approximately four will require face-to-face interviews and a later written status report before all the data for the summary report is available. This report will complete the documentation of final research project results plus the evaluation of the overall value of an independent State "ERDA" patterned after North Carolina's model as an instrument of public leadership. I plan to complete it within the next four months.

On Monday afternoon, I flew to San Francisco. Tuesday morning was the beginning of a two-day meeting at LBL on the research content of the Niland deep experiment. The FY 1984 budget for GHTD contains \$5.9M for deepening the third Niland project hole from 12,000 to 18,000 feet. This funding was directly the result of effective lobbying by Prof. Wilfred Elders of the University of California, Riverside during the FY 1984 budget hearings. His request to Congress included \$5.0 million for hole deepening and \$900K for Riverside research. Interestingly enough, the Republic Geothermal Corporation proposal to GHTD uses all \$5.9 million (\$4.8 million for hole deepening and \$1.1 million for an RGI fracturing experiment in the 12-18,000 foot interval). I found essentially no support for this experiment among the scientists attending the Berkeley.

Paul Witherspoon organized the meeting to review the recommendations of five sub-committees of the Orson Anderson committee which was formed (uninvited) by the University of California to advise on Niland research content. It will be necessary at this point to attempt to identify the many advisory committees for the Niland project in order to underline the urgency of a

centralized coordination role in order to merge all these activities and pin down the final research plan. These decisions are needed very soon, since the well drilling might begin in December, 1983, and the individual research plans (including temperature hardening of critical experimental hardware) will require a significant amount of time.

For many years there has been in existence a Continental Scientific Drilling Project (CSDP) committee which has sought a funded research project such as the Niland effort. Wilfred clearly identified his experiment as a part of the CSDP activity. George Kolstad is the DOE representative on the CSDP. The CSDP committee clearly has a role in identifying critical research needs which the Niland well might satisfy.

A few years ago the National Academy of Science asked Barry Raleigh of Lamont-Doherty geological observatory to establish and direct a committee to do the same thing as the CSDP committee, only in more detail. Orson Anderson was selected as a member of this committee, along with several other distinguished earth scientists. More than a month ago Raleigh called me to emphasize that the University of California Orson Anderson committee (with Paul Witherspoon as organizer) was not related to his committee. Further, he strongly urged that DOE not treat the Niland well as a California experiment but rather to open it to earth scientists from across the country.

Finally, I learned at the meeting that Wilfred Elders already has received NSF funding for mineralogical studies of cores and cuttings from the top 12,000 feet of the Niland well. His sponsor, Jim Hayes of NSF, asked him to establish a steering committee to advise him on the "top 12,000 ft. research. Further, Hayes identifies Elders as the principal investigator of the "lower 6000 feet" and has requested him to screen all incoming requests for NSF funding for "feasibility" using the screening committee before they go to NSF for evaluation.

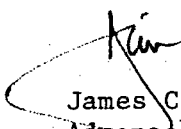
Thus we have four committees planning research for the Niland hole, none of which GHTD had a hand in forming. How we will use all this advise is quite unclear. I still feel that James Kelsey is the key person in this regard. He chaired one of Paul's five panels, the one devoted to instrument requirements. James made the best presentation of the day, with an emphasis on early realistic planning for down hole measurements at temperatures above 300°C. Incidentally, I was told that NSF and NAS (namely Raleigh himself) representatives would attend the LBL meeting. They didn't. Nor did Elders, who was in Japan. My overall impressions were that the present situation is chaotic; firm decision making apparatus must be formed quickly to avoid serious problems later. My vote would be the assignment of experimental access control to Kelsey, with a final override offered to Parsons to avoid any basis for their later claim that we alone are responsible for unanticipated damage to the well by the experiments.

Theoretically, DOE will "own" the lower 6,000 feet of the well during the experimental phase, before it is turned back to Parsons for production use. We need to be the gatekeepers (through the agency of someone like Kelsey), and we should select the \$900,000 in contract research which Elders recommended. He might have the best proposals, but we should allow other bids. I strongly recommend against a \$1.1 million fracture experiment to be performed by RGI.

George Kolstad will probably fund some down-well experiments at Niland in FY 1984 or FY 1985. He probably would accept Kelsey as gatekeeper. NSF might not, but we should try to convince them otherwise. I do not overlook the administrative control which SAN must exercise through John Crawford (who didn't attend), nor the Ron Toms/Ted Mock chain at Headquarters. Rather, I am not sure that our current administrative organization is equipped to make the hard decisions which must be made to integrate all the proposals and scientific advice into a coherent plan.

The two-day meeting hosted by SDG&E produced few surprises. Overall we are more or less on schedule and under budget. Fluor has made some rather serious mistakes in preparing the electrical bid package for Heber. It was originally due September 1, was postponed to October 1, and now is due by November 1. SDG&E took strong action to rectify Fluor's errors, and I was impressed with the general level of increased management attention this episode has spawned.

I was able to talk with Vasek Roberts about Ben Holt's 7 megawatt binary plant at Mammoth Lakes, California. He agrees with me that it may be very useful for northern Nevada applications. To my surprise, he had already organized a meeting with Sierra Pacific Power Co. in Reno during the week of October 17th to evaluate a possible EPRI role in the initiation of third party power plant builders using the Holt design. He suggested that EPRI might contribute up to \$1 million to stimulate the initial private investments. DOE should participate in the meeting (EPRI will invite us) and consider cost sharing this effort. I believe Nevada is ripe for such a program, and our stock with the Nevada delegation should be greatly enhanced by seizing the initiative and causing something significant to happen in power generation there in the next several years.


James C. Bresee, Chief
Advanced Energy Systems Branch

cc: J. Mock
T. Crane