

GLO1838



Department of Geology and Mineral Industries

ADMINISTRATIVE OFFICE

910 STATE OFFICE BLDG., 1400 SW 5th AVE., PORTLAND, OR 97201-5528 PHONE (503) 229-5580

MEMORANDUM

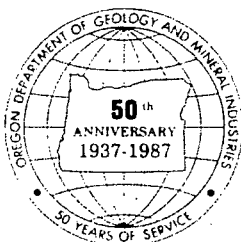
TO: PSDC Steering Committee and Task Force DATE: May 5, 1987
FROM: George Priest
SUBJECT: USDOE Program Research and Development Announcement
(PRDA), 1987

The current USDOE PRDA for state work on geothermal projects has a limit of \$200k. DOGAMI will be deciding in conjunction with other state agencies how to respond to this solicitation. This memorandum is written to solicit your help with this decision.

DOGAMI tried to pool Oregon's potential \$200k with the potential \$200k of Washington to do a 1.2 km diamond core hole at Santiam Pass. Not surprisingly, the Earth Resources group at DNR, Washington was less than enthusiastic about this possibility. Therefore only \$200k of potential funding is available for geothermal work in Oregon. A way must be found to use the support to serve the purpose of the PRDA (geothermal research and development), the aims of Phase I of the PSDC, and the wider goals of state geothermal resource assessment.

The Steering Committee has discussed the possibility of doing a workshop or symposium on the Cascade Range. I favor this as the highest priority use of the funding. My estimated costs are:

1. Assuming an open forum with 400 attendees, field trips, a published field trip guide, and a hard-bound GSA memoir-style book published through DOGAMI (or with page costs paid through DOGAMI to GSA): \$156k
2. Same as above but with memoir page costs picked up by GSA: \$113k
3. Assuming a closed Penrose-style workshop with about 80 people, field trips, and the same publication costs as in number 1: \$121k



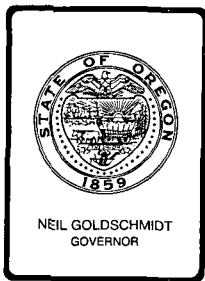
4. Same as number 3 but without memoir publication costs:
\$79k.

There is between about \$44k and \$121k left, depending on which symposium strategy is chosen. Assuming we keep Santiam Pass as the first priority for the PSDC, this money could be spent for the following:

1. Heat flow survey of Blue Lake: \$45-50k
2. Heat flow and geochemical survey of Blue Lake: \$55-74k
3. Reconnaissance site survey of Santiam Pass, including literature review and interpretation of geophysical and geologic data, 20 isotopic age determinations, and publication of Ed Taylor's geologic data: \$121-135k
4. Compilation and publication of Ed Taylor's geologic data: \$41-48k.
4. Resistivity survey of some potential drill sites at Santiam Pass: \$50-182k
5. Gravity survey of potential drill sites at Santiam Pass: \$45-100k

Residual money could also be spent on direct-use geothermal projects proposed by the Oregon Department of Water Resources and the Oregon Department of Energy. Representatives of these two agencies have approached DOGAMI with some projects that they consider valuable for economic development in the state. The cost of these projects is \$24k to \$76k.

Please play with the budget numbers and give me three budgets, all totaling \$200k, and prioritized as your first, second, and third choices. Your response must be back to me by May 25, 1987, so I can have time to beat the deadline for grant submission.



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March 6, 1987

Michael Wright
University of Utah Research Institute
Earth Science Laboratory
391 Chipeta Way, Suite C
Salt Lake City, UT 84108

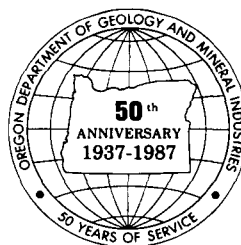
Dear Michael:

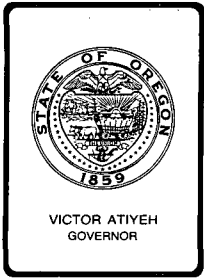
Is it possible for our research group to routinely receive complimentary copies of the various UURI reports and logs from the Oregon holes drilled under the USDOE cost share program? This would greatly help us keep our files current and to proceed more quickly and efficiently on our cooperative work with the USDOE geothermal program.

Best regards,

George R. Priest
Regional Geologist

cc Susan Prestwitch





Department of Geology and Mineral Industries
ADMINISTRATIVE OFFICE

910 STATE OFFICE BLDG., 1400 SW 5th AVE., PORTLAND, OR 97201-5528 PHONE (503) 229-5580

April 21, 1986

Mr. Mike Wright
UURI, Earth Science Lab.
391 Chipeta Way, Suite C
Salt Lake City, UT 84108

Dear Mr. Wright:

Last year GEO Operator Corporation drilled well N-1 in Deschutes County, Oregon with U.S. Department of Energy funding. In trying to obtain Oregon's copy of the data from the well, I have learned that there is an agreement that the DOE is to distribute the records through your office. This is what GEO Operator has indicated to me.

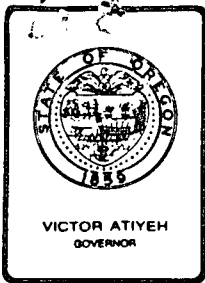
The only records I have received are: Completion report (federal form), "volcanic flow top" lithology, well history, and temperature survey of 11/9/85. We have not received representative samples of cores taken, amount of rods left in the hole, depth to water, and continuous lithology descriptions in the hole. These are required to be submitted to us but we have not received them. The operator is to bear any reproduction and shipping costs for the delivery of the data to us.

Please forward the above records and samples to us soon. The 1986 drilling season is approaching and we want to finish our data collection for 1985 before beginning the 1986 season.

Sincerely,

Dennis L. Olmstead
Petroleum Engineer

DLO:ak



Department of Geology and Mineral Industries
ADMINISTRATIVE OFFICE

1005 STATE OFFICE BLDG., PORTLAND

(503) 229-5580

*to
Mike Wright
UURI*

1986

MEMORANDUM

To: Interested Persons
From: George Priest
Subject: Recent developments in the PSDC

Enclosed is an abstract for the upcoming DOSECC workshop on June 12-14, 1986 in Rapid City. I will be presenting the proposed first phase of the PSDC. I urge all members of the Cascade Task Force to attend this meeting. Your input into the process is important.

Also enclosed is a non-technical summary of the PSDC. This is an information document which covers the highlights of the PSDC with a minimum of technical jargon and a maximum of pictures and illustrations.

I will also give a brief presentation to the USDOE CSD Review Group at the Lawrence Berkeley Laboratory on Thursday, May 1, 1986.

For those interested in doing work on the USDOE-industry cooperative drilling program, there will be an opportunity this summer to do experiments on two 4,000' holes on the flanks of Newberry volcano. Thermal Power is drilling a 5,000' well in the west flank of the northern Oregon High Cascades starting in June. Another small company may drill a 4,000' hole near Santiam Pass in September of this year, although the cost sharing agreement is not yet finalized. Contact Susan Prestwitch, USDOE Idaho Operations Office, 550 Second St., Idaho Falls, Idaho 83401 (Ph. 208-526-1147) for further information. Remember that DOSECC has a special program for holes of opportunity. Contact Bob Andrews of DOSECC (Ph. 202-234-2100), if you have questions.

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FIRST PHASE OF A PROGRAM FOR SCIENTIFIC DRILLING IN THE CASCADES

George R. Priest (Oregon Dept. of Geology and Mineral Industries)

The primary purpose of the Program for Scientific Drilling in the Cascades (PSDC) is to develop a reliable theoretical model for processes of mass and energy transfer which occur in the volcanic mountain range above a subduction zone. The Cascade volcanic arc is related to subduction of the Juan de Fuca and Gorda plates, two of the smallest and most slowly subducting oceanic plates in the world. This subduction regime is thus an end member in the spectrum of subduction zone types. Comparison of data from the PSDC with similar data from areas of fast subduction of large oceanic plates will result in a comprehensive model for the subduction process. The model can then be used as a predictive tool for finding geothermal and mineral resources and for scientific understanding of other subduction-related volcanic belts throughout the world. The following are specific objectives for the PSDC: Objective 1. Define possible correlations between the rate and geometry of subduction and the rates and areal distribution of heat flow, volcanism, and crustal deformation. Objective 2. Analyze the flow of heat and fluid with emphasis on: a) studying geothermal resources, ore deposition, and water-rock reactions, and b) determining the nature of the heat source for the Cascade heat flow anomaly.

These objectives can be accomplished by a phased program of drilling and surface surveys. The following is a description of an extensive first phase in the investigation which would accomplish most of the major objectives.

Phase I will consist of a detailed study of an east-west transect across the entire Cascade Range at the latitude of

Santiam Pass, Oregon, and a local study of the adjacent Breitenbush Hot Springs area. Both areas are representative and better understood than most other parts of the range.

The Santiam Pass investigation will result in a detailed three dimensional picture of a typical segment of the volcanic arc. Drilling will be focused primarily on the volcanically active High Cascade Range where the upper 1 km of highly permeable, resistive volcanic rocks has frustrated heat flow and geophysical sounding techniques. Drilling four 1.2 km holes and one 2.7 km hole will allow accurate measurement of volcanic rock volumes, geophysical properties, and the composition of fluids and rocks. Rates of volcanism, heat flow, and deformation can be calculated when the drill hole data are calibrated to detailed surface geophysical and geologic surveys of the entire transect. This will be compared to estimated rates of subduction over the last 40 m.y. to test for causal relationships. Water-rock reactions and petrologic changes through time will be determined from analysis of fluids and rocks.

A regional seismic survey will determine the geometry of the subducted plate at present. Theoretical models based on estimated rates of convergence and the distribution of volcanism will be used to infer the geometry of the subduction zone in the past.

Drilling in the Breitenbush area will 1) determine if the high heat flow measured at shallow depths in the eastern part of the volcanically inactive Western Cascades persists to great depth, and 2) examine the physical and chemical characteristics of a typical Cascade hydrothermal system. The first objective will require deepening a previously drilled 2.5 km hole to 4.0 km. The second objective will require testing the known thermal aquifer in the 2.5 km well and drilling a 2.0 km hole 6 km to the southeast, where the aquifer is deeper and nearer the active volcanic belt.