

MEMORANDUM TO: Mitchell Stark, Senior Geoscientist
Calpine Corporation

CONCERNING: Modified proposal for geologic analysis of the Glass Mountain hydrothermal system,
Siskiyou County, California

FROM: Jeff Hulen, Energy & Geoscience Institute, University of Utah

DATE: January 28, 2002

Mitch --

Following up on our recent e-mail and telephone conversations concerning the proposed Glass Mountain work, below is an abbreviated, modified work scope tailored more to your budgetary expectations. The modifications are based on my earlier, more comprehensive proposal outline and planning document (for a longer-term effort), e-mailed to you on January 7, 2002.

Task 1: Literature review -- We can eliminate this one. I'll read the stuff at night anyway.

Task 2: Log 88-28 -- I presume this is the most pressing task, so I've kept much of the proposed work intact, but the scope is modified thusly:

- JBH, 15 days -- \$8350
- Thin sections, 50 @ \$25/ea -- \$1250
- Bulk XRD, 10 @ \$100/ea -- \$1000
- Fluid-inclusion analyses, 5 samples (multiple analyses ea.) @ \$300/sample
- TOTAL -- \$11,100

Task 3: Comparative hydrothermal mineralogy -- Modify as a pilot study, to be extended and refined as part of the proposed EGI-Calpine DOE cost-shared work.

- JBH, 10 days -- \$5560
- Thin sections, 20 @ \$25/ea -- \$500
- Bulk XRD, 10 @ \$100/ea -- \$1000
- TOTAL -- \$6160

Task 4: Study intrusive rocks -- I'll bootleg some of this because I'm really interested in the problem, but within the new financial framework, we really can't do the study justice. Since the 2002 drilling program has already been set, I recommend deferring this study until we obtain new DOE funding.

Task 5: Geologic (and temperature) maps and sections

- JBH, 15 days -- \$8350

Task 6: Wellsite geology guidelines -- Point taken about not needing to prepare a Scientific Drilling Project-style compendium

- JBH, 12 days -- \$6680
- Thin sections, 20 @ \$25/ea -- \$500
- Bulk XRD, 10 @ \$100/ea -- \$1000
- One trip to Santa Rosa, JBH, 3 days: Airfare, \$300; Lodging, 2 nights @ \$75/night; Per diem, 3 days @ \$45/day; *Subtotal* -- \$880 (\$585 w/UU overhead).
- TOTAL -- \$9060

Tasks 7, 8, 9, 10: Defer until the proposed DOE cost-shared study

TOTAL COST OF REVISED WORKSCOPE: \$34,670 (includes University overhead)

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If this amount still exceeds your budget for the project, I would respectfully recommend eliminating one of the tasks listed above rather than cutting them all incrementally. I consider the quote for each task as the minimum necessary to complete the work to our traditional standards. Also, please note that the quoted costs don't cover report preparation. I'll communicate results to you often and in detail, but should you wish traditional, formal documentation, please add about 25% for each task.

As soon as I hear from you, I'll prepare a formal budget for approval by our Office of Sponsored Projects. It won't deviate by more than 2-3% from the quoted amounts, but the University requires that OSP review and approve all projects and budgets.

Thanks very much for the opportunity to work on Glass Mountain. I can't wait to get started.

Jeff