



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

0374

April 21, 1995

Mr. Stephan J. Brocoum, Assistant Manager
for Suitability and Licensing
U.S. Department of Energy
Yucca Mountain Project Office
P.O. Box 98606
101 Convention Center Drive
Las Vegas, Nevada 89101

Dear Mr. Brocoum:

With the advent of the program approach by the Department of Energy (DOE), the Nuclear Regulatory Commission is initiating a program of in-field verification of selected aspects of the overall program in an attempt to assure that sufficient information will be available from DOE for the licensing of a high-level nuclear waste repository in the time frame required by the Nuclear Waste Policy Act. One of the areas in which in-field verification will be initiated during the 1995 fiscal year is in igneous and volcanic activity. This program will include the review and inspection of selected data and procedures, and review of activities, at the Yucca Mountain Site and at various office locations.

In order to minimize the impact of this program on DOE activities, the NRC is requesting access to a series of data, procedures and samples primarily relating to the geochemical and petrographic aspects. Such information has either been referenced or presented in the Los Alamos Report LA-2908-MS titled "Status of Volcanism Studies for the Yucca Mountain Site Characterization Project," or in the various DOE study plans. Access to, and review of, this information, prior to actual in-field verification, should result in minimizing the amount of time needed for the verification, as well as allowing the verification to be sharply focused on specific areas of concern. At present, we would estimate some type of site/laboratory visit in the late FY95 time-frame. Timing of this actual verification activity would be dependant upon receipt of the requested information.

It is our understanding that Los Alamos has recently submitted a geochemical data package as a major milestone, and is in the process of preparing to submit another major milestone which would be the data package for the status report. The NRC requests access to these two data packages. In addition, to the extent that the information is not contained within these data packages, the NRC also requests the information in the enclosure to this letter. It is also our understanding that not all the samples requested in the enclosure may

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be available as many could be unique, one-of-a-kind materials, which may only be available as sample archives. In such cases, viewing of these samples and the results of sample testing may need to be reserved for visits to the actual laboratories or sample storage facilities. Therefore, please supply us with the sample testing information and the locations so that plans for visiting these locations can be finalized. To facilitate our review, we ask that this information be sent as it becomes available rather than waiting until all information can be sent as one package. The geochemical data package, for example, should be readily available to be transmitted while other parts of the data requests are being prepared. In any case, the NRC would appreciate being informed as to the time-frame over which the data requested could be transmitted.

If there are any questions regarding this request, please contact John S. Trapp of my staff at (301) 415-8063.

Sincerely,

/S/

Michael J. Bell, Chief
 Engineering and Geosciences Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Enclosure: As stated
 cc: Attached DOE List

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**REQUEST FOR BACKGROUND DATA ON IN-FIELD VERIFICATION OF DOE VOLCANISM
INVESTIGATIONS**

INFORMATION

- The results of geochemical analysis, sample locations, and stratigraphic unit designations for geochemical samples at Lathrop Wells volcano. Some of this information is contained in the LANL Volcanism print-out binder TWS-EES-13-LV-10-89-04. Additional analysis have been performed, however, as Crowe, et al. (1995) state, they have over 120 samples with "major, trace, and isotopic geochemistry." In addition, the sample location sketch map in the revised status report has sample numbers up to at least 153.
- Copies of 1:4000 air-photo stereo pairs used to construct geologic maps for Lathrop Wells.
- Complete and legible copies of all scientific information, used to document the "Key" stratigraphic or geologic relationships that LANL researchers maintain, show significant intervals of time between volcanic events at Lathrop Wells. This information is necessary because the critical outcrops have been destroyed, buried, or are no longer accessible.
- Complete and legible copies of all scientific information used to document the results of trenching activities at Lathrop Wells.
- Sample locations and unit designation for analyses reported in Vaniman and Crowe (1981) and Crowe, et al. (1986) LANL status reports. These two references are continuously cited as the source of most data used in YMR geochemical data.
- Sample locations for units dated by LANL or co-investigators at the USGS. This is necessary to evaluate if all volcanic centers or purported periods of activity have been dated.
- Analytical information sufficient to independently calculated reported dates, including measurements that affect analytical precision and accuracy. Included in this information are thin-sections or complete photomicrographs that demonstrate post-emplacement processes, such as surficial alteration, have not affected the material being dated.
- Copies of 1:5000 air-photo stereo pairs used to construct geologic maps for the Sleeping Butte volcanoes.
- Copies of maps, with appropriate scales, used to define alternative structural models for the distribution of Pliocene and Quaternary volcanic centers in the Yucca Mountain Region.
- Copies of photographs taken of large trench on north side of Lathrop Wells cones visited during stop 7 of the field trip on April 3, 1995.
- Copies of maximum clast size analysis of the Lathrop Wells cone, along with sample locations and unit designation.

Enclosure

SAMPLES

- A minimum of 3 gram (powdered) sample splits of all Lathrop Wells units that can no longer be sampled independently. This applies to outcrops that have been destroyed or are not accessible at surface exposures. In addition, hand-samples of these units also are needed, in order to evaluate the possibility that alteration or contamination may have produced observed geochemical variations.
- Sample splits of sufficient size to make at least one thin section and perform major, trace, and isotopic analyses (i.e., processed yield of at least 3 g) for the following units:
 - Basalt buried by alluvium in Frenchman Flat, which is reported as correlative with Nye Canyon area basalts (Crowe, et al., 1995, p. 2-15).
 - Basalt buried by alluvium in Yucca Flat, intersected in drill hole UE1-H at 784 feet, which is reported as correlative with Paiute Ridge area basalts (Crowe, et al., 1995, p. 2-14).
 - Basalt buried by alluvium in Amargosa Valley, intersected in a 1991 private company drill hole and reportedly dated at 3.8 Ma (Crowe, et al., 1995, p. 2-19).
 - Basalt buried by alluvium in Crater Flat Valley, intersected by drill hole VH-2 and reported as sample VH-2-1021 in Crowe, et al. (1986; LANL report LA-9325-MS, Vol. II).
 - Basalt of Rocket Wash, samples NE10-30-IDV, NE5-20-5DV, and NE 10-30-IDV, as reported in Crowe, et al. (1986; LANL report LA-9325-MS, Vol. II).
 - Basalt intersected by a drill hole at Pahute Mesa and reported as sample US19C-1480 in Crowe, et al. (1986; LANL report LA-9325-MS, Vol. II).
 - Basalt intersected by a drill hole at Amargosa Valley and reported as samples AM1-15-13 and AM1-15-270 in Crowe, et al. (1986; LANL report LA-9325-MS, Vol. II).

PROCEDURES

(All the following procedures have been referenced in either Study Plan 8.3.1.8.1.1, 8.3.1.8.1.2, or 8.3.1.8.5.1.):

Methods for calculating disruption parameter for calculation of the probability of disruption of the repository by magmatic activity;

Methods for magma volume determinations for calculating the probability of magmatic disruption of the repository and controlled area; and

Methods for weighing volcanic probability calculations through the use of expert opinion.

Procedures for geomorphic studies of volcanic landforms:

(unnumbered) Lithic fragments procedure;
DP-606 Procedure for volcanism field studies;
DP-607 Procedures for volcanism sample storage and control;
DP-130 Geologic sample preparation;
DP-107 Cameca MBX Electron Microprobe Operation;
DP-111 Procedure for X-Ray Florescence Analysis;
DP-03 Petrographic Procedure;
(number unknown) Procedure for Laboratory Studies of Soils; and
DP-602 Procedure for Soil Field Studies.