



**AGENCY FOR NUCLEAR PROJECTS
NUCLEAR WASTE PROJECT OFFICE**

Capitol Complex
Carson City, Nevada 89710
(702) 885-3744

December 27, 1988

Mr. Robert Browning, Director
Division of High-Level
Waste Management
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Browning:

Enclosed are two letters this Office received from the Department of Energy, which you and your staff may find of interest:

- 1) Carl Gertz to Robert Loux, "Clarification of Proposed Prototype Flume Calibration", dated December 9, 1988, and
- 2) Carl Gertz to Robert Loux, "Establishment of Seismic Monitoring Stations", dated December 9, 1988.

Sincerely,

A handwritten signature in cursive script, appearing to read "Carl A. Johnson".

Carl A. Johnson
Administrator of Technical Programs

CAJ/sjc

Enclosures

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PDR WASTE
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Department of Energy

Nevada Operations Office
P. O. Box 98518
Las Vegas, NV 89193-8518

WBS # 1.2.5.4.1
"QA: N/A"

NN1.881209.0031

DEC 09 1988

Robert R. Loux, Jr., Executive Director
Nuclear Waste Project Office
State of Nevada
Evergreen Center
Suite 252
1802 North Carson Street
Carson City, NV 89710

ESTABLISHMENT OF SEISMIC MONITORING STATIONS

Reference: Letter, Loux to Gertz, dtd. 10/18/88

This is in response to your referenced letter dated October 18, 1988, requesting the status of the University of Nevada-Reno (UNR) Operation and Safety Plan for the establishment of seismic monitoring stations and access to the U.S. Geological Survey (USGS) seismic telemetry stations.

As was indicated in the your letter, permission to establish a seismic monitoring station at the Climax Mine has been denied on the basis that placement of a station at this location would allow access to sensitive and, potentially, classified national security information. In addition, the Yucca Mountain Project Office must deny the UNR's request for establishing a seismic station on Yucca Mountain. Both Sandia National Laboratories (SNL) and Environmental Research Corporation, a U.S. Department of Energy ground-motion contractor, have conducted studies using portable instruments to record ground-motion from underground explosions at the Nevada Test Site (NTS). Results of those studies are available in technical reports. Reports by both organizations, of which UNR is in receipt, list amplitude prediction equations for nuclear explosions; of those, the SNL report equations are more applicable since they were developed for Yucca Mountain. If UNR does not consider these equations and studies to be sufficient or appropriate to its needs, the investigators should provide documentation of their objections to the studies and a written justification of their needs. My staff will work to resolve all objections and provide, where possible, the pertinent information.

On the third point, tying the UNR telemetry system into the three USGS seismic telemetry stations on the NTS, I am sure you are aware that the USGS is in the process of upgrading its Southern Nevada Network to provide more band-width and greater dynamic range for the current sites. The upgrade will also include an eleven station semi-mobile array and eight strong motion stations.

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The data from these instruments can be made available to the UNR via satellite from Golden, Colorado. This would, ultimately give the UNR access to the National Seismic Network which will be available in the near future. This type of down-link from the Southern Nevada Network is a better means of transferring the seismic data from the NTS. It can also provide for a reciprocal sharing of data between the UNR and USGS which will benefit investigators at both institutions.



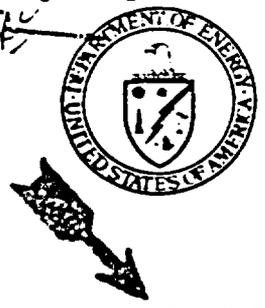
Carl P. Gertz, Project Manager
Yucca Mountain Project Office

YMP:MLP-719

CC:

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Allen Benson, HQ (RW-123) FORS
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NN1.881209.0029



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CLARIFICATION OF PROPOSED PROTOTYPE FLUME CALIBRATION

Thank you for your letter of October 14, 1988, in which you inquired about planned hydrologic testing in Pagany Wash at Yucca Mountain, and requested details of the proposed study, the environmental review conducted for this activity, the review which documents that this study will not adversely impact waste isolation or site performance assessments, and a determination of source and quantities of water to be used in this study.

The activity you refer to is a proposed prototype activity involving the installation, calibration, and evaluation of a prototype supercritical-flow flume for measuring streamflow. This proposed activity will support the ongoing Study 8.3.1.2.1.2: Characterization of runoff and streamflow. The prototype flume system evaluation activity has not been finalized or approved as of this date.

Because this prototype activity is still in the planning stages, it is not possible to respond to all of your concerns at this time. I believe the following information will give you a better understanding of the purpose and rationale for the proposed activity.

As you are aware, the correlation between the amount of precipitation and the consequent streamflow in the Yucca Mountain area is not well known. During site characterization, it has been proposed to install a number of continuously-recording stream stage gages at flumes, calibrated to mathematically relate stream levels to streamflow rates. This work is described in Site Characterization Plan Activity 8.3.1.2.1.2.1: Surface-water runoff monitoring.

In order to build confidence in the quality of the site characterization data collected, the prototype test will establish that the proposed design operates accurately and reliably under the ephemeral and sediment-laden flows associated with steep streams such as those on Yucca Mountain.

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Pagany Wash has been proposed as the location for installation and evaluation of the prototype flume system. The main factors involved in the nomination of Pagany Wash for the prototype evaluation are: (1) it has similar characteristics to other sites on Yucca Mountain, (2) access is readily available, and (3) there is adequate space upstream for water storage required for controlled calibration of the flume system.

The flume system currently considered has a designed measurement range of 0.7-350 cfs (cubic feet per second). In order to calibrate the prototype system, it will be necessary to pass a constant flow through the flume for about twenty minutes. The target flow rate currently proposed is about 500 gallons per minute, which is about 1.1 cfs, very close to the lower measurement limit of the flume system.

As noted earlier, it is not presently possible to correlate streamflow with precipitation with a great deal of confidence. Of the sparse data set available from the Yucca Mountain area, perhaps the most relevant are measurements associated with an intense period of rainfall in the Topopah Wash drainage in 1984(?). During this event, approximately 2 inches of rain fell in a one-hour period, and resulted in streamflow of about 75 cfs in Topopah Wash. A conservative comparison between the Topopah Wash event and the proposed calibration activity at Pagany Wash suggests that a streamflow of about 1.1 cfs will be considerably below the natural streamflow which would result from a natural rainfall of one-half inch in an hour. As such, the flume calibration activity will certainly not qualify as an artificial flood.

Because this flume study will be a prototype study, results are not intended to be used to support any aspect of site characterization or design, beyond the stated purpose of evaluating the flume system for operations at Yucca Mountain.

If you have any further questions, please do not hesitate to contact me.



Carl P. Gertz, Project Manager
Yucca Mountain Project Office

YMP:JRD-804

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