

**STATEMENT OF NYE COUNTY, NEVADA  
TO THE  
NUCLEAR REGULATORY COMMISSION  
MAY 15, 1997**

**Nick Stellavato, On-Site Representative  
Nye County Nuclear Waste Repository Project Office**

Madame Chair, and members of the Commission. I appreciate very much the opportunity to meet with you today. The Nye County Commission has asked me to present Nye County's perspectives to you, particularly since the Commissioners believe it is important that you understand the scope of our Independent Scientific Investigations Program. I will also relate our key concerns with DOE's technical program.

First, let me briefly introduce Nye County to you, since some of you are new to the Commission since we last addressed you in 1994. Nye is the *situs* jurisdiction; that is the county within which the proposed Yucca Mountain repository is located. Our County also hosts, in its entirety, the Nevada Test, the location currently under consideration for a high-level nuclear waste interim storage facility.

The County's unique status as the *situs* jurisdiction has been recognized by Congress in the 1987 Nuclear Waste Policy Amendments Act. Under this statute, the County is authorized to have an on-site representative with much the same access as your own staff on-site reps. I am Nye County's on-site representative, and have offices both at the Yucca Mountain Field Operations Center and at DOE's offices at Summerlin in Las Vegas. In this capacity, I also manage Nye County's Independent Scientific Investigation Program. We believe our work is vital for the protection of the public's health and safety.

You might be interested to know that Nye is the third largest county by land area in the continental United States. The County encompasses slightly over 18,000 square miles, an area roughly equivalent in size to the states of Massachusetts, Rhode Island, New Jersey, and Delaware combined. The County's population is estimated to be 20,000 people, but is one of the fastest growing in the United States. The County's future growth will be dependent on maintaining a clean and healthy environment.

Nye County has always maintained a position of "principled neutrality" regarding the designation of Yucca Mountain as the Country's candidate repository site. While we have not entered the political debate, we are not, in any way, neutral on the issue of how Yucca Mountain ought to be characterized. We have always insisted that 1) DOE's investigations be based on sound, rigorous and robust science, 2) that traditional and well-recognized principles of scientific conservatism be adhered to, and 3) that any decision on the suitability of the site be based on as complete and quality-assured data base as can be reasonably achieved, and that data analysis be accomplished with scientific integrity.

We further insist that DOE's entire program be subject to complete public scrutiny, and that the oversight responsibility and authority to Nye County, the State of Nevada, and other affected local governments be fully recognized. Unfortunately, the Federal government has fallen far short of the mark in this area in the last two fiscal years, not due to lack of DOE commitment to oversight, but because Congress has failed to make available to Nye and others the funds necessary to enable us to carry out any reasonable oversight program. [See the Appendix for a summary of the past and present program.]

We have been funded by a grant to maintain our science program's data-collection activities because our data and analyses are recognized to be objective, scientifically sound, and valuable. Our work has not only proved useful to the oversight and regulatory communities, but has also been important for furthering the scientific community's understanding of the mountain's natural system.

While we have appreciated being able to continue these minimal efforts, they do not come close to helping us meet the full scope of our oversight responsibilities. We look forward to Congress restoring the funding necessary for us to reestablish an active and effective the type of oversight program that is so fundamental to public acceptance, not only of DOE's ultimate recommendations, but of the Commission's license evaluation, as well.

Our position on any potential interim storage facility in Nye County is the same as toward Yucca Mountain, *i.e.*, principled neutrality, with this strong qualifier. We oppose any movement toward interim storage at the Nevada Test Site if that would take the focus off geologic disposal, result in a *de facto* permanent storage facility at the surface, or so effect the political momentum gathering behind Yucca Mountain as a final repository as to compromise a detached, objective, final decision on suitability and licensability based only on sound science.

Historically, Nye County has had an active, aggressive oversight program. We have been involved in all aspects of the DOE program, and have participated fully in the Commission staff's pre-licensing efforts and reviews, including, for example, the ongoing efforts at reduction of regulatory uncertainty, the review of key technical issues, and active participation in the Licensing Support System Advisory Review Panel (LSSARP).

The Nye County Nuclear Waste Repository Project Office has previously included 1) on-site representation, 2) the independent scientific investigations, 3) an active and effective regulatory and licensing effort, 4) independent socioeconomic and transportation studies, and participation in all aspects of DOE's institutional program, including, for example, the NEPA scoping and EIS preparation process. Our program has been conducted under protocols negotiated with DOE, very similar in fact to the agreements under which the NRC staff operates.

While our current effort includes regular interactions with your OSRs, we are not able to maintain them at a level that would be called for by any reasonable oversight program. We have, as examples, been forced to withdraw entirely from the LSSARP, been able to maintain only minimal contact with the pre-licensing review process, and our socioeconomic, transportation and institutional efforts have, for all intents and purposes, been terminated.

In carrying out Nye County's oversight authority and responsibilities, we have always expressed several overriding goals. They can be summarized as follows:

- ◆ Put good science first
- ◆ Preserve strong oversight
- ◆ Treat impacted communities fairly
- ◆ Keep the focus on geologic disposal
- ◆ Account for all program costs

Nye County's fundamental goal is to protect its residents, both present and future, by exercising vigorous technical oversight, and addressing potential project impacts, both from the repository and any potential interim storage facility. Central to that goal, and our strategy in achieving it, is our Independent Scientific Investigations Program. I will now more fully explain that program, go over some of the insights we have gained from it, and discuss with you at least one approach we strongly feel should be carefully considered as a design alternative.

In closing I would like to compliment your staff. We have received nothing but full cooperation and assistance from the NRC staff throughout our involvement in this process. Our working relationship is excellent and we will do our part to help keep it that way.

**APPENDIX**

**NYE COUNTY  
NUCLEAR WASTE REPOSITORY PROGRAM  
PAST AND PRESENT**

**A THUMBNAIL SKETCH**

## **GOALS**

- ◆ **TO ADDRESS KEY ISSUES THAT CAN HAVE PARAMOUNT IMPACT ON BOTH THE DESIGN AND PERFORMANCE OF THE REPOSITORY AT YUCCA MOUNTAIN**
- ◆ **TO PROTECT PUBLIC HEALTH, SAFETY AND THE ENVIRONMENT**
- ◆ **TO MONITOR AND EVALUATE DOE'S GENERAL SCIENTIFIC AND SITE CHARACTERIZATION PROGRAM**
- ◆ **TO IDENTIFY AREAS THAT ARE NOT BEING ADEQUATELY ADDRESSED BY DOE**

## **PRESENT PROGRAM**

**CONGRESS AGAIN DENIED FUNDING UNDER NWPA § 116 FOR  
CURRENT FISCAL YEAR**

**CURRENT PROGRAM LIMITED TO ON-SITE REPRESENTATION**

- ◆ **DEPENDENT ON FUNDING UNDER NWPA § 117(d)**
- ◆ **COLLATERAL ACTIVITIES LIMITED TO THOSE IN  
SUPPORT OF OSR FUNCTION INCLUDING ISIP**
- ◆ **DATA COLLECTION AND ANALYSIS UNDER ISIP  
WILL CONTINUE**
- ◆ **ISIP WILL CONTINUE TO BE CONDUCTED UNDER  
NYE/DOE OSR PROTOCOLS AND NQA-1. DATA AND  
ANALYSIS SHARED AS BEFORE VIA NYE HOME PAGE**

## **PAST PROGRAM**

### **ACTIVE OVERSIGHT OF ENTIRE RANGE OF DOE PROGRAM**

- ◆ **FUNDING UNDER NWPA § 116**
- ◆ **ON-SITE REPRESENTATIVE**
- ◆ **REGULATORY AND LICENSING**
- ◆ **SOCIOECONOMIC**
- ◆ **TRANSPORTATION**
- ◆ **INSTITUTIONAL**
- ◆ **NEPA/EIS**

### **PROGRAM CONDUCTED UNDER PROTOCOLS WITH DOE**

### **INDEPENDENT SCIENTIFIC INVESTIGATIONS PROGRAM (ISIP)**

- ◆ **ONE NEW BOREHOLE - ONC-1**
- ◆ **INSTRUMENTATION IN DOE HOLE - NRG-4**
- ◆ **PRESSURE/TEMPERATURE/RELATIVE HUMIDITY MONITORING IN ESF**
- ◆ **DATA SHARED WITH ALL INTERESTED PARTIES AND POSTED ON NYE HOME PAGE**

# **Presentation to Nuclear Regulatory Commission**

Nick Stellavato, On-Site Rep  
Nye County Nuclear Waste  
Repository Project Office

May 15, 1997



# Independent Scientific Program Goals

- Address Key Issues that can affect repository design and performance
- Evaluate DOE's overall scientific program
- Identify areas that are not being adequately addressed
- Obtain scientific data for an independent evaluation of Yucca Mtn

# Present NWRPO Technical Program

- Continue P, T and Rh monitoring
- Continue gas sampling in ONC#1
- Analyze NRG-4 and ESF interference for large scale rock properties
- Evaluate saturated zone response in ONC#1
- Continued analysis of ESF data(east-west drift) and other repository design issues



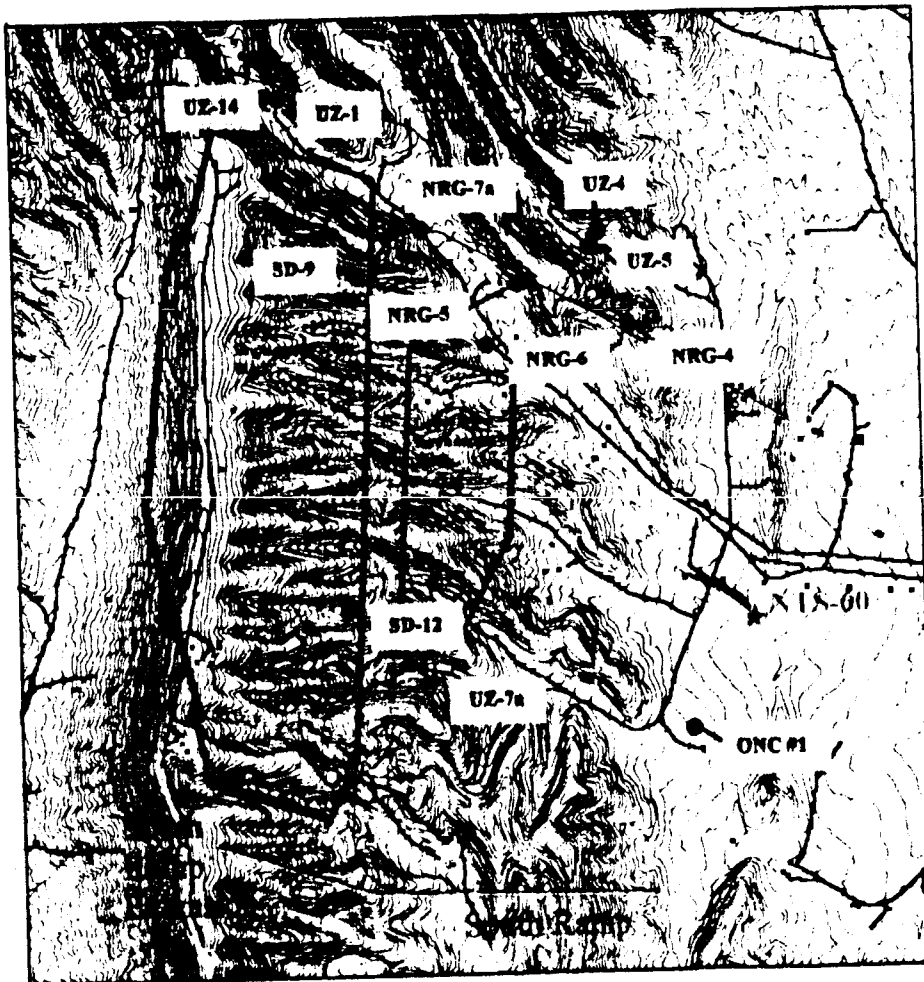
**IS IT SAFE ?**

# Independent Scientific Program Background






- Negotiated and signed on-site drilling and sampling protocols with the DOE
- Developed a Nye County QA program based on NQA-1 criteria
- Developed a Nye County WEB site for more efficient technical data distribution:  
([www.nyecounty.com](http://www.nyecounty.com))

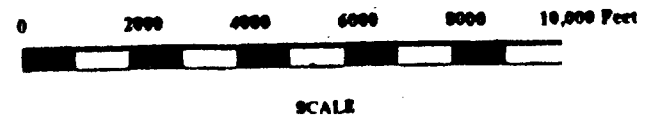
# Independent Scientific Program Background

- Drilled UE-25 ONC#1 in December '94
- Instrumented ONC#1 and DOE hole NRG-4 in March '95
- Instrumented TBM to continuously monitor temp, relative humidity and pressure in the ESF during construction

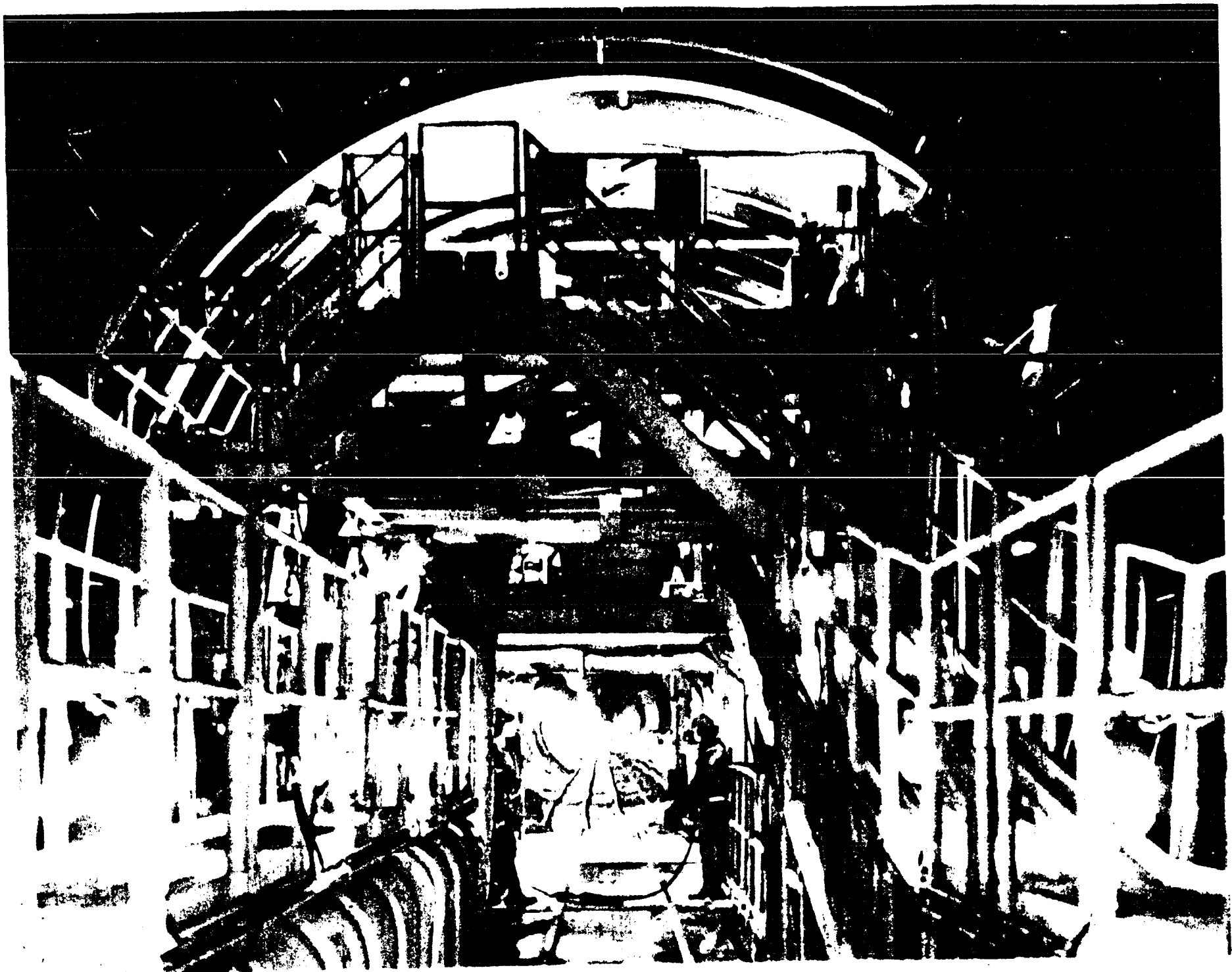


## EXPLANATION

-  Explorer Studies Facility (ESF) center line
-  UZ-14 Borehole location
-  Other borehole (existing and planned)
-  Roads
-  20-ft contour line



Topography, location of selected boreholes, and ESF centerline at Yucca Mountain Site.



# Data Collection and Analysis

- From Relative humidity, temp and pressure data recorded in the ESF, able to calculate moisture loss due to ventilation from the tunnel
- Simulated long-term repository ventilation effects from thermal and vapor concentration gradients in ESF
- Pneumatic data from 2 Nye County wells identifies rapid pressure response in the mountain



# Scientific Program Findings

- Yucca Mountain is more permeable than anticipated
- Water flux rates are higher due to fractured system
- Faults and fractures do act as conduits for water and vapor flow and are the dominant paths for radionuclide transport at Yucca Mountain

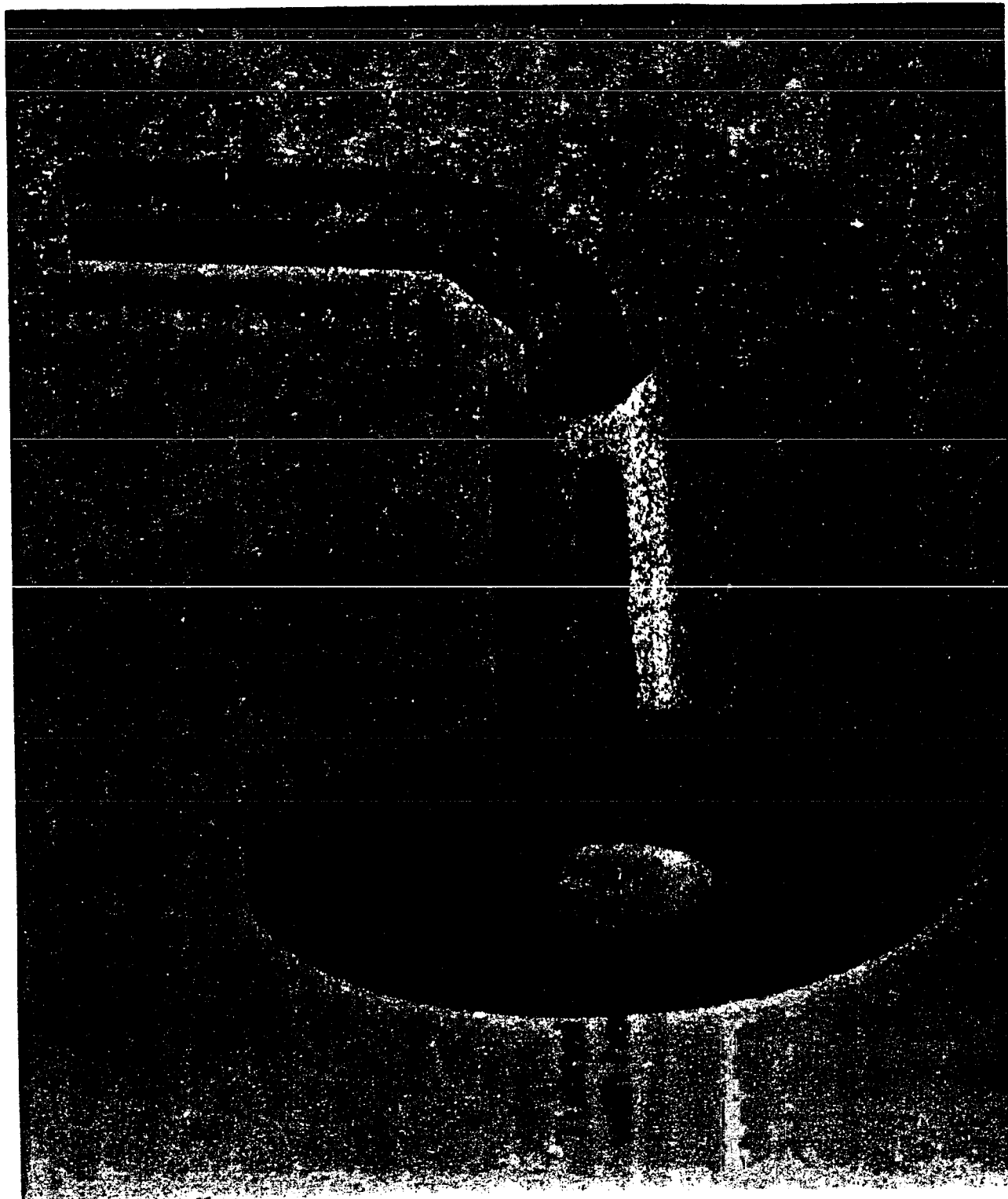
# Design and Performance Issues

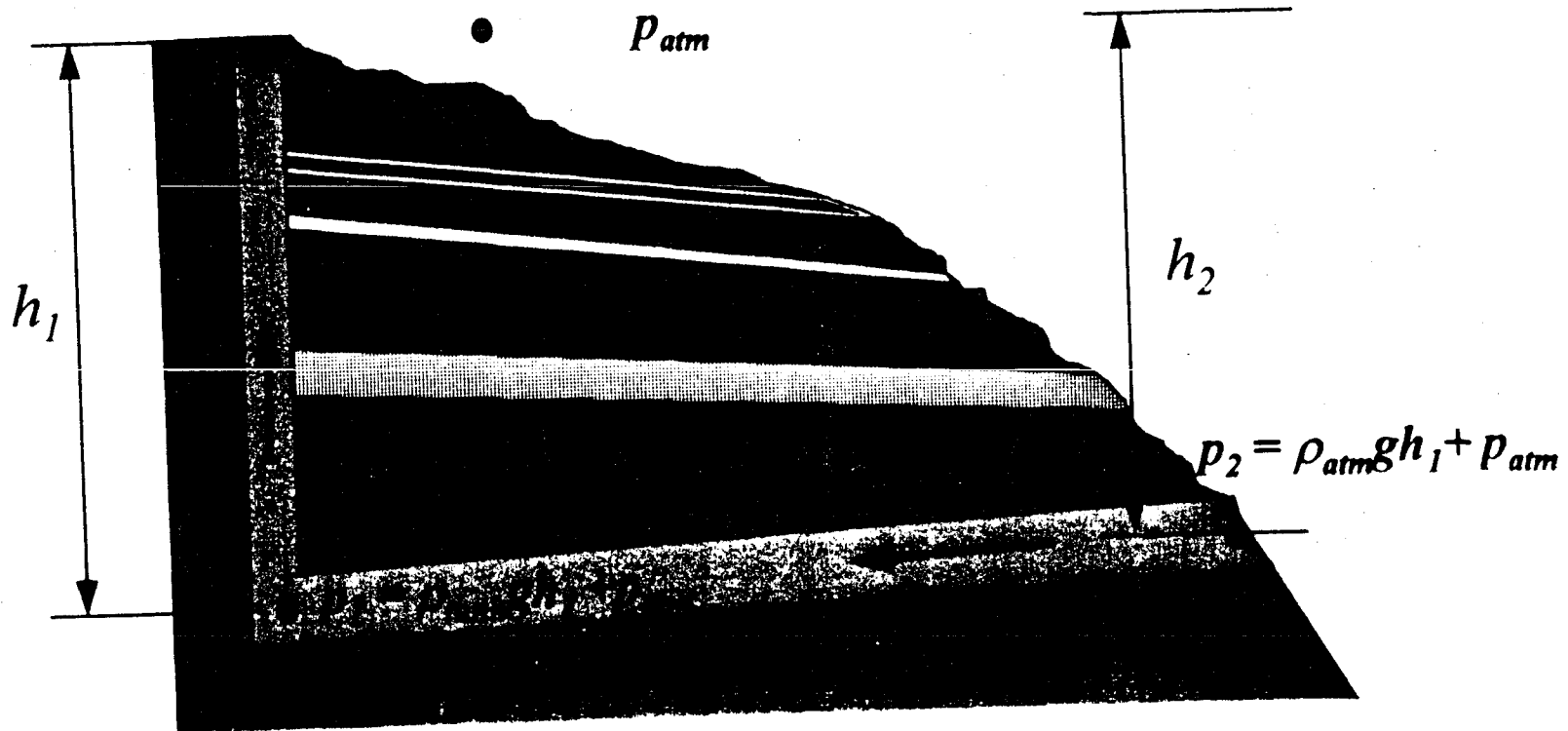
- DOE strategy is to rely more on engineered barriers and less on geology due to:
  - Higher Vapor flux than anticipated
  - Highly fractured system that breathes
  - Nye County is proposing that DOE investigate using an 'Open Repository Design'

# Scientific Program Recommendation

- Data from the ESF suggests an “Open Repository” design will perform well in the Yucca Mountain geologic and hydrologic setting; i.e. rock is highly permeable and has higher than projected water flux rates
- Can keep rock temperatures near ambient for 10,000 years
- Can keep repository rock saturation low

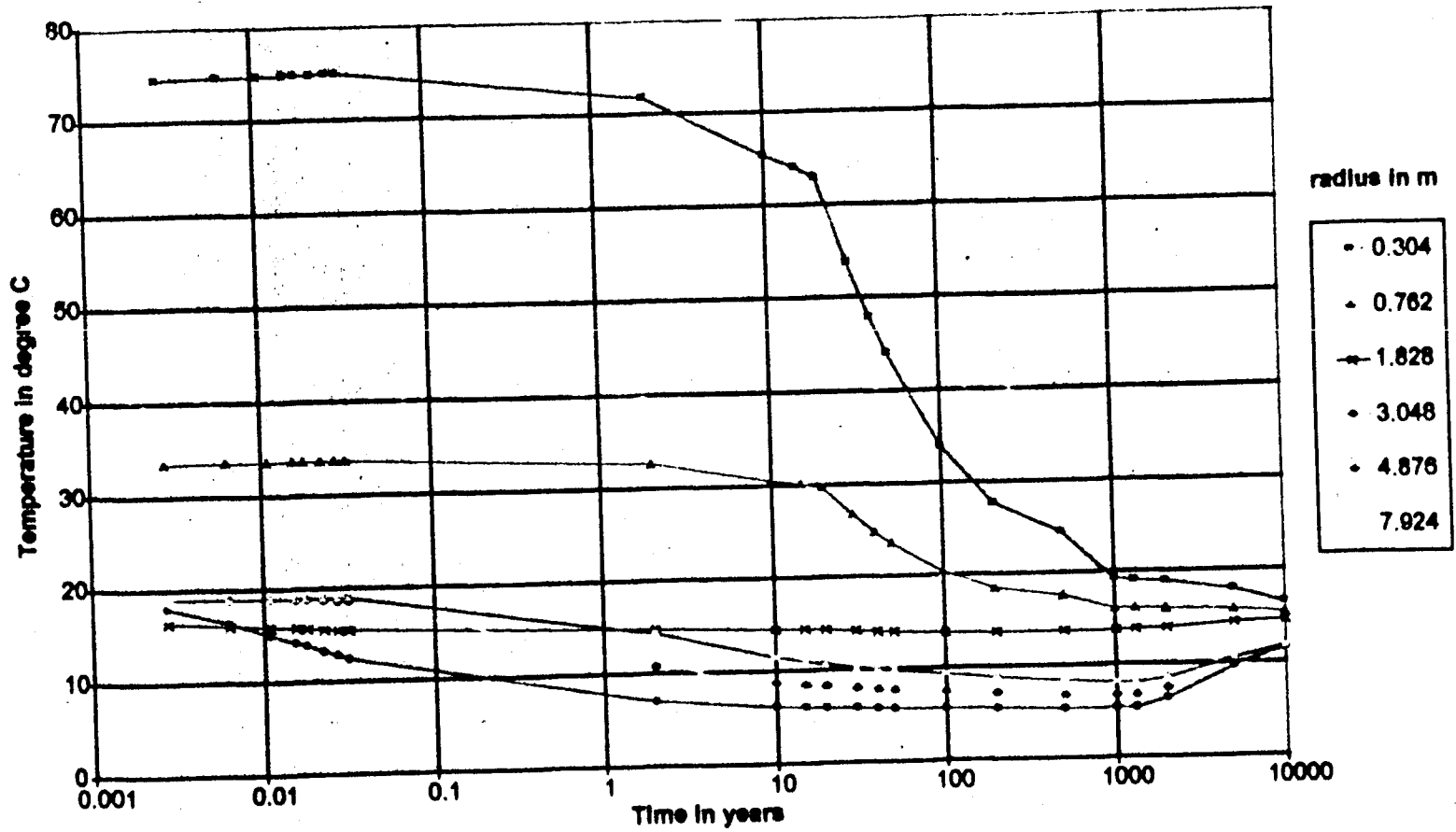
# NATURAL VENTILATION





**Conceptualization of natural ventilation.**

Simulated variation of temperature with time for selected nodes perpendicular to the center of heat load  
(Eddy Diff = 0.001 Case)







# Summary

- DOE should investigate an Open Repository concept if water flux rates are as high as reported, and the mountain is as open to natural air movement as shown from ESF studies and Nye County well data
- An Open Repository can handle more heat load per acre than a 'closed and backfilled repository'
- An Open Repository will permit reentry to remove canisters if necessary
- Canisters will remain dry