

Administrative Code 0541

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

①



memorandum

TO J. Gardner, EES-1, MS D462

DATE November 14, 1990

FROM D. Vaniman *Dave Vaniman*
for W. W. W.

MAIL STOP TELEPHONE D462/1863
D462/9202

SYMBOL EES-1, Geology/Geochemistry

Memo No: EES1-SH90-17

SUBJECT RESULTS OF GEOLOGICAL MAPPING/FRACTURE STUDIES TA-55 AREA

ABSTRACT

A geological map of 5.60 square miles (scale = 1:6,000) around the TA-55 area has been completed. This map (Plate 1 in this report) shows that the Rendija Canyon and Guaje Mountain fault zones can be located by geological field observations and fracture studies. The faults lie within a roughly N-S trend about 500 ft west and 1,500 ft east, respectively, of TA-55. Within this zone, the Bandelier Tuff is tectonically deformed. Important structural features include rock fractures, micrograbens caused by downdrop of tuff blocks up to several feet, and "zipper joints" where sets of joints have been incised and along which tuff surfaces have been down dropped several or more feet.

Along with the geological mapping study, detailed structural mapping and measurement of 1,625 fractures along Pajarito and East Jemez roads (Plates 2 and 3) demonstrate notable increases in the abundance of and opening on fractures over areas of the fault projections. The measurements show that fracture linear density increases from background levels averaging 20 fractures/100 ft to about 50 fractures/100 ft over the fault zones. Average fracture openings are about 1.0 cm, and observed vertical displacements along these fractures is a similar amount, making these fractures evidence of fault movement. Cumulative surface deformation calculated over the Rendija Canyon Fault zone along Pajarito Road is about 8.2 ft horizontal and 8.6 ft vertical, dispersed over 1,000 horizontal feet. Surface deformation on the Guaje Mountain Fault zone along East Jemez Road is calculated to be 5.8 ft horizontal and 6.1 ft vertical, spread out over 1,600 horizontal ft.

We conclude that vertical movement of at least 10 ft has likely occurred in bedrock below the Bandelier Tuff along both of these faults, but that this displacement is accommodated by fractures dispersed over 1,000 horizontal feet across the faults in the tuff.

We recommend that additional fracture measurements be made along blade cuts into the tuff over the fault zones near TA-55. Also our mapping shows a considerable hazard of cliff failure and mass wasting above TA-2, which should be studied further.

Attachment: a/s

Cy: EES-1, MS D462
Seismic Hazards File

Received by ER-RPF
JUL 22 1993
JCG

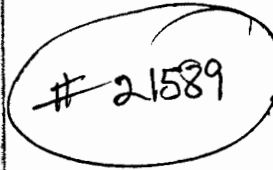


4357

Los Alamos Environmental Restoration Records Processing Facility



ER Record I.D.# 0021589



LOS ALAMOS

LOS ALAMOS NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION
Records Processing Facility
ER Record Index Form

DATE RECEIVED: 6/16/93 PROCESSOR: MJC

PAGE COUNT: 1

Quick Index: Complete all fields; indicate if not applicable or appropriate, please write legibly

DOCUMENT TO: J Gaudner ORGANIZATION EES-1
 ORIGINATOR NAME: D. Vaniman ORGANIZATION EES-1
 SYMBOL: EES-1 Geology/Geochronology DOCUMENT DATE 11/14/90
 SUBJECT/TITLE: Results of Geological Mapping
 Fracture Studies - TA 55 Area

RECORD TYPE (Circle relevant type for primary record, type of attachments should be selected on Keywords List)

- | | | | | |
|-------------------------|-----------|----------------|------------------------|------------------|
| Analytical Data | Excerpt | Map | Procedure | Summary |
| Article | FAQ | Many | Purchase Request | Table |
| Chain-of-Custody | Figure | Workbook | Receipt Acknowledgment | Telephone Record |
| Chart | Form | Notebook | Report | TOC |
| Computer Output | Interview | Outline | Resource | Transcription |
| Contract | Letter | Personal Notes | Site | Video |
| Controlled Distribution | List | Photo | Study | Work Plan |
| Drawing | Logbook | Plan | | Other |

RECORD CATEGORY: P
(P for Programmatic or R for Reference)

RECORD PACKAGE: _____

FILE FOLDER: _____

RECORD FILMED (Y/N): Y

RECORD LOCATION: _____
(Indicate location of record if not filmed)

Complete all fields; indicate if not applicable or appropriate, please write legibly Use ER Record Index Form Attachment Sheet if needed.

ATTACHMENTS FILMED (Y/N): _____
(Were attachments to this record filmed?)

LOCATION: _____
(Indicate location of attachments if not filmed)

Handwritten mark resembling the Greek letter pi (π)

ENVIRONMENTAL RESTORATION
Records Processing Facility
ER Record Index Form

ER Records Detail Index Form for ER Record ID # 21589

DETAIL INDEX: Complete all fields, indicate if not applicable or appropriate please write legibly

TECH AREA(S)	ADS NO(S)	STRUCTURE NO(S)/MDA	SWMU/PRS NO(S)
<small>LIST RELEVANT TECH AREAS:</small> 55	<small>LIST RELEVANT ADS NO'S</small> 1129	<small>LIST RELEVANT STRUCTURE NO'S</small> —	<small>LIST RELEVANT SWMU/PRS NO'S</small> —

DOCUMENT TO

LIST RELEVANT DOCUMENTS

—

ORIGINATOR NAMES

LIST RELEVANT ORIGINATOR NAMES

—

CORRECTION (Y/N) _____ CORRECTION # _____

CORRECTION DESCRIPTION: _____

KEYWORDS: Circle relevant KEYWORDS from the list below for ER Record #

21589

MISCELLANEOUS (List other indexing criteria as necessary, please write legibly):

OU 1129, fault, Rendyn, determination, large mountains, structures, cliff failure

Abandon	Bunker	Construction	Environmental	Gas
Aboveground Tank	Buried	Container	EOD (Explosive Ordnance Disposal)	Generation
Absorption	Burn	Containment	EPA (Environmental Protection Agency)	Generic
Abstract	-----	Contaminant	Equipment	Geochemistry
Accelerator	Cadmium	Contract	ERDA (Energy Research and Development Administration)	Geology
Access	Caisson	Control	Erosion	Geophysics
Accident	Calibration	Controlled Distribution	ERPO (Environmental Restoration Program Office)	Glass Beaker
Acid	CAMU (Corrective Action Management Unit)	Copper	ES&H (Environment Safety, and Health)	Glove Box
Active	Canyon	Core	Estimate	Graph
Activities	Capacitor	Corrective Action	Evacuation	Guidance
Administrative	Caustic	Correspondence	Evaluation	Gun
ADS (Activity Data Sheet)	CEARP (Comprehensive Environmental Assessment and Response Program)	Criteria	Evaporator	-----
Adsorption	Cement	Cyanide	Evidence	Handling
AEC (Atomic Energy Commission)	CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)	Cyanogen	Excavation	Hazardous
Aerial	-----	-----	Exclusion	Headquarters
Agenda	Cesium	Data	Exhaust	Health
Agreement	Chain of Custody	Deadline	Experiment	HE (High Explosive)
AIP (Agreement in Principle)	Chamber	Debris	Explosive	History
Air	Change Control	Decision Analysis	Exposure	HMTA (Hazardous Material Transportation Act)
Alpha	Change Order	Decommission	Extension	Hole
Americium	Charge	Decontamination	Extraction	Home Owner
Analysis	Chart	Deficiency	-----	Hood
Analytical	Checklist	Deliverable	Facility	HSWA (Hazardous and Solid Waste Amendments)
AOC (Area of Concern)	Chemical	Demolition	Fallout	Hydrology
Approval	Chromium	Description	Farm	Hygiene
Aquifer	Cleanup	Detection	FAX	-----
ARAR (Applicable, Relevant, or Appropriate Requirements)	Clearance	Detonation	Fence	Impact
-----	Closure	Development	Field	Implementation
Archaeology	Clothing	Diesel	Figure	Implosion
Archive	CNRA (Corrective Measures Implementation/Remedial Action)	Discharge	Filter	Impoundment
Area	CMS/FS (Corrective Measures Study/ Feasibility Study)	Disposal	FIMAD (Facility for Information Management, Analysis, and Display)	Inactive
Arsenic	-----	Documentation	Finding	Incident
Asbestos	Cobalt	DOE (Department of Energy)	Fire	Incinerator
Asphalt	Comment	Dose	Fining Site	Industrial
Assessment	Committee	DOO (Data Quality Objectives)	Fiscal	Infiltration
Audit	Community Relations	Draft	Fission	Injection Well
-----	Company	Drainage	Five-Year Plan	Injury
Backfill	Compliance	Drainline	Flow	Inorganic
Background	Compressed Gas	Drilling	Flow chart	Inspection
Bacteria	Computer Modeling	Drop Tower	Fluid	Installation
Barium	Computer Output	Drum	Form	Interim
Baseline	Concern	Dry Well	Framework	Interim Action
BCP (Baseline Change Proposal)	Concrete	Dump	Fuel	Internal
Beds	Concurrence	-----	Fume	Interview
Bermed Area	Configuration	Ecology	-----	Inventory
Beryllium	-----	Effluent	Gamma	Investigation
Beta	-----	EIS (Environmental Impact Statement)	-----	IRM (Interim Remedial Measure)
Biology	-----	Electrical	-----	Isotope
Blivit	-----	Emission	-----	IWP (Installation Work Plan)
Boiler	-----	Engineering	-----	-----
Boneyard	-----	-----	-----	-----