Los Alamos Environmental Restoration Records Processing Facility

ER Record I.D.# 0009734

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LOS ALAMOS NATIONAL LABORATORY

ENVIRONMENTAL RESTORATION
Records Processing Facility
ER Record Index Form
(Side 1 of 2)

0259734.0

Part I: Complete all fields; indicate if not applicable or appropriate; please write legibly.

DOCUMENT TO: File DOCUMENT DATE: 09/17/91

ORIGINATOR NAME: Dorothy Hoard ORGANIZATION: CLS-1

SYMBOL: CLS-1/91-304-DH PAGE COUNT: 3

SUBJECT/TITLE: Conversation with Harlow Russ

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

Analytical Data	FAX	Map	Plan	Study
Chain-of-Custody	Figure	(Memo)	Procedure	Telephone Record
Computer Output	Form	Microform	Purchase Request	Transcription
Contract	Interview	Notebook	Receipt Acknowledgment	Video
Controlled Distribution	Letter	Personal Notes	Report	Work Plan
Drawing	Logbook	Photo	Review	Other ____

RECORD CATEGORY: P RECORD PACKAGE #: —
(P for Programmatic or R for Reference)

RECORD FILMED (Y/N): Y RECORD LOCATION: —
(Indicate location of record if not filmed.)

Part II: 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): — LOCATION: —
(Were attachments to this record filmed?) (Indicate location of attachments.)

TECH AREA(S)	ADS NO(S)	WBS NO(S)	STRUCTURE NO(S)/MDA
LIST RELEVANT TECH AREA(S).	LIST RELEVANT ADS NO(S).	LIST RELEVANT WBS NO(S).	LIST RELEVANT STRUCTURE NO(S)/MDA.
TA-33 2	1122 1098	1.5.16 1.5.11	AREA 6

32268

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

PRS NO(S)	DOCUMENT TO	ORIGINATOR NAMES
LIST RELEVANT PRS NO(S).	LIST MULTIPLE RECIPIENTS.	LIST MULTIPLE ORIGINATORS.
—	—	—

CORRECTION (Y/N): — (Is this a correction to a record previously processed?)

CORRECTED #: — (If answer is Yes, please give ER Record # for corrected record.)

CORRECTION DESCRIPTION (Optional): —

SUPERCEDE: — **REPLACE:** — **DELETE:** — **ADD:** — **REVISE:** —

ATTACHMENT LIST

N/A

KEYWORDS: Circle relevant KEYWORDS from the list below for ER Record #: 9734

MISCELLANEOUS (List other indexing criteria as necessary; please write legibly):
OU 1122 HP-1 HP-40 HP-24 - titanium - Zirconium
HP-2 HP-19 HP-63 - tetrachloride - Iron
HP-16 HP-21 HP-25 Blvit - copper - Brass

Abandon
Aboveground Tank
Absorption
Abstract
Accelerator
Access
Accident
Accumulation
Acid
Active
Administrative
ADS (Activity Data Sheet)
Adsorption
AEC (Atomic Energy Commission)
Aerial
Agenda
Agreement
Air
Alpha
Americium
Analysis
Analytical
AOC (Area of Concern)
Approval
Aquifer
ARAR (Applicable, Relevant, or Appropriate Requirements)
Archaeology
Archive
Area
Arsenic
Asbestos
Asphalt
Assessment
Audit

Backfill
Bacteria
Barium
Baseline
BCP (Baseline Change Proposal)
Beds
Bermed Area
Beryllium
Beta
Biology
Blank
Boiler
Boneyard
Bunker
Buried
Burn
Burn Site

Cadmium
Caisson
Calibration
Canyon
Capacitor
Caustic
CEARP (Comprehensive Environmental Assessment and Response Program)
Cement
CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)
Certification
Cesium
Chain of Custody
Chamber
Change Control
Change Order
Charge
Chart
Checklist
Chemical
Chromium
Cleanup
Clearance
Closure
Clothing
CMI/RA (Corrective Measures Implementation/Remedial Action)
CMS/FS (Corrective Measures Study/ Feasibility Study)
Cobalt
Comment
Committee
Community Relations
Compliance
Compressed Gas
Computer Modeling
Computer Output
Concern
Concrete
Concurrence
Configuration
Construction
Container
Containment
Contaminant
Contract
Control
Controlled Distribution
Core
Corrective Action
Correspondence
Criteria
Cyanide

Data
Deadline
Debris
Decision Analysis
Decommission
Decontamination
Deficiency
Deliverable
Demolition
Description
Detection
Detonation
Development
Discharge
Disposal
Documentation
DOE (Department of Energy)
Dose
DQO (Data Quality Objectives)
Draft
Drainage
Drainline
Drawing
Drilling
Drop Tower
Drum
Dry Well
Dump
Duplicates

Ecology
Effluent
EIS (Environmental Impact Statement)
Emission
Engineering
Environmental
EPA (Environmental Protection Agency)
Equipment
ERDA (Energy Research and Development Administration)
Erosion
Error
ES&H (Environment, Safety, and Health)
Estimate
Evacuation
Evaluation
Evaporator
Excavation
Exclusion
Exhaust
Experiment
Explosive
Exposure
Extension
Extraction

Facility
Fallout
Farm
FAX
Fence
Field
Figure
Filter
FIMAD (Facility for Information Management, Analysis, and Display)
Finding
Fire
Firing Site
Fiscal
Fission
Five-Year Plan
Flow
Flow chart
Fluid
Form
Framework
Free
Fuel
Fume

Gamma
Gas
Generation
Generic
Geochemistry
Geology
Geophysics
Glass Beaker
Glove Box
Graph
Guidance
Gun

Handling
Hazardous
Health
HE (High Explosive)
History
Hole
Home Owner
Hood
HSWA (Hazardous and Solid Waste Amendments)
Hydrology
Hygiene

Impact
Implementation
Implosion
Impoundment
Inactive
Incident
Incinerator
Industrial
Infiltration
Injection Well
Injury
Inorganic
Inspection
Installation
Interim
Interim Action
Internal
Interview
Inventory
Investigation
IRM (Interim Remedial Measure)
Isotope
IWP (Installation Work Plan)

Lab Job
Laboratory
Lagoon
Land
Landfill
Laundry
Leach
Lead
Leak
Legal

Letter
Limit
Lines
Liquid
List
Log
Logbook

Magazine
Management
Manhole
Map
Material
MDA (Material Disposal Area)
Media
Meeting
Memo
Mercury
Metal
Microform
Minimization
Minutes
MIS (Management Information System)
Mixed Waste
MOA (Memo of Agreement)
Model
Modification
Money (Allocation, Appropriation, Budget, Cost, Funding, etc.)
Monitoring
Monthly Report
Mortar Impact Area
MOU (Memo of Understanding)
MSA (Major System Acquisition)

NEPA (National Environmental Policy Act)
NFA (No Further Action)
Nitrate
NMED (New Mexico Environment Department)
NMEID (New Mexico Environmental Improvement Division)
NOD (Notice of Deficiency)
Nonexplosive
Notebook
Notification
NPDES (National Pollutant Discharge Elimination System)
NRC (Nuclear Regulatory Commission)
Nuclear

Observation
Off-gas
Oil
Open
Open Burning
Operation
Order
Organic
Organization
OSHA (Occupational Safety & Health Administration)
OU (Operable Unit)
Outfall
Outline

Pad
PA/RFA (Preliminary Assessment /RCRA Facility Assessment)
PCB (Polychlorinated Biphenyl)
Permit
Personal Notes
Personnel
Personnel Qualification
Photo
Pilot Study
Pipe
Pit
Plan
Plant
Plutonium
Pollution
Polonium
Polaroid
Potential
Presentation
Prevention
Priority
Procedure
Program
Programmatic
Project
Project Leader
Propellant
Property
Proposal
Protection
Protocol
PRS (Potential Release Site)
Public
Pump
Purchase Request

Quality
QA (Quality Assurance)
QP (Quality Procedure)
Quarterly Report

Radioactive
Radiochemistry
Radionuclide
Radium
Rationale
RCRA (Resource, Conservation, and Recovery Act)
Reactor
Receipt Acknowledgment
Recommendation
Reconnaissance
Records
Recovery
Recycle
Reduction
Reference
Regulation
Release
Remediation
Removal
Report
Request
Requirements
Research
Resin Bed
Resolution
Resource
Respirator
Response
Restoration
Restriction
Results
Review
Revision
RFI/RI (RCRA Facility Investigation/Remedial Investigation)
Risk
RPF (Records-Processing Facility)

Safety
Salamander
Salvage
Sample
Sampling Plan
Sanitary
Satellite
Schedule
Scope
Scrap
Scrap Detonation Site
Screening
Scrubber
Search
Security
Seep
Seminar
Semivolatile
Septic
Sewer
Shaft
Sheet
Shell
Shot
Silver
Site
Sludge
Soil
Solid
Solvent
SOP (Standard Operating Procedure)
SOW (Statement of Scope of Work)
Specific
Spill
Stack
Standard
Statistics
Steamline
Steel
Storage
Strontium
Structure
Study
Subcontractor
Subsurface
Summary
Sump
Support
Surface
Surveillance
Survey
Swipe
SWMU (Solid Waste Management Unit)
System

Table
Tank
Task
TCLP (Toxicity Characteristic Leaching Procedure)
TDD (Technical Document Description)
Technical
Technical Team
Technology
Telephone Record
Test Area
Testing
TLD (Thermoluminescent Dosimeter)
TOC (Table of Contents)
Townsite
Toxic
Tracking
Training
Transcription
Transfer
Transformer
Transport
Treatment
Trench
Trip Report
Tritium
TRU (Transuranic)
TSCA (Toxic Substances Control Act)
Tuballoy
Tuff

Underground
Uranium
Urine
USGS (United States Geological Survey)
UST (Underground Storage Tank)
Utility

Validation
Variance
VE (Value Engineering)
Ventilation
Verification
Video
Volatile
Volume

Warehouse
Waste
Water
WBS (Work Breakdown Structure)
Weapon
Well
Work
Working Group

Zinc

02-022

Los Alamos

Los Alamos National Laboratory
Los Alamos, New Mexico 87545

(3)

memorandum

TO: File

DATE: September 17, 1991

FROM: Dorothy Hoard, CLS-1

MAIL STOP/TELEPHONE: G740/7-9624

SYMBOL: CLS-1/91-304-DH

SUBJECT: **CONVERSATIONS WITH HARLOW RUSS**

☐ UNCLASSIFIED
☐ CONFIDENTIAL
☐ SECRET ☐ RD
☐ FRD
☐ NSI
Date 9/30/92
CS-6

TA-33, December 14, 1990
Dorothy Hoard, Keith Dowler

Harlow Russ accompanied Keith Dowler and Dorothy Hoard to TA-33 on the afternoon of December 14, 1990. The tour included Area 6, South Site, and East site. The focus of the tour centered on waste management practices. However, Russ covered a broad range of topics of interest. Russ joined the lab in 1944. He joined W-3 and served as Deputy Group Leader under Don MacMillan and John Dougherty from 1949 until the group disbanded in 1973. W-3 had firing sites at military installations throughout the United States. Russ participated in activities at all these sites, including the four at TA-33. In addition, he was involved in related work at Sandia, the Nevada Test Site and in the South Pacific. W-3 involvement at Trinity Site ended before Russ joined the group.

Group M-3 was the precursor to W-3. Marshall Holloway was group leader following the reorganization of the lab after WW-II. M-3 conducted gun-type shots in Sandia Canyon at about the location of the present firing range. Francis Burch was in charge of both S-Site and the Sandia Canyon operations. The Sandia Canyon shots ended in 1948 when the present truck route was built. Z-Division became Sandia Labs. B Division conducted operations Crossroads; Russ was group Leader of B-6.

GENERAL COMMENTS: Roads were not paved to TA-33 when Russ joined W-3 in 1949. Pavement ended at the Back Gate near S-Site and at White Rock on State Road 4. The AEC paved this entire loop of State Road 4 past TA-33 and Bandelier.

W-3 could not always establish a good electrical ground in Bandelier Tuff, the underlying rock at TA-33. Stray ground currents would occasionally detonate an experiment. Once, a lightning strike in the Jemez Mountains set off a charge. To alleviate the problem, the group dug a 1000-foot well in Ancho Canyon below the entrance to TA-33. A conducting post was put in the well, and the well filled with salt water to establish a good ground for experiments at the site.

Test shots ended in 1973 at TA-33. The group was disbanded and reorganized into GMX at S-Site and WX. Russ is still consultant to these groups. W-3 left TA-33 in the summer of 1973, though the group still retained some responsibilities there. WX operates the tritium facility.

AREA 6: An airgun in HP-16 had screw bolts behind the projectile; these bolts failed at a certain pressure. The projectile was propelled by the sudden exposure to the built-up pressure. Projectiles were fired into a catcher box south of the building. There was a gun mounted to the east of HP-16 in addition to one on the west. Only gun-type shots were fired at Area 6. The initiators contained Be and Po-210; projectiles were of uranium. Some material may still be in the catcher boxes.

The guns were free recoil type that, on recoil, slid along a girder and into a berm behind the gun. The gun barrel was equipped with a cable which could be hooked to a tractor. After the recoil the tractor extracted the gun barrel from the berm. These guns were muzzle loaded. Such a gun provides a quick and easy method for short range firing tests. The firing pad to the west of HP-16 held a turret-type gun with the barrel on a mount. An iron plate approximately one foot thick was bolted to the pad. The plate had overlapping grooves extending the width of the plate. The gun mount slid sideways onto the plate, then was bolted in place. There were once several more catcher boxes near the remaining two boxes south of HP-16. The boxes were filled with sawdust and vermiculite. Lumber facing on the boxes was replaced often after projectiles shattered holes it.

In the cinder cone area was a large caliber gun of four- to five-inch bore. Projectiles were shot into the cinder bank of the cone. The bank has since been dug back about 75 feet more than at the time of use. The guns were routinely contaminated with Po-210. They were quickly sprayed-painted to be readied for the next shot. Eventually the guns were sent back to the Army or the Navy. They had to be cleaned and decontaminated prior to being shipped.

There is a drain outlet northwest of HP-16 that served trailers parked on the pad to the north of the building. One was an assembly trailer, another had a darkroom. In addition to being used on site, these trailers were taken to Trinity Site at times. In the 1960s some solid state physics experiments were conducted in HP-1 and HP-2. Barium, titanium, lead, and zirconium were used in the fabrication of ceramics and single crystals. There are discarded polished minerals on the south side of HP-2. Russ warned that rattlesnakes typically sought shelter under the building in the summer. The work was later moved to the main shops at TA-33.

HP-21: The cutoff saw in HP-21 was used only for experiments, not for sectioning projectiles. That work was done in the cutoff shack HP-40. Part of HP-21 was reinforced concrete; part was wood, for easy disposal if it became contaminated. The structure was not intended for plutonium work. The Pu spill involved a pressurized can of Pu that blew up before it was supposed to. Russ was talking on the phone in the concrete

section of the building. A colleague dashed in and pulled him from the building, leaving the phone dangling off the hook. They rushed to the shower at HP-19. Russ' suit was contaminated, so had to be destroyed. The Health Protection monitors could track his radioactive footprints between the two buildings.

HP-22 MAGAZINE AND HP-23 TRIM BUILDING: The magazine held a few charges of bulk gun propellant. The charges were handled in the Trim Building, which has a marble floor to minimize static. After the operation, the floor was washed with a water spray that discharged to the sump.

These propellants were so-called double based, and were procured from military installations. Some charges came from the Navy powder factory at Indian Head, Maryland, which had the capability of making custom experimental formulations. The propellant came in long strings (like spaghetti). The buyer could specify the diameter. Each rod had holes drilled lengthwise down the tube. This increased the surface for burning. Very narrow propellant rods were solid.

The charge was cut to size and put in a silk bag to be carried to the firing site. Raw silk was used because it does not hold a spark. Charges could be set off rapidly one after the other without danger of early detonation due to a spark on some material remaining in the barrel. Any metal tools used were made of beryllium-copper alloy, which doesn't spark.

Black powder, packaged as a "Red Patch" cap, was sewn on the back of the silk bag as an igniter. Some red patches were sewn on with a sewing machine; some had lace holes and were threaded on like shoelaces. Mostly they bought the silk bags with the red patch already attached. After the propellant was put in the bag and the red patch attached, two men carried the charge to the firing site. During moving operations, all personnel were cleared from the area. (Propellants are not explosive; they generate gas to propel the projectile.)

SOUTH SITE: There was a 6.5-inch gun in the HP-25 Gun Building. It was controlled from the HP-24 Control Building. The gun fired into the HP-63 berm. At the edge of the road was another gun that fired into a catcher box near the east door of HP-25.
Timbers from this box are still in place. About two years ago, Russ found a projectile south of the road near HP-25. Though he reported it, the projectile may still be there. Northeast of HP-25 was the so-called blivit area. Tritium reservoirs were filled to high pressures with tritium gas at Omega Site in Los Alamos Canyon. Since they were capable of blowing up, leaking reservoirs were brought here to discharge their gas contents. A fence and warning sign were put up for the protection of personnel. A "blivit" is defined as a container leaking radioactive contents.

Several dozen small implosion shots were detonated at the HP-26 X-Unit Vault firing pad. The device was often contained in a steel assembly, which was then contained in a copper can to prevent stray ground currents from igniting the shots. A wooden shack was built around the entire assembly. The shots contained uranium with tungsten, tungsten carbide, nickel and copper parts. Beryllium, beryllium oxide, and beryllium nitride were also present. Beryllium and tungsten were strategic material, so were reclaimed and sent away for recovery. The shots were surrounded with scintillation fluid in carbon tetrachloride. The fluid burned. The shrapnel scattered about the area is mostly copper and aluminium from these shots. (Joe Roybal, now stationed in CMR, was a laborer at TA-33 during clearing of an area near this shot pad. He said the tree trunks were so full of shrapnel that the crew ruined three chainsaws trying to cut them down. They finally brought in a bulldozer and chained the trees.)

The railgun HP-144 was used only for a short period. It pointed downhill and shot into a sand pit. It was fired electrically.

Russ was in charge of the Tower shots. These were gun-type shots for a "super." The two top floors of the tower were used in the Pacific. Explosions destroyed the tower.

Chamber #3 HP-29 at MDA-E was designed for a 30-pound explosive charge. The device was placed in the center of the chamber. Chambers contained HE, Po-210, and Be, but no uranium. The elevator shaft was filled with sand prior to detonation. The bottom of the chamber was 50 feet below grade. There was no dirt covering over the top of the chamber. Also at MDA-E was a trench where they threw tungsten material until enough accumulated to be sent away for recovery. Russ thinks there may still be projectiles buried at MDA-E.

There were three guns in the berm area at SOUTH SITE. The gun at the entrance shot across the road into the berm. There was a catcher box at the berm. A slide mount gun within the horseshoe area fired at the rockcut bank. They were testing penetrating devices. W-3 also fired at homogeneous iron plates from 10" to two feet thick. The projectiles went right through the plate. They made nice round holes.

Old lumber from the catcher boxes was burned at the Burning Pit. They stacked up the lumber until a good pile accumulated. The fire department supervised the actual burning and hosed down the area when the job was done. Very little debris was left.

EAST SITE: The firing sites at Old Hot Point were built for implosion studies, but none were fired there. They used the HP-89 X-Unit vault for other things. There is a tunnel leading from the Control Building HP-87 to the Instrumentation Room HP-88, located between the two berms. The tunnel is big enough for a person to walk through. It is accessed through manholes along the firing site between Shot Pad HP-135 and X-Ray Shack HP-151. They ran cables for the bevatron housed in HP-151.

The iron berm box west of HP-151 functioned to catch stray bullets.

At the easternmost point overlooking White Rock Canyon, W-3 built a shack which they reinforced with sand bags and steel plates. During shots they stationed a man in the shack to watch for projectiles that jumped catcher boxes HP-118 and HP-136 and flew into the canyon. There were quite a few. Some contained plutonium or U-233. The Safety Group searched the canyons on foot with detectors. Russ feels they recovered all the wayward projectiles.

"Breakup" shots were fired on Shot Pads HP-97 and -98. They were designed to fragment in the air. Shrapnel was scattered over the berms. W-3 recovered the large pieces to cut open and analyze. The "Breakup" projectiles had test instrumentation incorporated within the body. Parts contained depleted uranium, Po-210, beryllium, iron, steel, copper, and brass. Fragments may still be buried in the berms.

One time at East Site a plug got stuck in one of the guns. The gun weighed about 1.5 tons; the plug weigh about 500 pounds. When personnel could not extract the plug, they put a charge of explosives in the gun and blew the plug out. All vehicles were shielded behind a berm, except the rear fender of one truck. That truck was demolished by the shot.

There were several other firing sites at EAST SITE. Three were to the south of Control Building HP-87; the catcher boxes were on the ridge west of the present trailer tower HP-166. There was a firing site for a 155-mm gun north of the road near the elevator storage site HP-3. Projectiles were fired three-eights of a mile across a low draw into a shack filled with sawdust and vermiculite. They entered through a three-foot hole. This site was used for light projectiles. Firing cables went from the HP-87 Control Building to the firing pad. Neutron detectors were the same photomultiplier-oscilloscope type as used at SOUTH SITE. Film was developed in the darkroom at HP-87. Hughes Aircraft built the system for five million dollars.

During the Vietnam War, TA-33 was used to test sonic devices designed to detect approaching mortar shells. Test mortars were fired at SOUTH Site toward EAST Site.
Often shells went into Ancho Canyon. Most were recovered. The sonic devices worked well at TA-33, but not in Vietnam. Under wartime conditions, projectiles came from all directions and the instruments became confused.

POSTSCRIPT: It was cold at TA-33 and the wind blew fearfully. Still, it was a GREAT tour!