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Total Radionuclide Inventory Associated with Underground Nuclear Tests Conducted at the Nevada Test Site, 1955-1992 (U)

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ABSTRACT (U)

An inventory of radionuclides produced by underground nuclear testing conducted at the Nevada Test Site (NTS) by the Lawrence Livermore National Laboratory (LLNL) and the Los Alamos National Laboratory (LANL) from 1955 to 1992 includes tritium, fission products, actinides, and activation products. This inventory provides a measure of radioactivity remaining underground at the NTS after nuclear testing. The radionuclide data is reported for each individual nuclear test, gathered into five groups corresponding to geographic regions at NTS: Frenchman Flat, Pahute Mesa Area 19, Pahute Mesa Area 20, Rainier Mesa, and Yucca Flat. The inventory is further organized by total for events fired above and below the static water level in each of the five regions. Curie activities are reported as of January 1, 1994, and January 1, 2094. This report also synthesizes the sources and methods used in calculating the reported inventory. This inventory does not represent the total radioactivity dissolved or potentially dissolved in the groundwater beneath the Nevada Test Site, but is strictly a compilation of the residual radionuclide inventory remaining from those underground nuclear tests conducted by LLNL and LANL from 1955 to 1992. The written report is companion to a personal computer based electronic database resident in the Nuclear Chemistry Division of the Lawrence Livermore National Laboratory and the Chemical Science and Technology Division of the Los Alamos National Laboratory. This database tabulates radionuclide totals, primary and secondary weapon data, yield, cavity radius, working point lithology, static water level, hole name and firing data for each event. This work has been sponsored by the U.S. Department of Energy, Nevada Operations Office, Environmental Restoration Division.

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INTRODUCTION

This report provides an inventory of radionuclides residual from all underground nuclear tests conducted at the Nevada Test Site (NTS), Nye County, Nevada. The radionuclide inventory is part of a larger effort sponsored by the U.S. Department of Energy to comprehensively investigate the distribution and potential migration of these radionuclides in ground waters at the Nevada Test Site. Ultimately the assessment of risk for receptors down gradient from testing centers requires an accurate quantitative measure of potential contaminant species. Since 1955, the United States government has conducted more than 800 underground nuclear tests at the NTS; these tests supported a program of strategic nuclear deterrence that defined national defense policy during the four decades from 1950 to 1990. The tests were sponsored by the U.S. Atomic Energy Commission from 1950 to 1960 and its successor agencies, the U.S. Energy Research and Development Agency from 1970 to 1980, and the U.S. Department of Energy from 1980 to 1992. The Los Alamos National Laboratory (LANL), the Lawrence Livermore National Laboratory (LLNL), and the Department of Defense/Defense Nuclear Agency with support from the national laboratories, conducted specific test series for the U.S. government. In addition, a number of tests were conducted cooperatively on behalf of the United Kingdom. Objectives of the nuclear test program included insuring operational readiness of stockpiled nuclear weapons, executing proof-of-principle experiments driven by design requirements and studying the effects of enhanced radiation fields produced during nuclear explosions. Individual test schedules varied year to year and are summarized in Figure 1. From 1958 to 1961, nuclear testing was suspended by a voluntary international moratorium; in October 1992 a second voluntary testing moratorium was adopted by the U.S. government and has remained in effect to the present.

THE NEVADA TEST SITE

The Nevada Test Site is situated approximately 105 kilometers (65 miles) northwest of Las Vegas and comprises approximately 3500 square kilometers of north-south tending mountain ranges and mesas separated by broad alluvial basins typical of the Basin and Range physiographic province throughout much of Nevada, Arizona, and Utah. On the basis of its remote setting, favorable year-round weather, restricted access and prevailing wind patterns, the Nevada Proving Grounds -- forerunner to the Nevada Test Site -- was established in January 1951 as a continental proving ground for atmospheric nuclear tests. In 1955, the first underground nuclear test was fielded at the Nevada Test Site and since July 1962, all nuclear tests have been conducted underground. As a location for extensive underground nuclear testing, the NTS is further distinguished by extreme depths (>600 meters) to slow moving ground water (1 to 100 meters/year), a lack of surface water and an extremely arid climate (23 centimeters annual precipitation on the mountains at an elevation of 2,000 meters above mean sea level and 15 centimeters on the basin floors at an elevation of 1200 meters above mean sea level). Since 1962, the NTS has been managed the Department of Energy's (formerly the Atomic Energy Commission's) Nevada Operations Office (DOE/NV). Ground water characterization and remediation at the Nevada Test Site are presently administered by the Environmental Restoration Division of DOE/NV.

THE RADIONUCLIDE SOURCE TERM

The potential for the contamination of ground water beneath the Nevada Test Site by nuclear testing has long been recognized. Over the past two decades, specific topical studies of radiological contamination of soil and ground water, notably those conducted by the Radionuclide Migration Program (presently the Hydrologic Resources Management Program), complemented the nuclear test program. In 1987, DOE/NV determined that characterization and remediation of NTS sites impacted by nuclear test activities would comply with Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requirements. As a part of CERCLA-driven strategy

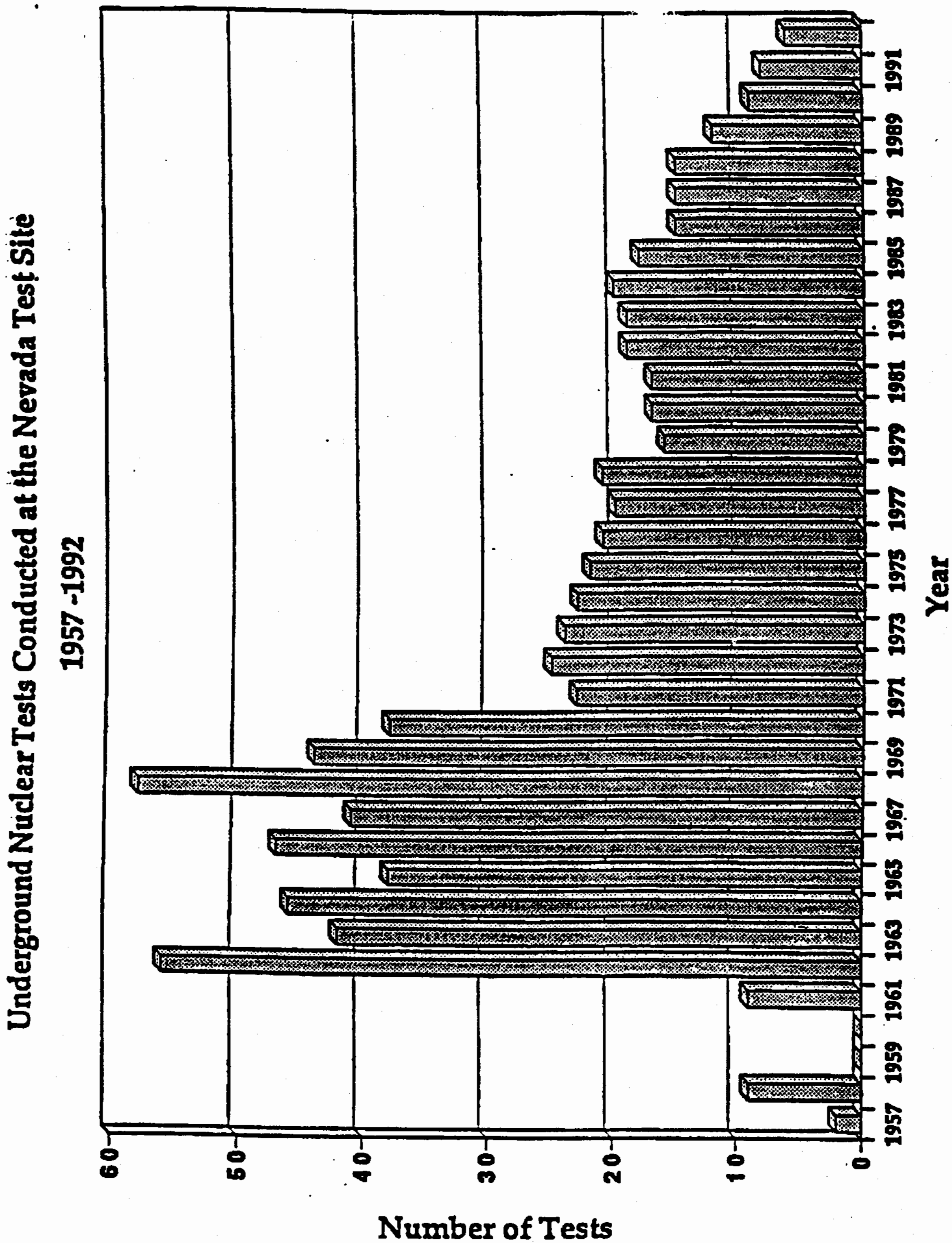

Figure 1: A histogram showing the number of underground nuclear tests conducted by year at the Nevada Test Site

to address potential contamination at the Nevada Test Site, DOE/NV designated the Underground Test Area (UGTA) Operable Unit to manage technical studies of ground water impacted by underground testing. An early priority of the UGTA Operable Unit included an accurate measure of the total radiological inventory present at the Nevada Test Site. Before the potential for radionuclide transport by ground water is assessed with certainty, the quantity of existing contaminants requires accurate determination. Similarly, risk assessment developed for human health and the environment requires a reliable measure of radionuclides available for potential transport by ground water to down-gradient receptors. The radionuclide inventory includes all long-lived radioactive species produced by or remaining after underground nuclear explosions at the Nevada Test Site during the period 1955 to 1992. As such, the inventory represents a starting point for radionuclides available for potential dispersal away from test centers and provides an upper limit on the quantity of radionuclides underground at NTS. Not all radionuclides are equally available for transport. A necessary distinction must be drawn between the radionuclide source term that includes all radioactive material remaining after a nuclear test and the hydrologic source term that includes only those radionuclides dissolved in and/or transported by ground water. The radionuclide inventory reported here does not represent the amount of radioactivity that is or ever will be dissolved in ground water at the NTS. The hydrologic source term is considerably less than the total radionuclide source term. This report presents the results of the latter in a classified format combining radiochemical inventories compiled for underground nuclear tests conducted by the Los Alamos and Lawrence Livermore National Laboratories as well as national laboratory experiments supporting the Department of Defense. A companion unclassified report (Bowen, *et al.*, 1994) has also been prepared with more general summary information about the source term.

UNDERGROUND NUCLEAR TESTING

As an aid to understanding the radionuclide source term, a review of the execution of underground nuclear tests and the phenomenology associated with nuclear explosions will be presented. For the purposes of this report, underground nuclear tests may be considered as any tests involving fissionable nuclear material that has been emplaced underground prior to detonation. The yield -- or the amount of explosive energy released from a nuclear weapon -- is typically measured in TNT equivalent. Yields for NTS underground nuclear experiments at NTS range from <1 kiloton to >1 megaton.

Underground nuclear testing practice has evolved considerably since the first 1955 underground experiment detonated in a 65 foot deep hole. The Rainier event of September 1957 was the first nuclear test contained completely underground and was designed to prevent the release of radioactivity as well as to determine whether diagnostic information could be obtained from an underground nuclear test. In 1963, the United States signed the Limited Test Ban Treaty prohibiting nuclear testing other than underground. Containment scenarios largely eliminated venting of radioactive debris to the atmosphere; experience gained through 1992 allowed containment to minimize the accidental release of radioactive gas to the surface without compromising device performance or event diagnostics.

A brief introduction to underground testing is valuable to place the radionuclide source term in context. Interested readers are referred to a comprehensive discussion of the containment of underground nuclear explosions written by the Office of Technology Assessment (1989). Containment relies on the physical properties of surrounding geologic media including rock elastic strength and porosity, the depth of burial of the device to be exploded, and impermeable seals and backfill, known as stemming, which prevent gas release out of the emplacement hole. The majority of underground tests are generically classified as either vertical shaft tests or horizontal tunnel tests. More than 90% of the underground tests were fired in vertical shafts several thousand feet below ground surface. Shaft experiments were fielded primarily to test stockpiled weapons or design features in new weapons systems. NTS vertical shaft tests were conducted predominantly on Yucca Flat (Areas 8, 10, 2, 9, 4, 1, 7, 3 and 6) and Frenchman Flat (Area 5 and 11) for lower yield experiments and on Pahute Mesa (Areas 19 and 20) for higher yield experiments. Approximately 30% of the shaft tests were fired beneath the static water level (water table). Generally, tests conducted on Yucca Flat were buried at depths of approximately 600 meters or less; higher yield experiments might be buried at depths exceeding 1200 meters on Pahute Mesa. Horizontal tunnel tests occurred within tunnel complexes excavated in Rainier and Aqueduct Mesas (Area 12) and were designed to determine the effects of prompt radiation produced from nuclear explosions on military hardware. [redacted] Tunnel tests were fired within zones of discontinuously perched ground water beneath the Rainier and Aqueduct Mesas. Figure 2 is a map of the Nevada Test Site showing the locations of underground nuclear tests announced prior to December 1993. Over 200 previously unannounced tests were declassified by the Department of Energy in December 1993 and are omitted on Figure 2.

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NUCLEAR EXPLOSION PHENOMENOLOGY

A brief discussion of phenomenology is warranted in the context of the evolution of the radionuclide source term. The following builds on the summaries provided by the Office of Technology Assessment (OTA) (1989) and those compiled by Glasstone and Dolan (1977). The sequence of events following a nuclear explosion is illustrated in Figure 3. At firing (zero) time pressures within the weapons case can exceed several million pounds per square inch and temperatures may be as high as 10^8 degrees Kelvin. A shock wave radiates away from ground zero. Hydrodynamic calculations indicate the shock wave vaporizes 70 metric tons and melts 700 metric tons of rock for each kiloton of explosive yield. Milliseconds after detonation, the weapons case, rack and geologic media immediately surrounding the device are vaporized and a cavity forms in response to gas pressure and the explosive energy imparted to the surrounding rock. For events fired at or below the water table, all standing water near the working point is also vaporized. As the gas continues to expand adiabatically, the cavity grows (approximately) spherically for a few tenths of a second until the gas pressure drops to below the ambient lithostatic pressure; at this point the cavity has reached its maximum radius and volume. Scaling laws based on empirical studies relate cavity radius to explosive yield (see Glasstone and Dolan, 1977 and OTA, 1989).

During the period of cavity growth, the vaporized material, consisting largely of volatilized silicate phases, condenses as it cools and mixes with molten rock that lines the circumference of the cavity. For a contained explosion, the melt flows down the walls and begins to coalesce in a puddle on the cavity bottom. The shock waves propagate outward away from the cavity forming a radius of fractured rock that extends approximately three times that of the spherical cavity; the shock wave loses energy until the surrounding rock is no longer crushed but is merely elastically compressed. After several seconds, the molten rock begins to collect and solidify on the floor of the cavity. At this time, condensable gases change phase and cavity pressure drops. Within minutes to days, the gas pressure in the cavity diminishes to the point where cavity can no longer support the weight of the overlying rock. The cavity collapses in on itself, often with blocks of rock chaotically incorporated in the still partially molten melt glass. As blocks of rock fill the cavity void, the process is perpetuated upwards as the rubble continues to fall downwards. This process creates a rubble chimney that propagates upwards from the working point until the void volume in the chimney is completely filled with rubble debris and the strength of the overlying rocks can support the overburden, or until the chimney reaches the surface and creates a subsidence crater. Typically the collapse and chimney formation occur within a few hours of zero time, but it may occur as late as a few days or months after the explosion. For events fired at or below the water table, hydrologic heads immediately perturbed by the displacement of water during the explosion will begin to return to original preshot static water levels within days to years, depending on adjacent

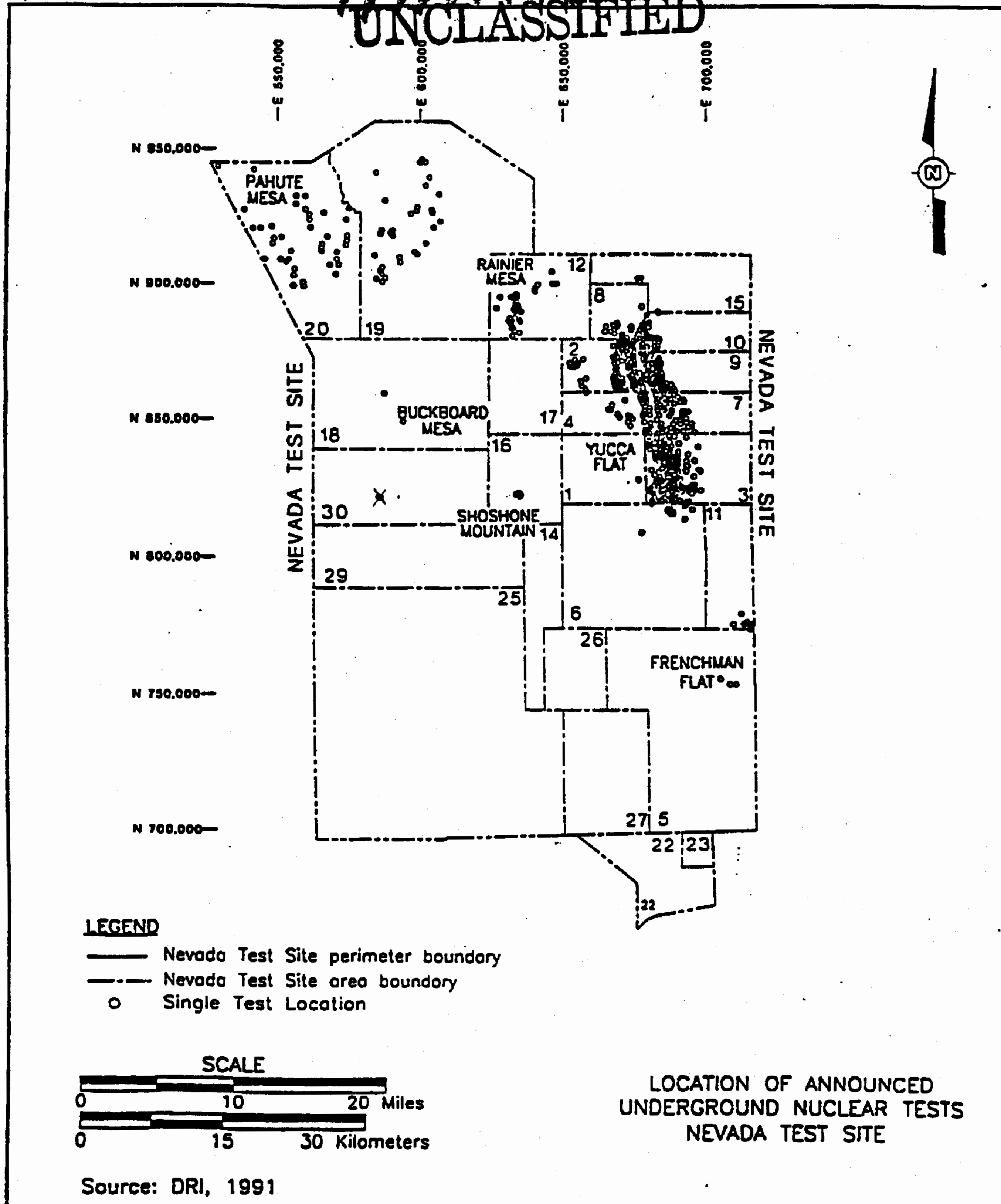

Figure 2: Map of the Nevada Test Site showing the locations of underground nuclear tests announced prior to December 1993. Over 200 previously unannounced tests were declassified by the Department of Energy in December 1993 and are omitted from this figure.

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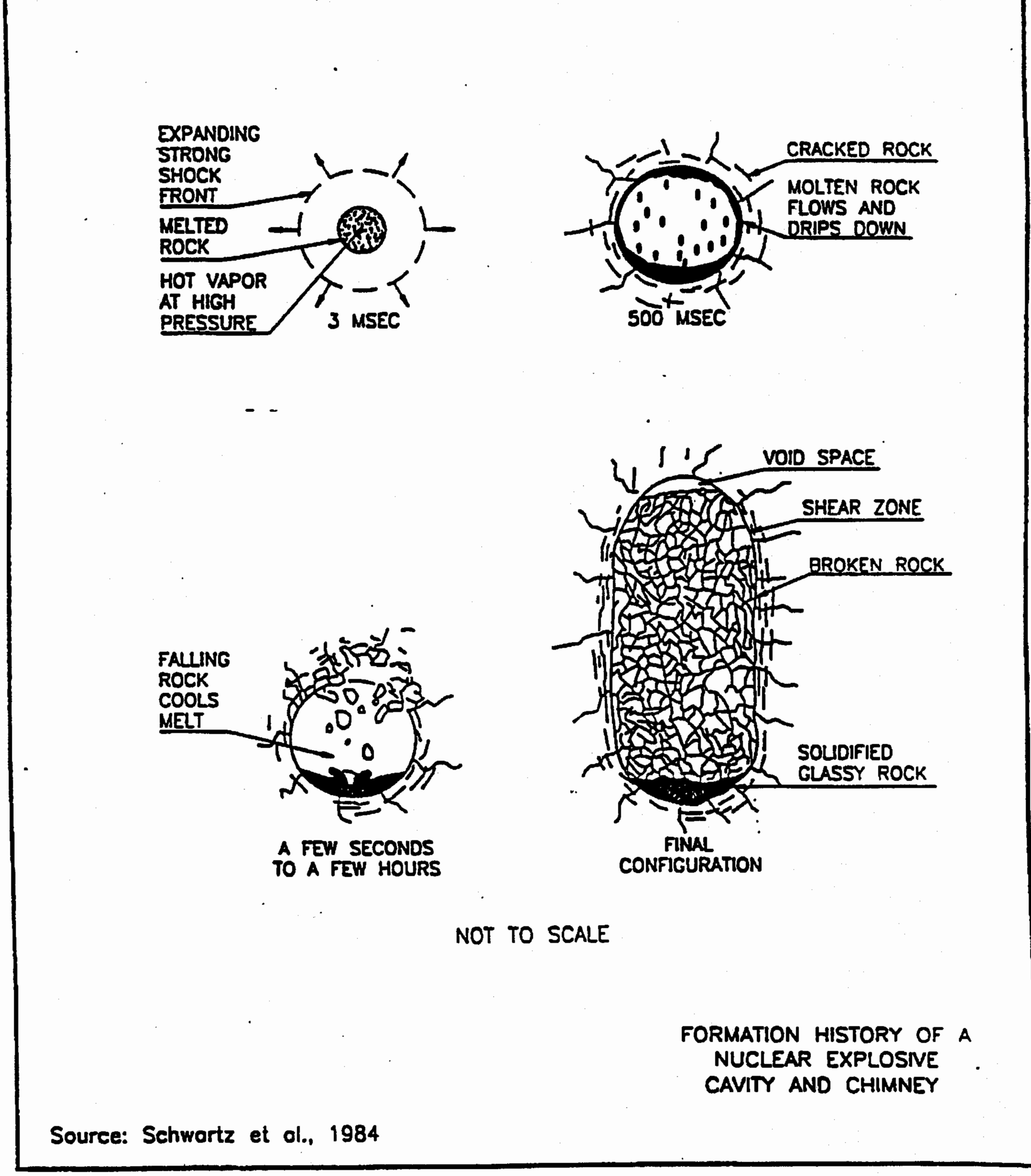

Figure 3: Idealized formation history of an underground nuclear explosion in siliceous rock. Stages are in elapsed time from detonation.

hydrologic conductivities.

DISTRIBUTION OF RADIONUCLIDES

Phenomenology strongly influences the distribution of radionuclides within the cavity-chimney complex (Borg *et al.*, 1976). Immediately after a nuclear explosion, all of the radioactive species exist as gasses. As the cavity ceases to expand, heat is transferred to the wall rock and the cavity temperature and pressure begins to drop. The melt that flows to the floor of the cavity entrains the refractory radionuclides with higher boiling points (rare earth elements, alkaline earths, Zr and Pu). Most of these refractory species are trapped in the cooling melt; a small proportion is incorporated with the collapsed chimney rubble as splash or fine droplets entrained with escaping cavity glasses. Volatile species with lower boiling points (tritium, alkalis, Ru, U, Sb, Cl, I) circulate up cracks in the rubble chimney. Activation products are concentrated around the working point and will be largely incorporated in the melt or debris that borders the cavity. Volatile species, particularly ^{90}Kr and ^{137}Xe, are transported as gasses through the rubble and will be concentrated higher in the cavity and in the chimney relative to the refractory radionuclides. Drillback samples systematically exhibit higher volatile to refractory radionuclide ratios (Cs/Eu) for returns collected higher in the cavity and chimney. In addition, recent studies of nuclear tests fired above the water table indicate that material may be transported by prompt injection through explosion induced fractures arranged radially away from ground zero. By this mechanism, gaseous species, particularly tritium and ^{137}Cs (^{137}Cs has a gaseous ^{137}Xe precursor with a 3.8 minute half-life), may be deposited several cavity radii away from the working point. There is some evidence that refractory species may be similarly transported by prompt injection (Thompson and Gilmore, 1991).

Ultimately, the amounts and types of radionuclides resulting from a specific nuclear explosion will depend on the amount of fissile material, the fission/fusion ratio and the device yield. On an event-by-event basis, these data are classified. The present report attempts to quantify the abundance of these residual radionuclide species for five geographic test centers at the Nevada Test Site.

RADIONUCLIDE INCLUSION CRITERIA

Radionuclides to be considered for inclusion in the source term inventory are: 1) Residual fissile fuel and tracer materials, such as U isotopes, Pu isotopes, Am, and ^{244}Cm; 2) Fission products such as ^{137}Cs and ^{90}Sr, and other products of fuel burn; 3) tritium (^{3}H); 4) Activities induced by neutrons in device parts, in external hardware, and in the surrounding geologic medium (such as ^{14}C, ^{36}Cl, and ^{41}Ca). Not all of the radionuclides produced during a nuclear test are worth including in the source term inventory. Many of the nuclides have half-lives so short (microseconds to hours) that they decay to undetectable levels soon after the event. Other nuclides are produced in such low initial abundance that they never exceed levels deemed unsafe or non-permissible by regulatory agencies. Criteria were developed to exclude such unimportant nuclides from the inventory; this permits the user to focus attention on the nuclides of interest from a risk assessment point of view. Excluded were nuclides produced in such low amounts that if *all* of the amount produced during a nuclear test were dissolved into a volume of water equal to the volume of the detonation cavity for the event, 100 years from now the resulting aqueous concentration (activity) in µCi/mL (one µCi = 2.22×10^{6} disintegrations per minute) would be less than one-tenth of the values for the maximum permissible concentrations (MPC's) proposed for drinking water by the Environmental Protection Agency in the Federal Register (1991). This effectively excludes almost all radionuclides with half-lives less than ten years. However, if a radionuclide exceeded these criteria for at least one event it was included for all other events for which estimates are available even if concentrations were below the 0.1 MPC criterion. The MPC of a nuclide listed in this compilation is that concentration in drinking water that will impart a dose of 4 mrem/year to a person drinking an average of 2 liters of water per day. The requirement of 100 years into the future eliminates many nuclides that are produced in great abundance in nuclear detonations, but have half-lives sufficiently short that they will have decayed below the 0.1 MPC value by that time. For nuclides with no listed values, we conservatively assumed a value of 10^{-8} µCi/mL for the MPC. We have compiled the list of nuclides shown in Table I that have half-lives of >10 years (with the exception of ^{154}Eu at 8.6 y) and could be produced in nuclear detonations. Listed values of MPC's were obtained from the Federal Register reference.

The volume element was determined by extracting the cavity radius for each event where it was known and converting this to a volume in cm^3, assuming a spherical cavity. To arrive at a concentration value, we assumed that the radionuclides produced in the event were distributed uniformly throughout the cavity volume as if they were dissolved in a volume of water equal to the cavity volume. For events with very low total yields (<0.1 kiloton), cavity volumes were negligible and the concentration criterion was not invoked.

TABLE I

Candidate Radionuclides for Inclusion into Source-Term Inventory
(MPC values from Federal Register, 1991)

Nuclide	half-life (y)*	MPC (µCi/mL)	main source(s) (FP = fission product)
^{3}H	12.3	6.1×10^{-5}	device comp.; ^{6}Li (n,α) T
^{10}Be	1.6×10^{6}	----	^{10}B (n,p); ^{9}Be (n,γ)
^{14}C	5730	3.2×10^{-6}	^{14}N (n,p); ^{13}C (n,γ); ^{17}O (n,α)
^{26}Al	7.3×10^{5}	----	^{27}Al (n,2n)
^{36}Cl	3.01×10^{5}	1.8×10^{-6}	^{35}Cl (n,γ); ^{39}K (n,α)
^{39}Ar	269	----	^{39}K (n,p); ^{38}Ar(n,γ)
^{41}Ca	1.03×10^{5}	----	^{40}Ca (n,γ)
^{53}Mn	3.7×10^{6}	----	^{54}Fe (n,2n) $^{53}Fe \rightarrow {}^{53}Mn$
^{59}Ni	7.6×10^{4}	2.7×10^{-5}	^{58}Ni (n,γ)
^{63}Ni	100	9.9×10^{-6}	^{62}Ni (n,γ), ^{64}Ni (n,2n), ^{63}Cu (n,p)
^{79}Se	$\leq 6.5 \times 10^{4}$	----	^{78}Se (n,γ); ^{79}Br (n,p)
^{81}Kr	2.1×10^{5}	----	^{80}Kr (n,γ); ^{81}Br (n,p)
^{85}Kr	10.7	----	FP; ^{84}Kr (n,γ)
^{90}Sr	29.1	4.2×10^{-8}	FP
^{93}Zr	1.5×10^{6}	5.1×10^{-6}	FP; ^{92}Zr (n,γ); ^{94}Zr (n,2n)
^{92g}Nb	3.6×10^{7}	----	^{92}Mo (n,p); ^{93}Nb (n,2n)
^{93m}Nb	16.1	1.0×10^{-5}	^{93}Nb (n,n')

^{94}Nb	2.0×10^{4}	7.1×10^{-7}	FP; ^{93}Nb (n,γ)
^{93}Mo	~3500	----	^{92}Mo (n,γ)
^{98}Tc	4.2×10^{6}	----	^{98}Ru (n,p)
^{99g}Tc	2.13×10^{5}	3.8×10^{-6}	FP; ^{99}Ru (n,p)
^{107}Pd	6.5×10^{6}	3.7×10^{-5}	FP; ^{106}Pd (n,γ)
^{113m}Cd	14.1	----	FP
^{121m}Sn	~55	2.3×10^{-6}	FP; ^{120}Sn (n,γ)
^{126}Sn	$\sim 1.0 \times 10^{5}$	2.9×10^{-7}	FP
^{129}I	1.57×10^{7}	2.1×10^{-8}	FP; ^{129}Xe (n,p)
^{135}Cs	2.3×10^{6}	7.9×10^{-7}	FP
^{137}Cs	30.17	1.2×10^{-7}	FP; ^{137}Ba (n,p)
^{146}Sm	1.03×10^{8}	----	FP; ^{147}Sm (n,2n)
^{151}Sm	90	1.4×10^{-5}	FP; ^{150}Sm (n,γ)
^{150}Eu	36	----	^{151}Eu (n,2n)
^{152}Eu	13.48	8.4×10^{-7}	^{151}Eu (n,γ); ^{153}Eu (n,2n)
^{154}Eu	8.59	6.7×10^{-7}	^{153}Eu (n,γ)
^{166m}Ho	1.2×10^{3}	----	FP; ^{165}Ho(n,γ)
^{178m}Hf	31	----	^{177}Hf (n,γ)
^{186m}Re	2.0×10^{5}	----	^{185}Re (n,γ); ^{186}Os (n,p)
^{192m}Ir	$24. \times 10^{1}$	----	^{191}Ir (n,γ); ^{193}Ir (n,2n)
^{193}Pt	60	4.6×10^{-5}	^{192}Pt (n,γ); ^{194}Pt (n,2n)
^{205}Pb	1.5×10^{7}	----	^{204}Pb (n,γ); ^{206}Pb (n,2n)
^{210}Pb	22.3	1.0×10^{-9}	natural (RaA)
^{231}Pa	3.28×10^{4}	1.0×10^{-8}	natural; decay of device ^{235}U; ^{232}Th (n,2n)
^{232}Th	1.40×10^{10}	9.2×10^{-8}	natural and device component
^{232}U	70.	1.0×10^{-8}	device component; ^{233}U (n,2n)
^{233}U	1.592×10^{5}	2.6×10^{-8}	device component; radiochemical tracer
^{234}U	2.46×10^{5}	2.6×10^{-8}	natural and device component
^{235}U	7.04×10^{8}	2.6×10^{-8}	natural and device component
^{236}U	2.342×10^{7}	2.7×10^{-8}	device comp.; ^{235}U (n,g); ^{238}U (n,2n)[2]
^{238}U	4.47×10^{9}	2.6×10^{-8}	natural and device component

^{237}Np	2.14×10^{6}	7.2×10^{-9}	device component; radiochemical tracer; decay of ^{237}U
^{238}Pu	87.7	7.2×10^{-9}	device component; radiochemical tracer; ^{239}Pu (n,2n); ^{237}Np (n,γ)
^{239}Pu	2.410×10^{4}	6.5×10^{-8}	device component; decay of ^{239}U
^{240}Pu	6.56×10^{3}	6.5×10^{-8}	device component; ^{239}Pu (n,γ); decay of ^{240}U
^{241}Pu	14.4	----	device component; ^{240}Pu (n,γ); decay of ^{241}U
^{242}Pu	3.75×10^{5}	6.8×10^{-8}	device component; radiochemical tracer; ^{241}Pu (n,γ); decay of ^{242}U
^{241}Am	432.7	6.4×10^{-9}	device component; radiochemical tracer; decay of ^{241}Pu
^{243}Am	7.37×10^{3}	6.5×10^{-9}	device component; radiochemical tracer
^{244}Cm	18.1	1.0×10^{-8}	radiochemical tracer

* Half-lives obtained from Chart of the Nuclides (1989).

DATA STRUCTURE

The complete underground source-term inventory for the Nevada Test Site combines separate inventories compiled by the Los Alamos and Lawrence Livermore National Laboratories. Each laboratory maintains a unique database for tests fielded, sponsored or supported by its own test organization. By agreement, the Chemical Sciences and Technology Division of Los Alamos National Laboratory and the Nuclear Chemistry Division of Lawrence Livermore National Laboratory will each independently maintain its own inventory but in a common and compatible format. While the present classified document reports on the inventory in detail, it is LANL and LLNL's intention that their respective inventories reside in digital format on databases at both laboratories. The databases will be continually improved through refinements in pre-shot and post-shot data input, error checking and refinements of computational algorithms -- particularly for fission products and tritium. The databases are designed to be "living" files that can be manipulated to serve the requirements of specific investigators. By this definition, LANL and LLNL computer databases, not the present or any supporting document, carry the current and comprehensive radionuclide inventory.

The LANL and LLNL databases reside on Microsoft® Excel spreadsheets that run on the Apple Macintosh computing platform. Computer hard drives incorporate the active databases that are regularly backed-up on high capacity Bernoulli removable or tape-drive storage media. LANL and

LLNL database formats are nearly identical with few exceptions. The database is organized by event name, hole, number, sponsoring laboratory, fire date, yield, depth of burial, cavity radius, depth of cavity bottom above and below the water table, working point geology and event specific radionuclide amounts (reported in curies) for 57 isotopes meeting the above criteria for inclusion. Because the databases compile event-specific nuclear performance data including yield, residual nuclear fuels and thermonuclear and fission products, by necessity they are classified as Secret-Restricted Data. The databases are accessible to investigators holding an active U.S. Department of Energy Q security clearance with a valid "need-to-know."

For the purposes of summary and publication, LANL and LLNL arbitrarily subdivided the inventory into five regions corresponding to geographic test centers at the Nevada Test Site. In addition, the inventory is further subdivided by tests fired above or below the static water level. If the working point depth was below or within one cavity radius of the static water level (SWL), the test was considered to have been below the water-level. Generally, testing areas within a region have similar geologic and hydrologic properties.

TABLE II

Combination of NTS Areas into Regions

NTS region	NTS areas included
Yucca Flat	1, 2, 3, 4, 6, 7, 8, 9, 10, 15, 17
Pahute Mesa - 19	19
Pahute Mesa - 20	20
Frenchman Flat	5, 11*
Rainier Mesa	12, 16, 18, 29, 30

*Frenchman Flat also incorporates a small number of safety shots fired at NTS

The results of this compilation are presented in Tables VII - XX, which list the activities in curies of those radionuclides that meet the selection criteria. The activities are specified at two dates (January 1, 1994, and January 1, 2094) and classified as above or below the static water level (water table). For each radionuclide, aggregate activities are also listed for each of the five NTS regions outlined in Table II. These tables represent the long-lived radionuclide source term for all tests conducted underground at the Nevada Test Site by the Los Alamos National Laboratory, Lawrence Livermore National Laboratory and the Defense Nuclear Agency between 1955 and 1992.

SOURCES OF RADIONUCLIDE DATA

Values for the total inventory of radionuclides were determined in two principal fashions for this compilation: measurements and calculations. Many nuclides have historically been measured from small samples recovered from the underground environment as part of the radiochemical diagnostics effort. These have been those nuclides most related to the diagnostic purposes: fission products, residual fuel species, and radiochemical detector and tracer isotopes. These measurements have also served to establish an understanding of the processes occurring in the underground environment, often reduced to computer codes used in the prediction of the production of nuclides. These codes can then be used to stand in where measurements were not made at the time of the test or where interpretation of the data for total inventory is difficult.

Radiochemical diagnostics depends upon the recovery of a small portion of the debris from the underground nuclear test site. Both Los Alamos and Livermore did this in a similar fashion, distinguished minimally by the criteria and measurements taken in the field by which samples were collected and chosen for further work. Only small portions of the residual materials were recovered. Recovered material was dissolved in strong acids to produce a solution of device material; analysis proceeded to determine atoms of particular nuclides per milliliter (or gram) of this solution. These quantities can be converted into total inventory by dividing by the relative proportion of the device in the sample:

$$\frac{\left(\frac{\text{atoms of nuclide}}{\text{milliliter of solution}}\right)}{\left(\frac{\text{fraction of device}}{\text{milliliter of solution}}\right)} = \text{total inventory of nuclide}$$

As part of the radiochemical diagnostics effort, it has also been necessary to know the inventory of most of the materials going into the test device. Complete inventories of fissile isotopes (limited in early times by measurement techniques) were recorded for essentially all tests. Similarly, most tritium data is also available. Based upon complete suites of measurements, it is possible to establish mathematical relationships (implemented by computer codes) to mimic isotopic changes when measurements were not made:

$$\text{ingoing isotopics} + \text{outcoming isotopics} + \text{performance} \rightarrow \text{systematics}$$

$$\text{ingoing isotopics} + \text{performance} + \text{systematics} \rightarrow \text{outcoming isotopics}$$

A large amount of the information required for this study was available in existing databases maintained by the Nuclear Chemistry Division at LLNL and the Chemical Science and Technology Division at LANL. Other information exists in other databases or in paper form. Information collected in this study has been inserted into EXCEL spreadsheets, with each laboratory responsible for maintaining their contribution, and collated for the summary described here. Table III lists data sources used by our organizations in the present effort.

TABLE III

Data Sources for the NTS Underground Radionuclide Inventory Project

Lawrence Livermore National Laboratory
1. GOSPEL data files (INGRES database)
2. Yield Committee reports and other LLNL Nuclear Design Office reports
3. LLNL Nuclear Chemistry Division reports and data
4. Data books and Test Shot Data reports
5. LLNL A- and B-Division preshot and postshot reports and consultation with design physicists
6. Gas fill reports from the Tritium Group

7. Explosion simulation code calculations

Los Alamos National Laboratory

1. Weapons Radiochemistry Database (INGRES database)
2. Common Event Database Systems (COEDS; INGRES database)
3. LANL radiochemistry reports and data (J, CNC, INC, and CST Divisions, depending upon time period)
4. Minutes of the Weapons Working Group
5. Test Shot Data Sheets
6. Gas fill memoranda
7. Explosion and isotope production code calculations

The GOSPEL database of LLNL's Nuclear Chemistry Division is the latest and most technologically up-to-data archival and retrieval medium for LLNL radiochemical shot data. Data from previous archival systems (OUIJA and PROPHET) have been transferred to GOSPEL. It is based on the INGRES system and contains both preshot and postshot information for events dating back almost to the beginning of underground testing at NTS. Searches of the database can be made for nuclides using different criteria.

Yield Committee reports, if available, provided the official yield quotations for an event sponsored by LLNL. The yield values consisted of the fission, thermonuclear, and ground-capture yields and were based on radiochemical results, prompt-diagnostics physics results, and estimates from explosion code calculations.

Gas-fill reports from the Tritium Group were very important, if available, because of the amount of residual preshot ^3H contained in the fill system. Often, only the preshot ^3H contained in the device parts was included in official reports, and this residual ^3H, which was unconsumed and contributed to the postshot inventory, was not previously considered as important.

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The Weapons Radiochemistry Database and COEDS operate in parallel at LANL, with different ranges of data. The former contributes selected evaluated data to the latter. The Weapons Radiochemistry Database contains pre- and post-shot data from approximately 1975 onwards, including data that has been transferred from a previous FOCAL version. COEDS contains a wide range of specific test data from numerous participating organizations, including emplacement conditions. Both of these databases operate using the INGRES system.

Formal reports were provided by the radiochemistry group at Los Alamos for many of the early underground nuclear tests. These served as principal documentation for those tests not yet in the radiochemistry database. In addition, the Minutes of the Weapons Working Group, a monthly gathering of those participating in the nuclear weapons program, provide another documented source of reported results. A yield committee parallel to that of LLNL does not exist at LANL; the results from radiochemical diagnostics, if available, are taken as the reference value.

The explosion code calculational tools at LLNL and LANL are roughly parallel, but are not identical, due to the independent, peer-review relationship of the laboratories. We have found that they are largely consistent with respect to the isotopics relevant to this report. The isotope production codes are unique to Los Alamos; they are simplified, non-predictive tools that were developed strictly for aid in radiochemical diagnostics.

METHODS OF ESTIMATING POSTSHOT RADIONUCLIDE CONTENT

Postshot radionuclides present underground at the Nevada Test Site can be conveniently grouped into four different categories: fission products, actinide elements, tritium, and activation products/natural materials. Each of these groups requires different methodologies for estimating the postshot quantities of the nuclides. In addition, historical differences in the methods employed by Los Alamos and Livermore in their radiochemical diagnostics efforts lead to slightly different techniques. The following sections describe the methods used in this study.

LLNL published radionuclide inventories from their underground nuclear tests earlier this year (Goishi et al., 1994). Since then LLNL has revised their fission product yield values as well as algorithms for estimating the quantity of postshot radionuclides. This report describes their current set of algorithms. Because of these revisions the data reported here supersede those in the earlier reports.

FISSION PRODUCTS

Most of the fission products of interest to the Underground Test Area Remedial Investigation and Feasibility Study are formed in such low yield or have such long half-lives that they were not measured radiochemically following the tests. In addition, many of these isotopes experience chemical fractionation, or preferential loss from the sampled region, and were of little or no diagnostic value.

For a large number of tests, sufficient high-yield fission products were measured in order to determine the fission yield of the device. Other fission products were also measured to characterize the fission split, the distribution of fissions among the fissile materials and neutron energy. For the remaining tests, sufficient precedent or other diagnostic measurements were available to state the fission yield and split. Thus determined, the fission yields and splits have served as the basis for the calculation of the amounts of the various fission products given in this study.

We have chosen to calculate the postshot amounts from fission yields based on the type of fissile fuel and the neutron energy spectrum. In most cases, these characteristics were available in the documentation associated with each individual test. In other cases, we reasoned by analogy. The neutron energy spectrum is arbitrarily divided into two groups: the "fast" region, where $E_n > 7.5$ MeV, and the "fission spectrum" region, with $E_n < 7.5$ MeV. Each fissile fuel (^{232}Th, ^{233}U, ^{235}U, ^{238}U, and ^{239}Pu) has two yields quoted for each fission product, one for each of these regions. The overall, effective yield of a fission product for each event is the weighted average of the yields from that event's mix of fissions from each fissile fuel and neutron energy spectrum.

For the majority of fission products, the fission yields of England and Rider (1993) were used by both LANL and LLNL. For ^{144}Ce, the values of Barr (1977) were used by LANL, while the values of Nethaway (1985) were used by LLNL for ^{95}Zr, ^{144}Ce and ^{147}Nd. For ^{85}Kr, LLNL used the values currently accepted by the gas diagnostics section of the Nuclear Chemistry Division (Hudson, 1990); LANL used the England and Rider values. Differences among these various sources reflect the different philosophies and best experience of the efforts of the two organizations; in the worst case, differences are less than 8%.

ACTINIDES

Los Alamos' Chemical Science and Technology Division and Livermore's Nuclear Chemistry Division have chosen different but consistent paths in the manner in which they have treated their actinide data. This is in part driven by the available data and in part by the technical biases that developed in their individual histories of weapons radiochemical diagnostics. The methods used for the actinides will be detailed separately in this subsection. In the example section that follows, a side-by-side comparison will be given to illustrate that both approaches reach substantially the same conclusion.

Plutonium, Americium, and Curium

LLNL

For ^{241}Am and most of the plutonium isotopes, we based our determination of the residual amounts of radionuclides from the measurements on actual core samples. We took the measurements of the fission product nuclides ^{95}Zr, ^{144}Ce, and ^{147}Nd from the first six samples taken for radiochemical yield measurement. The fission product yield for each of these nuclides is well known as a function of fissioning species and the neutron energy spectrum; from this, the known total fission yield, and the fraction of fissions occurring in each fissile fuel, we were able to obtain the total production of these fission productions in each event. We could then determine the total amount of each of the actinides in the postshot debris from the average measured ratio of the actinide to each of these three fission products.

The isotopes ^{239}Pu and ^{244}Cm were treated differently. The postshot ^{239}Pu was obtained by subtracting the number of plutonium fissions from the preshot ^{239}Pu and adding in the amount of postshot ^{239}Np. The isotope ^{244}Cm was almost always used as an external tracer so that its destruction was 1 to 2% at most. DOE b(3)

For those events that were not sampled post-test, we used the yields reported by the Yield Committee as a starting point. If the yield was less than 0.1 kilotons (kt), we assumed all postshot actinide isotopes except ^{239}Pu to be the same as the preshot amounts. Preshot amounts were obtained from the Device Engineer's Data Book and, where preshot isotopic measurements were not made, we used the "standard isotopic composition" from the PROPHET Operations Manual. For ^{239}Pu, we used the preshot amount less the amount consumed by fission.

For unmeasured events where the fission yield from plutonium was significant (> 0.1 kt), we used as a model for the residual ^{240,241,242}Pu and ^{241}Am an event with a similar design and similar total and fission yields, with appropriate scaling for differences in yield and preshot composition. The net ^{238}Pu production was assumed to be 0.008 atoms per plutonium fission.

Any ^{238}Pu, ^{242}Pu, ^{241}Am, or ^{244}Cm employed externally as a tracer on unmeasured events was assumed to undergo negligible burnup and to be the same as the preshot amount.

In all cases, we included the ^{239}Np content in the reported postshot ^{239}Pu value. Because the ^{239}Np is the daughter product of 23.5-minute ^{239}U and uranium displays a volatile nature underground when compared to plutonium, the relative amount of the ^{239}U is depleted in our core samples by an average of about 12%. For this reason, the ^{239}Np added to the postshot ^{239}Pu was increased by 12% over the measured postshot amount.

LANL

Measurements from debris samples represented the preferred method for determining postshot inventories of the plutonium isotopes. Data was collected for ^{239}Pu atoms per fission (or atoms per fission product atom) and for isotopic ratios (for example, $^{238/239}Pu$). The ^{239}Pu/fission ratio was then multiplied by total fissions for the device, as determined from total fission yield and fission split, yielding total ^{239}Pu atoms. (In the case of atoms per fission product atom, the additional step of converting fission product atoms to fissions was likewise done.) Ratios were then applied for other plutonium isotopes.

Calculation provided the backup method for direct interpretation of measurements. Our plutonium isotope production code, a tool that has been developed to model the isotopic changes occurring as a result of the nuclear explosion, was exercised to provide algorithms that expressed isotopic changes as a function of specific yield (kilotons per kilogram of Pu). Ingoing isotopics were collected from our documentation; in instances where these measurements were not made, canonical values were used. The algorithms were then implemented based on the known performance of the device. This resulted in a suite of data comparable to that which was measured.

For ^{241}Am and its reaction products $^{242m,242g}Am$ and ^{242}Cm, measurements from debris samples were available, especially in recent years. However, it is the assertion of Los Alamos that these species are volatile in the underground environment. We therefore have chosen to use the calculational route for estimation of the quantities of these isotopes. Algorithms based on the plutonium isotope production code were combined with preshot measurements or estimates of ^{241}Am content (a canonical 300 ppm in the primary plutonium) to produce postshot values. Decay of the short-lived species ^{242g}Am and ^{242}Cm down the appropriate decay chains was performed to the 1994 and 2094 values.

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Plutonium-242 and ^{233}U were used as tracers in most latter-day LANL tests. In addition, ^{243}Am and ^{244}Cm were used as tracers in a few Los Alamos tests. Given that in most cases these tracer packages were external to the devices and were shielded from neutron exposure, their postshot amounts were taken as the preshot values.

Uranium

The device debris from an underground explosion is mixed with a large amount of the surrounding medium, and that medium contains a significant amount of natural uranium. In addition, uranium in the underground nuclear explosion environment displays preferential loss (volatility) with respect to the refractory plutonium in the samples taken for diagnostic purposes. For these reasons, we could not use "raw" (uncorrected) postshot measurements to determine the residual device uranium in our samples. Therefore, both laboratories routinely used algorithmic methods to estimate the postshot amount of the various uranium isotopes.

LLNL

The algorithms for ^{234}U, ^{235}U, and ^{238}U shown below resulted from a study of explosion simulation calculations for twelve different uranium-containing devices.

^{232}U: The production of ^{232}U from ^{233}U fuel or tracer was actually measured on eight events. The production from three other events with ^{233}U fuel was estimated by assuming that the conversion of ^{233}U to ^{232}U was equal to the production of ^{234}U from ^{235}U at the same fission efficiency. For ^{232}U production in ^{235}U-enriched and depleted uranium, an approximate adaptation of the LANL algorithms for such production was used.

^{233}U: The postshot ^{233}U was obtained by subtracting from the preshot ^{233}U the fissions that occurred in ^{233}U and an additional 10% of the ^{233}U fissions for other neutron destruction reactions. The postshot ^{233}Pa, which decays to ^{233}U, was added to this amount.

^{234}U: The postshot device ^{234}U was calculated by multiplying the fractional decrease in device ^{235}U by 0.9 and adding that to the preshot ^{234}U content.

^{235}U: The postshot device ^{235}U was obtained by subtracting from the preshot ^{235}U the fissions that occurred in ^{235}U and subtracting an additional 15% of the ^{235}U fissions for other neutron destruction reactions.

^{236,237}U: These isotopes were calculated by increasing the measured postshot amounts by 12% to correct for volatility losses. The ^{237}U was added to any preshot ^{237}Np and reported as such.

^{238}U: The postshot device ^{238}U was calculated in a manner similar to that for ^{235}U, except that the additional destruction factor was 80% of the ^{238}U fissions.

LANL

As with plutonium, the uranium isotope production code was exercised to produced algorithms showing the change in uranium isotopic amounts. Two distinct versions were produced, one for enriched uranium and one for depleted uranium. From the already-collected fission yields, fission splits, and device descriptions, postshot uranium inventories were calculated. Interdecays of short-lived species were all properly accounted for.

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As previously mentioned, ^{233}U from tracer packages was used according to its preshot amount.

^{232}Th, ^{237}Np, and ^{231}Pa

LLNL

Most of the thorium on LLNL events was used in locations where very little of it was destroyed. We therefore took the amount of ^{232}Th to be equal to the preshot amount for every event, an assumption that resulted in an overestimate of the total ^{232}Th inventory by 10% at most. The same non-destruction assumption was made for ^{237}Np. This should have caused our total ^{237}Np inventory to be high by ~20% at most. The fact that these postshot device inventories for ^{232}Th and ^{237}Np were only roughly estimated turns out to be of little consequence. Only 3% of the total ^{237}Np came from residual ^{237}Np, while the remaining 97% was formed from the decay of ^{237}U, ^{241}Pu, and ^{241}Am. The total residual device thorium is negligible compared to the total ^{232}Th from the geologic medium that mixed into the melts formed by the explosions.

Device-associated ^{231}Pa (from the decay of ^{231}Th from the ^{232}Th (n,2n) reaction) is not included in our inventory as yet. The total activity is expected to be small compared to most of the other actinides. Implicit in the inventory already is the ^{231}Pa in equilibrium with the ^{235}U from natural uranium that mixed into the melt at zero time.

LANL

Los Alamos' practice did not cause us to include a significant amount of ^{232}Th in the tracer packages or as part of the device components. This material has not be tabulated in the present study. Likewise, ^{231}Pa has not been specifically included.

The isotope ^{237}Np has been included without destruction, similarly to LLNL's assumption, with similar arguments as to the effect on the total inventory.

TRITIUM

On most U.S. nuclear tests, up to times as long as 100 to 200 years following the detonation, tritium has by far the highest activity of any radionuclide with a half-life longer than ten years. Because of this we have expended considerable effort in estimating the residual tritium on the individual nuclear tests. We have also sought to achieve agreement between Los Alamos and Livermore for this isotope. Because of their earlier start to the underground inventory effort, LLNL has provided most of the algorithms for tritium production and destruction; LANL has served to confirm these methods through independent explosion code calculations.

The amount of residual tritium from a nuclear event is the net result of the amount loaded on the device and the amounts produced and destroyed in the nuclear explosion. The loaded tritium is in the form of tritium gas or a solid tritiated compound. Mixtures of tritium and deuterium gas are the most common form in which tritium is emplaced in the pits of nuclear devices.

The largest source of tritium in nuclear tests is the amount residual from the production in thermonuclear fuel, mainly ^6LiD and its variants, but also D_2 fuel. In ^6LiD fuel, most of the tritium comes from the $^6Li(n,\alpha)T$ reaction ($\alpha = {}^4He$); this reaction is in fact the reason the ^6LiD may be used as a thermonuclear fuel. In D_2 fuel, the D(d,p)T reaction and the $D(d,n)^3He$ reaction followed by the $^3He(n,p)T$ reaction account for essentially all of the tritium production. The deuterium reactions are minor contributors to tritium production in ^6LiD fuel. Other production reactions in fuels that are of much less importance are the $^7Li(n,n'\alpha)T$ and $^6Li(d,p\alpha)T$ reactions. Tritium production from fission, about one tritium atom per 10^4 fissions, is a negligible source in comparison.

The production of tritium external to the nuclear device is important on some events. A special example is the capture of neutrons by thick ^6LiH blankets that lined the device canisters in a few LLNL tests in the 100-kt to 1-Mt yield range. The use of boron-containing stemming materials around the device canister has been a common practice at both laboratories, at LANL from the early 1960's and at LLNL from the mid-1970's. Furthermore, since 1975, canister liners of B_4C-epoxy or B_4C plus a similar neutron-moderating material have been employed on many LLNL tests. At LANL, two inches of B_4C-loaded polyethylene has typically been employed for the same period. The $^{10}B(n,2\alpha)T$ reaction is a negligible or minor contributor to the tritium inventory of all but a handful of tests. For this reason, we did not include tritium from ^{10}B reactions in our inventory.

Finally, the lithium in the geologic medium surrounding the working point may produce tritium through the $^6Li(n,\alpha)T$ reaction. However, since in typical NTS media only 1 to 3 percent of the neutrons that escape into the geologic medium undergo this reaction, this source of tritium is unimportant on almost all events. The (n,x)T reactions on other elements found in device materials, rack materials, and the geologic medium are negligible sources of tritium because of their high reaction thresholds and small cross sections.

The destruction of tritium in nuclear tests is almost entirely by the $T(d,n)\alpha$ reaction, whether the fuel is DT, D_2, or $^6LiD(T/H)$. All of the other destruction paths are very minor by comparison: the $T(n,2n)D$, $T(p,n)^3He$, and $T(t,2n)\alpha$ reactions, for example.

The amount of residual tritium has been successfully measured on some 18 LLNL tests. The method involves loading a measured amount of D_2O near the nuclear device so that it mixes thoroughly with the nuclear explosion debris. Samples of the gaseous explosion debris are obtained soon after the nuclear test. The T/D/H ratio is measured on the hydrogen fraction in the gas samples. The residual tritium is determined from the T/D ratio after correction for background deuterium. No comparable LANL data is available.

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ACTIVATION PRODUCTS AND NATURAL ISOTOPES

Reactions of neutrons with parts of the device other than the fuel, such as the structural materials, the stemming, and the geologic medium, produce several nuclides with half-lives longer than 10 years. There are about 50 such nuclides, but many of them can be excluded using the source term inventory criteria, because of extremely long half-life of the nuclide or very small production rate. Several nuclides do meet the selection criteria, however. The contributions of these nuclides to the source term were estimated using available data on other slow and fast neutron activation products, relevant cross section information, and neutron transport calculations.

For most of the nuclides of interest, activation of the geologic medium by reactions of slow neutrons is an important production mechanism. To estimate this, we made use of extensive data at both laboratories on the production of ^{160}Tb by $^{159}Tb(n,\gamma)$. Both the Nuclear Chemistry Division at LLNL and the Chemical Science and Technology Division at LANL have measured ^{160}Tb in debris samples from a large number of underground nuclear tests as an indicator of neutron activation of soil constituents. These measurements were used to correct other observations for such soil contributions. Empirical relationships were independently derived by the laboratories to estimate the ^{160}Tb production in cases where measurements were not made; these will be given below.

The amounts of various other nuclides produced by the slow neutron reactions in the soil relative to ^{160}Tb were estimated using relationships derived at LLNL using neutron transport calculations. Monte Carlo neutron transport calculations were performed using the MCNP code (Los Alamos National Laboratory, XXXX); in addition, the Monte Carlo transport calculations by Lessler and Guy (1965) were also useful. The MCNP calculations were done for different water contents of the soil in the range of 0 to 13 wt% and for soil temperatures of 0 and 100 eV. The production rates of the different isotopes relative to ^{160}Tb showed up to a factor of two variation over this range of input conditions. The production rates relative to ^{160}Tb adopted here correspond to room temperature and a water content of 13 wt%. This was the average measured water content of the geologic medium from 206 drill holes at NTS. Average trace element abundances (C.F. Smith, 1993) in the geologic media for several drill holes were used in these calculations (see Table IV). Adjustments were made for the different composition of the Los Alamos magnetite stemming material. These approximations were considered adequate in view of the rather large uncertainties in the calculation of the activation products and the fact that the activation products in general are not major components of the radionuclide inventory.

TABLE IV

Elemental Abundances
Soil and Magnetite Activation

Element	Soil Abundance (wt%)	Magnetite Abundance (wt%)
Al	4.9	0.78
Cl	0.011	<0.012
K	4.0	0.24
Ca	2.8	1.04
Ni	0.0094	0.0094

Nb	0.001	0.001
Eu	9.0×10^{-5}	2.3×10^{-4}
Tb	6.8×10^{-5}	2.2×10^{-4}

The production of nuclides in device parts was, in some cases, calculated relative to other nuclides that were actually measured as part of the radiochemical diagnostics of the test. For example, the amount of ^{94}Nb, produced by ^{93}Nb(n,γ) in the case material in many devices, was obtained from the measured or calculated production of ^{239}U from ^{238}U. In other cases, (e.g., ^{62}Ni from Ni or Cu in various devices), explosion code calculations and MCNP calculations using simplified geometries were used.

Notes pertaining to individual nuclides follow.

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ACCURACY OF THE REPORTED INVENTORY

The accuracy that we would quote on the content of the inventory depends to a large part on the sources of the included nuclides. Clearly, nuclides whose abundances were measured directly are more accurately reported than those for which estimates had to be made based on device characteristics and performance. There are also events in the inventory for which little or no postshot information exists; estimates of nuclidic content for these events are considerably more uncertain and increase the overall uncertainty for a given nuclide. In Table V, we are show the different groups into which the inventory nuclides have been combined, along with our estimates of the accuracies of the event- by-event amounts we obtained for the nuclides in each group. The accuracies of fission product amounts from very low yield events are not included in Table V because the contribution of such events to the total fission product inventory is negligible. Details of the accuracies of individual nuclide amounts are given after the table.

TABLE V

Estimated Accuracies for Individual Nuclides in the Various Groups of Radionuclides in this Inventory

Fission products:	~ 10 to 30% for most important fission products
Unspent fuel materials:	~ 20% or better
Fuel activation products	~ 50% or better
Residual tritium	~ 1% to a factor of 3
Activation products	~ a factor of 10

Fission Products

For reported amounts of fission products, accuracy depends on the accuracy of the following for that event: 1) the fission yield (kilotons); 2) the fission split, and 3) the yields of the fission product (atoms per fission) from the various fissions for the event. Not counting some of the events with very low yields (<0.1 ton), the fission yields of almost all the events are known to within 5 to 30%. For those events with radiochemical measurements, the fission splits among the fissionable nuclides are usually known accurately. The fraction of fast fission for each fissionable nuclide, the pivotal quantities for some of the fission products, is sometimes uncertain by as much as a factory of 2. The accuracies for the fission product yields we quote here are from England and Rider (1993). We consider only ^{235}U, ^{238}U and ^{239}Pu fission, for these three accounted for over 99% of the fissions. The least accurately known yields are those for the fission products ^{94}Nb, ^{113m}Cd, ^{121m}Sn, ^{152}Eu, and ^{166m}Ho. Their yields could be in error by a factor of 2 to 100 or more. Fortunately, these are also the fission products with the lowest yields, so they are very minor contributors to the radionuclide inventory. Furthermore, the total amounts of ^{94}Nb, ^{152}Eu, and ^{166m}Ho produced as activation products are at least 1000 times larger than the amounts from fission. The accuracies of the ^{126}Sn yields are 4 to 16%. The accuracies of the yields of all the other fission products in our inventory are 0.4 to 11%. For events on which no radiochemical measurements were made, uncertainty for the fission products can exceed another factor of 2 unless the event was known to be similar in design and performance to one measured.

Actinides

Most of the tabulated amounts of unspent fission fuel and tracer materials, namely ^{232}Th, ^{233}U, ^{235}U, ^{237}Np, ^{239}Pu, ^{241}Am and ^{244}Cm are accurate to 1 to 10%. A few, including some of the values for events for which the device performance is known only approximately, have uncertainties of up to 20%.

The tabulated amounts of minor isotopes and activation products of fission fuel (^{232}U, ^{234}U, ^{236}U, ^{237}U, ^{238}Pu, ^{240}Pu, ^{241}Pu, and ^{242}Pu) when derived from actual measurements, are accurate to 20% or better. However, when the amounts are estimates from approximate device performance information and estimated preshot compositions, the uncertainties for some of the isotopes may rise to 50%. The total ^{232}U inventory is good only to a factory of 2 or 3 because only about 15% of it is based on actual measurements. The remainder is largely from coarse estimates of the number of ^{233}U (n,2n) reactions based on (n,2n)--to-fission data for ^{235}U burning devices. Uranium-237 data for some of the order events is missing and still needs to be found or replaced by estimates. Because of this, our ^{237}Np inventory is probably low by a few tens of percent.

Tritium

The estimates of residual tritium have a wide range of uncertainties: from 1 - 2% to a factor of 3. The 1 or 2% applies to those events on which there was no thermonuclear yield and negligible tritium production, in which case the postshot amount of tritium equals the preshot amount. The factor of 3 applies to devices with unusual designs and events for which performance is only known approximately.

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Activation Products

Our activation product estimates are likely accurate only to a factor of 10 in most instances. This relatively large error is the result of the approximate nature of the methods we used to obtain the estimates described above, such as using data for nuclides from similar reactions and approximate Monte Carlo neutron transport models employing average elemental abundances for soil activation. The part of the europium isotope inventory that is based on direct measurements is more accurate, with uncertainties of 10 to 30%.

EXAMPLES OF METHODOLOGY

As examples of the implementation of the methods described above, we present here detailed examples of the calculational techniques for two tests, one from the LLNL suite and one from the LANL suite. In all cases, the quantities displayed here are expressed as atoms immediately postshot. Conversion to curies on January 1, 1994, and January 1, 2094, were accomplished through standard radioactive decay definitions and equations.

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COMPARISONS OF NUMERICAL RESULTS

Table VI displays the numerical results for the radionuclide inventories for six nuclear tests, three sponsored by each of LLNL and LANL, including the two described immediately above. These tests were chosen for comparison of results as would be calculated by the methods employed by each laboratory. [redacted]

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[redacted] information concerning the nuclear configuration, contents, and analytical results was communicated between organizations. The "other laboratory" calculated their expectations of the radionuclide inventory for comparison with the values that the sponsoring laboratory carried in their database for the event.

Table VI displays remarkably good agreement between the laboratories across the suite of tests examined, usually well within the accuracies estimated in Table V for each of the results. This serves as an indication (but not proof) that the overall inventory complies with the intended accuracies.

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[redacted] These will likely be simply resolved on consultation between LLNL and LANL. Other values would agree more closely with further discussion between the diagnosticians.

EXPLANATION OF RADIONUCLIDE INVENTORY TABLES

Tables VII through XII contain the underground inventory information for nuclides as they existed on January 1, 1994. Radionuclides are arranged within each table according to their atomic number and atomic mass; amounts are listed in curies. Also contained in these tables are the various test parameters: hole, area, date of the test, sponsoring laboratory, static water level, depth of burial, cavity radius, above/below the water table, and total test yield. The tables are arranged as follows:

Table VII	Frenchman Flat
Table VIII	Pahute Mesa Area 19
Table IX	Pahute Mesa Area 20
Table X	Rainier Mesa
Table XI	Yucca Flat, above the water table
Table XII	Yucca Flat, below the water table

Table XIII contains the summary of the radionuclide totals, broken down by area above and below the water table, as they existed on January 1, 1994.

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Table VI - Comparison of Results for Six Underground Nuclear Tests

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Table VI - Comparison of Results for Six Underground Nuclear Tests

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Table VI - Comparison of Results for Six Underground Nuclear Tests

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Table VI - Comparison of Results for Six Underground Nuclear Tests

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Tables XIV through XX contain the underground inventory information for nuclides as they would exist on January 1, 2094. Test parameters are not included in these tables. The tables are arranged as follows:

Table XIV	Frenchman Flat
Table XV	Pahute Mesa Area 19
Table XVI	Pahute Mesa Area 20
Table XVII	Rainier Mesa
Table XVIII	Yucca Flat, above the water table
Table XIX	Yucca Flat, below the water table

Table XX contains the summary of the radionuclide totals, broken down by area above and below the water table, as it would exist on January 1, 2094.

It will be noted that the Clearwater event was the single test on Rainier Mesa below the water table. This results in the nuclides from this test uniquely defining the total inventory in the summation. Because this would reveal classified information, for the purposes of the unclassified report (Bowen et al., 1994), this test has been included with the tests above the water table.

DISCUSSION

The total underground radionuclide inventory for the Nevada Test Site provides an accurate measure of residual radioactive products present after nearly four decades of nuclear testing. The source term inventory is valuable for three reasons. First, this compilation provides a quantified and accurate radionuclide source term; in contrast, many previous compilations were qualitative only. Second, the NTS radionuclide inventory integrates in excess of 800 single radionuclide sources. Third, the inventory incorporates a significant proportion of radionuclides introduced from natural sources in addition to those expected from anthropogenic sources.

As mentioned earlier, radionuclide totals for the NTS represent an upper limit of radionuclides potentially available for transport. The radionuclide source term will never be transported in entirety; the hydrologic source term comprises those species that are dissolved in or transportable by groundwater. The mobility of radionuclides is moderated both by chemical kinetics and hydrology. Numerous experimental and field studies accompanying the nuclear test program (see Borg, 1976 and Smith, 1993) indicate, in general, long-lived radionuclides (actinides, fission products) are relatively insoluble in NTS groundwaters and are attenuated during transport by ion-exchange and surface reactions with sorptive minerals -- particularly zeolites -- characteristic of the NTS volcanic stratigraphy. With the exception of tritium, which is efficiently dispersed in groundwater as molecular HTO, the hydrologic source term will always be less than the radionuclide source term. Approximately two thirds of the devices fired at the NTS were detonated above the static water level and by probably will not substantively contribute to the hydrologic source term. Finally, the hydrology of the Nevada Test Site consists of a complex and variably transmissive stratigraphy of regional Paleozoic carbonate (transmissivities from 7 to > 10,000 m^2/day) and overlying Tertiary volcanic (transmissivities of 2.5 to 1,200 m^2/day) aquifers divided by prevailing flow directions and by discharge areas into three groundwater subbasins. While a comprehensive description of radionuclide leaching and sorption and Nevada Test Site hydrology is outside the scope of this report, radionuclide transport will not occur uniformly or pervasively away from the testing centers at the Nevada Test Site. Different geology and hydrologic properties will greatly affect potential radionuclide transport.

The source term integrates over 800 underground nuclear tests and provides radionuclide totals for five test areas both above and below the water table. By summing radionuclide totals for individual tests into regional areas, radionuclide production from an individual test is integrated into the sum for that region. The effect, particularly for tests with higher yield, is to minimize the contribution from any one event. Because the radionuclide source term is device dependent, local contributions -- particularly those devices with lower fission / fusion ratios and associated higher tritium production -- will be disproportionately skewed toward the regional average. Geographic divisions were made arbitrarily and should not be treated as mutually exclusive; ideally, each test should be considered individually relative to both yield and specific radionuclide production.

The radionuclide inventory is dominated by residual radioactivity introduced by nuclear testing, but also includes a significant proportion of natural radioactivity. Volcanic tuffs and rhyolites erupted from volcanic centers over the past 15 billion years are highly evolved rocks that partition oxides of uranium, thorium and potassium -- all of which are naturally radioactive. Past undocumented studies on core samples from underground nuclear tests indicate that 700 tons of geologic media are melted per kiloton of nuclear explosive yield. (We recently confirmed this value by examining the radiochemical diagnostic data for the most device-debris-rich core sample from each of 18 LLNL tests between 1970 and 1988.) Therefore, natural ^{40}K, natural ^{232}Th and natural uranium activities are mixed into the melt created by all the events in each of the five inventory regions. The average potassium, thorium and uranium concentrations of NTS working point media are 4%, 22 ppm and 3.7 ppm by weight. Using these values, we calculate that 0.0229 Ci of ^{40}K, 0.00169 Ci of ^{232}Th, and 0.00177 Ci of uranium are incorporated into the melt per kiloton of yield. We include this contribution separately in our totals for each for the five test regions defined for the inventory. Background radioactivity from naturally occurring radionuclides constitutes an effective lower limit for monitoring or remedial levels proposed for the Nevada Test Site.

FUTURE WORK

It should be recognized that the databases represented by this work are evolving entities, subject to improvements and corrections as more sophisticated interpretations evolve and additional information is gleaned from the historic record. We expect, that with continued support, that the values of the underground nuclide inventory will improve, particularly on an event-by-event basis. Large scale changes in the sums, by area or above or below the water table, are not expected.

Los Alamos and Livermore expect to maintain actively their respective databases, commensurate with the resources available. Routine communication of updates to each database will occur, ensuring that the most comprehensive and current values are available at both locations. Improvements to the database structure and implementation are envisioned to facilitate greater utility and quality assurance.

Eleven underground nuclear tests sponsored by the laboratories occurred outside the boundaries of the Nevada Test Site, within the boundaries of the United States. During fiscal year 1995, these tests will be inventoried in a fashion similar to that described here. This data will become available as a separate report.

ACKNOWLEDGMENTS

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Table VII - Frenchman Flat - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
E1	U27A	Frenchman Flat	12/12/60	LLNL	1800	60	2	Above
E2	U27B	Frenchman Flat	12/15/60	LLNL	1800	59	2	Above
70	U27C	Frenchman Flat	1/15/61	LLNL	1800	58	2	Above
61	U27I	Frenchman Flat	1/27/61	LLNL	1800	52	2	Above
68A	U27D	Frenchman Flat	2/15/61	LLNL	1800	57	2	Above
36	U27E	Frenchman Flat	3/15/61	LLNL	1800	56	2	Above
69A	U27F	Frenchman Flat	5/19/61	LLNL	1800	55	2	Above
66	U27G	Frenchman Flat	6/14/61	LLNL	1800	54	2	Above
33	U27H	Frenchman Flat	7/8/61	LLNL	1800	53	2	Above
32	U27J	Frenchman Flat	8/17/61	LLNL	1800	51	2	Above
72	U27K	Frenchman Flat	8/31/61	LLNL	1800	50	2	Above
67	U27L	Frenchman Flat	9/1/61	LLNL	1800	49	2	Above
WISHBONE	U5A	Frenchman Flat	2/18/65	LLNL	699	574	99	Above
PIN STRIPE	U11B	Frenchman Flat	4/25/66	LANL	1180	970	95	Above
DERRINGER	U5I	Frenchman Flat	9/12/66	LANL	1000	840	109	Above
NEWPOINT	U11C	Frenchman Flat	12/13/66	LLNL	981	785	86	Above
DIANA MOON	U11E	Frenchman Flat	8/27/68	LANL	990	790	97	Above
MINUTE STEAK	U11F	Frenchman Flat	9/12/69	LLNL	991	868	108	Above
DIAGONAL LINE	U11G	Frenchman Flat	11/24/71	LLNL	991	867	100	Above
Sum								
CAMBRIC	U5E	Frenchman Flat	5/14/65	LLNL	699	967	44	Below
DILUTED WATERS	U5B	Frenchman Flat	6/16/65	LLNL	699	632	102	Below
MILKSHAKE	U5K	Frenchman Flat	3/25/68	LLNL	699	868	104	Below
Sum								

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Table VII - Frenchman Flat - 1994

Shot Name
E1
E2
70
61
68A
36
69A
66
33
32
72
67
WISHBONE
PIN STRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE
Sum
CAMBRIC
DILUTED WATERS
MILKSHAKE
Sum

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Table VII - Frenchman Flat - 1994

Shot Name
E1
E2
70
61
68A
36
69A
66
33
32
72
67
WISHBONE
PIN STRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE
Sum
CAMBRIC
DILUTED WATERS
MILKSHAKE
Sum

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Table VII - Frenchman Flat - 1994

Shot Name
E1
E2
70
61
68A
36
69A
66
33
32
72
67
WISHBONE
PIN STRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE
Sum
CAMBRIC
DILUTED WATERS
MILKSHAKE
Sum

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Table VII - Frenchman Flat - 1994

Shot Name
E1
E2
70
61
68A
36
69A
66
33
32
72
67
WISHBONE
PIN STRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE
Sum
CAMBRIC
DILUTED WATERS
MILKSHAKE
Sum

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Table VIII - Pahute Mesa Area 19 - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
SCROLL	U19N	Pahute Mesa - 19	4/23/68	LLNL	2083	735	68	Above
EMMENTHAL	U19T	Pahute Mesa - 19	11/2/78	LLNL	2231	1890	78	Above
SHEEPSHEAD	U19AA	Pahute Mesa - 19	9/26/79	LANL	2330	2100	190	Above
NEBBIOLO	U19AE	Pahute Mesa - 19	6/24/82	LANL	2320	2100	198	Above
...TRA	U19AC	Pahute Mesa - 19	12/15/84	LLNL	2283	2100	179	Above
...ALVESTON	U19AF	Pahute Mesa - 19	9/4/86	LANL	2280	1600	46	Above
LOCKNEY	U19AQ	Pahute Mesa - 19	9/24/87	LANL	2370	2010	145	Above
KEARSARGE(JVE-1)	U19AX	Pahute Mesa - 19	8/17/88	LANL	2300	2020	224	Above
HOUSTON	U19AZ	Pahute Mesa - 19	11/14/90	LANL	2320	1950	142	Above
BEXAR	U19BA	Pahute Mesa - 19	4/4/91	LANL	2310	2060	213	Above
Sum								
ALMENDRO	U19V	Pahute Mesa - 19	6/6/73	LANL	2250	3490	245	Below
MAST	U19U	Pahute Mesa - 19	6/19/75	LANL	2190	2990	213	Below
CAMEMBERT	U19Q	Pahute Mesa - 19	6/26/75	LLNL	2192	4300	227	Below
INLET	U19F	Pahute Mesa - 19	11/20/75	LANL	2310	2680	215	Below
MUENSTER	U19E	Pahute Mesa - 19	1/3/76	LLNL	2218	4765	199	Below
ESTUARY	U19G	Pahute Mesa - 19	3/9/76	LANL	2060	2610	263	Below
POOL	U19P	Pahute Mesa - 19	3/17/76	LANL	2260	2890	219	Below
FONDUTTA	U19Z S	Pahute Mesa - 19	4/11/78	LLNL	2192	2077	198	Below
BACKBEACH	U19X	Pahute Mesa - 19	4/11/78	LANL	2350	2200	169	Below
PANIR	U19Y S	Pahute Mesa - 19	8/31/78	LLNL	2118	2234	178	Below
SERPA	U19AI	Pahute Mesa - 19	12/17/80	LLNL	2057	1880	198	Below
HARZER	U19AJ	Pahute Mesa - 19	6/6/81	LLNL	2192	2090	226	Below
HOSTA	U19AK	Pahute Mesa - 19	2/12/82	LANL	2190	2100	175	Below
CHANCELLOR	U19AD	Pahute Mesa - 19	9/1/83	LANL	2120	2050	201	Below
TOWANDA	U19AB	Pahute Mesa - 19	5/2/85	LANL	2010	2170	172	Below
CYBAR	U19AR	Pahute Mesa - 19	7/17/86	LANL	2120	2060	157	Below
LABQUARK	U19AN	Pahute Mesa - 19	9/30/86	LLNL	2103	2021	218	Below
ALAMO	U19AU	Pahute Mesa - 19	7/7/88	LANL	2050	2040	207	Below
AMARILLO	U19AY	Pahute Mesa - 19	6/27/89	LANL	2130	2100	127	Below
JUNCTION	U19BG	Pahute Mesa - 19	3/26/92	LANL	2103	2040	207	Below
STINGER	U19L	Pahute Mesa - 19	3/22/68	LANL	2100	2190	169	Below
SCOTCH	U19AS	Pahute Mesa - 19	5/23/67	LANL	2190	3210	165	Below
CHARTREUSE	U19D	Pahute Mesa - 19	5/6/66	LANL	2190	2200	132	Below
RICKEY	U19C	Pahute Mesa - 19	6/15/68	LANL	2320	2240	191	Below
HALFBEAK	U19B	Pahute Mesa - 19	6/30/66	LANL	2120	2690	265	Below
SLED	U19I	Pahute Mesa - 19	8/29/68	LANL	2190	2390	190	Below
Sum								

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Table VIII - Pahute Mesa Area 19 - 1994

Shot Name
SCROLL
EMMENTHAL
SHEEPSHEAD
NEBBIOLO
TERRA
GALVESTON
LOCKNEY
KEARSARGE(JVE-1)
HOUSTON
BEXAR
Sum
ALMENDRO
MAST
CAMEMBERT
INLET
MUENSTER
ESTUARY
POOL
FONDUTTA
BACKBEACH
PANIR
SERPA
HARZER
HOSTA
CHANCELLOR
TOWANDA
CYBAR
LABQUARK
ALAMO
AMARILLO
JUNCTION
STINGER
SCOTCH
CHARTREUSE
RICKEY
HALFBEAK
SLEDGE
Sum

DOE b(3)

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Table VIII - Pahute Mesa Area 19 - 1994

Shot Name
SCROLL
EMMENTHAL
SHEEPSHEAD
NEBBIOLO
TERRA
GALVESTON
LOCKNEY
KEARSARGE(JVE-1)
HOUSTON
BEXAR
Sum
ALMENDRO
MAST
CAMEMBERT
INLET
MUENSTER
ESTUARY
POOL
FONDUTTA
BACKBEACH
PANIR
SERPA
HARZER
HOSTA
CHANCELLOR
TOWANDA
CYBAR
LABQUARK
ALAMO
AMARILLO
JUNCTION
STINGER
SCOTCH
CHARTREUSE
PICKEY
HALFBEAK
SLEDGE
Sum

DoE b(3)

Table VIII - Pahute Mesa Area 19 - 1994

Shot Name
SCROLL
EMMENTHAL
SHEEPSHEAD
NEBBIOLO
TIERRA
GALVESTON
LOCKNEY
KEARSARGE(JVE-1)
HOUSTON
BEXAR
Sum
ALMENDRO
MAST
CAMEMBERT
INLET
MUENSTER
ESTUARY
POOL
FONDUTTA
BACKBEACH
PANIR
SERPA
HARZER
HOSTA
CHANCELLOR
TOWANDA
CYBAR
LABQUARK
ALAMO
AMARILLO
JUNCTION
STINGER
SCOTCH
CHARTREUSE
RICKEY
HALFBEAK
SLEDGE
Sum

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Table VIII - Pahute Mesa Area 19 - 1994

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Table IX - Pahute Mesa Area 20 - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
PALANQUIN	U20K	Pahute Mesa - 20	4/14/65	LLNL	1601	281	81	Above
DURYEA	U20A 1	Pahute Mesa - 20	4/14/66	LLNL	2172	1784	172	Above
CABRIOLET	U20L	Pahute Mesa - 20	1/26/68	LLNL	1601	170	65	Above
SCHOONER	U20U	Pahute Mesa - 20	12/8/68	LLNL	899	365	155	Above
DELAMAR	U20AT	Pahute Mesa - 20	4/18/87	LLNL	2026	1785	172	Above
CONTACT	U20AW	Pahute Mesa - 20	6/22/89	LLNL	2087	1785	172	Above
BARNWELL	U20AZ	Pahute Mesa - 20	12/8/89	LLNL	2169	1971	166	Above
Sum								
BUTEO	U20A	Pahute Mesa - 20	5/12/65	LANL	2160	2290	35	Below
REX	U20H	Pahute Mesa - 20	2/24/66	LLNL	2106	2202	99	Below
GREELEY	U20G	Pahute Mesa - 20	12/20/66	LLNL	2018	3991	251	Below
KNICKERBOCKER	U20D	Pahute Mesa - 20	5/26/67	LLNL	2073	2069	152	Below
BOXCAR	U20I	Pahute Mesa - 20	4/26/68	LLNL	1903	3825	310	Below
CHATEAUGAY	U20T	Pahute Mesa - 20	6/28/68	LLNL	2073	1992	155	Below
BENHAM	U20C	Pahute Mesa - 20	12/19/68	LLNL	2103	4600	325	Below
PURSE	U20V	Pahute Mesa - 20	5/7/69	LLNL	1972	1965	186	Below
JORUM	U20E	Pahute Mesa - 20	9/16/69	LLNL	1824	3809	348	Below
PIPKIN	U20B	Pahute Mesa - 20	10/8/69	LLNL	2100	2046	168	Below
HANDLEY	U20M	Pahute Mesa - 20	3/26/70	LLNL	1270	3967	370	Below
TYBO	U20Y	Pahute Mesa - 20	5/14/75	LLNL	2067	2510	287	Below
STILTON	U20P	Pahute Mesa - 20	6/3/75	LLNL	919	2400	176	Below
KASSERI	U20Z	Pahute Mesa - 20	10/28/75	LLNL	2060	4150	303	Below
FONTINA	U20F	Pahute Mesa - 20	2/12/76	LLNL	1952	3999	289	Below
CHESHIRE	U20N	Pahute Mesa - 20	2/14/76	LLNL	2051	3829	201	Below
COLBY	U20AA	Pahute Mesa - 20	3/14/76	LLNL	1873	4178	261	Below
FARM	U20AB	Pahute Mesa - 20	12/16/78	LLNL	2129	2260	187	Below
PEPATO	U20AD	Pahute Mesa - 20	6/11/79	LLNL	1900	2234	174	Below
COLWICK	U20AC	Pahute Mesa - 20	4/26/80	LLNL	2067	2077	164	Below
KASH	U20AF	Pahute Mesa - 20	6/12/80	LLNL	1975	2116	178	Below
TAFI	U20AE	Pahute Mesa - 20	7/25/80	LLNL	1991	2231	178	Below
MOLBO	U20AG	Pahute Mesa - 20	2/12/82	LLNL	2014	2093	130	Below
GIBNE	U20AH	Pahute Mesa - 20	4/25/82	LLNL	2001	1870	177	Below
CABRA	U20AJ	Pahute Mesa - 20	3/26/83	LLNL	1873	1780	177	Below
KAPPELI	U20AM	Pahute Mesa - 20	7/25/84	LLNL	2139	2100	191	Below
EGMONT	U20AL	Pahute Mesa - 20	12/9/84	LLNL	1936	1791	151	Below
SALUT	U20AK	Pahute Mesa - 20	6/12/85	LLNL	2041	1995	209	Below
SERENA	U20AN	Pahute Mesa - 20	7/25/85	LLNL	1988	1959	169	Below

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Table IX - Pahute Mesa Area 20 - 1994

Shot Name
PALANQUIN
DURYEA
CABRIOLET
SCHOONER
DELAMAR
CONTACT
BARNWELL
Sum
BUTEO
REX
GREELEY
KNICKERBOCKER
BOXCAR
CHATEAUGAY
BENHAM
PURSE
JORUM
PIPKIN
HANDLEY
TYBO
STILTON
KASSERI
FONTINA
CHESHIRE
COLBY
FARM
PEPATO
COLWICK
KASH
TAFI
MOLBO
GIBNE
CABRA
KAPPELI
EGMONT
SALUT
SERENA

DOE b(3)

SECRET

UNCLASSIFIED

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
PALANQUIN
DURYEA
CABRIOLET
SCHOONER
DELAMAR
CONTACT
BARNWELL
Sum
BUTEO
REX
GREELEY
KNICKERBOCKER
BOXCAR
CHATEAUGAY
BENHAM
FURSE
JORUM
PIPKIN
HANDLEY
TYBO
STILTON
KASSERI
FONTINA
CHESHIRE
COLBY
FARM
PEPATO
COLWICK
KASH
TAFI
MOLBO
GIBNE
CABRA
KAPPELI
EGMONT
SALUT
SERENA

DOE b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
PALANQUIN
DURYEA
CABRIOLET
SCHOONER
DELAMAR
CONTACT
BARNWELL
Sum
BUTEO
REX
GREELEY
KNICKERBOCKER
BOXCAR
CHATEAUGAY
BENHAM
PURSE
JORUM
PIPKIN
HANDLEY
TYBO
STILTON
KASSERI
FONTINA
CHESHIRE
COLBY
FARM
PEPATO
COLWICK
KASH
TAFI
MOLBO
GIBNE
CABRA
KAPPELI
EGMONT
SALUT
SERENA

DOE b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
PALANQUIN
DURYEA
CABRIOLET
SCHOONER
DELAMAR
CONTACT
BARNWELL
Sum
BUTEO
REX
GREELEY
KNICKERBOCKER
BOXCAR
CHATEAUGAY
BENHAM
PURSE
JORUM
PIPKIN
HANDLEY
TYBO
STILTON
KASSERI
FONTINA
CHESHIRE
COLBY
FARM
PEPATO
COLWICK
KASH
TAFI
MOLBO
GIBNE
CABRA
KAPPELI
EGMONT
SALUT
SERENA

DOE
b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
GOLDSTONE	U20AO	Pahute Mesa - 20	12/28/85	LLNL	1955	1801	172	Below
JEFFERSON	U20AI	Pahute Mesa - 20	4/22/86	LLNL	2051	1998	154	Below
DARWIN	U20AQ	Pahute Mesa - 20	6/25/86	LLNL	1883	1801	179	Below
BELMONT	U20AS	Pahute Mesa - 20	10/16/86	LLNL	2011	1985	231	Below
BODIE	U20AP	Pahute Mesa - 20	12/13/86	LLNL	2139	2083	229	Below
HARDIN	U20AV	Pahute Mesa - 20	4/30/87	LLNL	2075	2051	197	Below
KERNVILLE	U20AR	Pahute Mesa - 20	2/15/88	LLNL	1841	1777	172	Below
COMSTOCK	U20AY	Pahute Mesa - 20	6/2/88	LLNL	2054	2035	156	Below
HORNITOS	U20BC	Pahute Mesa - 20	10/31/89	LLNL	1867	1850	189	Below
BULLION	U20BD	Pahute Mesa - 20	6/13/90	LLNL	2037	2211	180	Below
TENABO	U20BB	Pahute Mesa - 20	10/12/90	LLNL	2034	1969	183	Below
MONTELLO	U20BF	Pahute Mesa - 20	4/16/91	LLNL	2135	2105	150	Below
HOYA	U20BE	Pahute Mesa - 20	9/14/91	LLNL	2215	2159	190	Below
Sum								

DOE b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
GOLDSTONE
JEFFERSON
DARWIN
BELMONT
BODIE
HARDIN
KERNVILLE
COMSTOCK
HORNITOS
BULLION
TENABO
MONTELLO
HOYA
Sum

DOE b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
GOLDSTONE
JEFFERSON
DARWIN
BELMONT
BODIE
HARDIN
KERNVILLE
COMSTOCK
HORNITOS
BULLION
TENABO
MONTELLO
HOYA
Sum

DOE
b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
GOLDSTONE
JEFFERSON
DARWIN
BELMONT
BODIE
HARDIN
KERNVILLE
COMSTOCK
HORNITOS
BULLION
TENABO
MONTELLO
HOYA
Sum

DOE
b(3)

Table IX - Pahute Mesa Area 20 - 1994

Shot Name
GOLDSTONE
JEFFERSON
DARWIN
BELMONT
BODIE
HARDIN
KERNVILLE
COMSTOCK
HORNITOS
BULLION
TENABO
MONTELLO
HOYA
Sum

DoE b(3)

DOE b(3)

Table X - Rainier Mesa - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
ESS	U16	Rainier Mesa	3/23/55	LANL		65	55	Above
SATURN	U12C.02	Rainier Mesa	8/9/57	LLNL	1886	128	4	Above
RAINIER	U12B	Rainier Mesa	9/19/57	LLNL	1886	899	65	Above
VENUS	U12D.01	Rainier Mesa	2/22/58	LLNL	1886	100	4	Above
URANUS	U12C.01	Rainier Mesa	3/14/58	LLNL	1886	114	4	Above
MERCURY	U12F.01	Rainier Mesa	9/23/58	LLNL	1886	183	4	Above
MARS	U12D	Rainier Mesa	9/28/58	LLNL	1886	125	12	Above
TAMALPIAS	U12B.02	Rainier Mesa	10/8/58	LLNL	1886	330	30	Above
NEPTUNE	U12C.03	Rainier Mesa	10/14/58	LLNL	1886	98	20	Above
LOGAN	U12E.02	Rainier Mesa	10/16/58	LLNL	1886	930	92	Above
EVANS	U12B.04	Rainier Mesa	10/29/58	LLNL	1886	840	19	Above
BLANCA	U12E.05	Rainier Mesa	10/30/58	LLNL	1886	988	145	Above
ANTLER	U12E.03	Rainier Mesa	9/15/61	LLNL	1886	1319	65	Above
CHENA	U12B.09	Rainier Mesa	10/10/61	LLNL	1886	838	50	Above
FEATHER	U12B.08	Rainier Mesa	12/22/61	LLNL	1886	812	27	Above
DANNY BOY	U18A	Rainier Mesa	3/5/62	LLNL	1886	110	36	Above
PLATTE	U12K.01	Rainier Mesa	4/14/62	LLNL	1886	628	71	Above
DES MOINES	U12J.01	Rainier Mesa	6/13/62	LLNL	1886	660	75	Above
MARSHMALLOW	U16A	Rainier Mesa	8/28/62	LLNL	1886	1020	90	Above
MADISON	U12G.01	Rainier Mesa	12/12/62	LLNL	1886	1320	78	Above
YUBA	U12B.10	Rainier Mesa	6/5/63	LLNL	1886	796	75	Above
SULKY	U18D	Rainier Mesa	12/18/64	LLNL	1099	89	23	Above
GUMDROP	U16A.02	Rainier Mesa	4/21/65	LLNL	1886	1000	79	Above
RED HOT	U12G.06	Rainier Mesa	3/5/66	LANL	4650	1330	63	Above
DOUBLE PLAY	U16A.03	Rainier Mesa	6/15/66	LLNL	1886	1075	94	Above
MIDMIST	U12N.02	Rainier Mesa	6/26/67	LLNL	1886	1237	69	Above
DOOR MIST	U12G.07	Rainier Mesa	8/31/67	LANL	1970	1430	62	Above
DORSAL FIN	U12E.10	Rainier Mesa	2/29/68	LANL	1960	1350	114	Above
BUGGY	U30A	Yucca Flat	3/12/68	LLNL	1450	135	52	Above
HUDSON SEAL	U12N.04	Rainier Mesa	9/24/68	LLNL	1886	1130	108	Above
MING VASE	U16A.04	Rainier Mesa	11/20/68	LANL	1600	1010	80	Above
WINESKIN	U12R	Rainier Mesa	1/15/69	LLNL	1886	1700	140	Above
CYPRESS	U12G.09	Rainier Mesa	2/12/69	LLNL	1886	1350	105	Above
DIESEL TRAIN	U12E.11	Rainier Mesa	12/5/69	LANL	1960	1390	93	Above
DIANA MIST	U12N.06	Rainier Mesa	2/11/70	LANL	1870	1320	85	Above
MINT LEAF	U12T.01	Rainier Mesa	5/5/70	LLNL	1886	1330	108	Above
DIAMOND DUST	U16A.05	Rainier Mesa	5/12/70	LANL	1340	830	14	Above
HUDSON MOON	U12E.12	Rainier Mesa	5/26/70	LLNL	1886	1386	100	Above
CAMPHOR	U12G.10	Rainier Mesa	6/29/71	LLNL	1886	1390	107	Above

Table X - Rainier Mesa - 1994

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPIAS
NEPTUNE
LOGAN
EVANS
BLANCA
ANTLER
CHENA
FEATHER
DANNY BOY
PLATTE
DES MOINES
MARSHMALLOW
MADISON
YUBA
SULKY
GUMDROP
RED HOT
DOUBLE PLAY
MIDMIST
DOOR MIST
DORSAL FIN
BUGGY
HUDSON SEAL
MING VASE
WINESKIN
CYPRESS
DIESEL TRAIN
DIANA MIST
MINT LEAF
DIAMOND DUST
HUDSON MOON
CAMPHOR

Table X - Rainier Mesa - 1994

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPIAS
NEPTUNE
LOGAN
EVANS
BLANCA
ANTLER
CHENA
FEATHER
DANNY BOY
PLATTE
DES MOINES
MARSHMALLOW
MADISON
YUBA
SULKY
GUMDROP
RED HOT
DOUBLE PLAY
MIDIMIST
DOOR MIST
DORSAL FIN
BUGGY
HUDSON SEAL
MING VASE
WINESKIN
CYPRESS
DIESEL TRAIN
DIANA MIST
MINT LEAF
DIAMOND DUST
HUDSON MOON
CAMPHOR

DOE
b(3)

DOE b(3)

Table X - Rainier Mesa - 1994

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPIAS
NEPTUNE
LOGAN
EVANS
BLANCA
ANTLER
CHENA
FEATHER
DANNY BOY
PLATTE
DES MOINES
MARSHMALLOW
MADISON
YUBA
SULKY
GUMDROP
RED HOT
DOUBLE PLAY
MIDIMIST
DOOR MIST
DORSAL FIN
BUGGY
HUDSON SEAL
MING VASE
WINESKIN
CYPRESS
DIESEL TRAIN
DIANA MIST
MINT LEAF
DIAMOND DUST
HUDSON MOON
CAMPHOR

Table X - Rainier Mesa - 1994

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPAIS
NEPTUNE
LOGAN
EVANS
BLANCA
ANTLER
CHENA
FEATHER
DANNY BOY
PLATTE
DES MOINES
MARSHMALLOW
MADISON
YUBA
SULKY
GUMDROP
RED HOT
DOUBLE PLAY
MIDMIST
DOOR MIST
DORSAL FIN
BUGGY
HUDSON SEAL
MING VASE
WINESKIN
CYPRESS
DIESEL TRAIN
DIANA MIST
MINT LEAF
DIAMOND DUST
HUDSON MOON
CAMPHOR

DOE
b(3)

Table X - Rainier Mesa - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
DIAMOND MINE	U16A.06	Rainier Mesa	7/1/71	LANL	1470	890	14	Above
MISTY NORTH	U12N.05	Rainier Mesa	5/2/72	LANL	1700	1240	115	Above
DIAMOND SCULLS	U12T.02	Rainier Mesa	7/20/72	LLNL	1886	1391	129	Above
DIDO QUEEN	U12E.14	Rainier Mesa	6/5/73	LLNL	2001	1284	120	Above
HUSKY ACE	U12N.07	Rainier Mesa	10/12/73	LANL	2920	1360	82	Above
MING BLADE	U12N.08	Rainier Mesa	6/19/74	LANL	2980	1270	99	Above
HYBLA FAIR	U12N.09	Rainier Mesa	10/28/74	LLNL	1886	1325	28	Above
DINING CAR	U12E.18	Rainier Mesa	4/5/75	LLNL	1886	1257	106	Above
HUSKY PUP	U12T.03	Rainier Mesa	10/24/75	LANL	2450	1080	80	Above
MIGHTY EPIC	U12N.10	Rainier Mesa	5/12/76	LLNL	1886	1306	106	Above
HYBLA GOLD	U12E.20	Rainier Mesa	11/1/77	LANL	3230	1260	44	Above
DIABLO HAWK	U12N.10A	Rainier Mesa	9/13/78	LLNL	1886	1273	104	Above
MINERS IRON	U12N.11	Rainier Mesa	10/31/80	LANL	1890	1280	102	Above
HURON LANDING	U12N.15	Rainier Mesa	9/23/82	LANL	3230	1340	122	Above
DIAMOND ACE	U12N.15	Rainier Mesa	9/23/82	LLNL	1886	1336	121	Above
MINI JADE	U12N.12	Rainier Mesa	5/26/83	LANL	3140	1240	12	Above
TOMME/MIDNIGHT ZEPH	U12N.18	Rainier Mesa	9/21/83	LLNL	1886	1328	54	Above
MIDAS MYTH/MILAGRO	U12T.04	Rainier Mesa	2/15/84	LANL	2620	1160	148	Above
MISTY RAIN	U12N.17	Rainier Mesa	4/6/85	LLNL	1886	1275	106	Above
DIAMOND BEECH	U12N.19	Rainier Mesa	10/9/85	LLNL	1886	1327	64	Above
MILL YARD	U12N.20	Rainier Mesa	10/9/85	LANL	3120	1220	12	Above
MIGHTY OAK	U12T.08	Rainier Mesa	4/10/86	LLNL	1886	1294	106	Above
MIDDLE NOTE	U12N.21	Rainier Mesa	3/18/87	LLNL	1886	1308	65	Above
MISSION GHOST	U12T.09	Rainier Mesa	6/20/87	LANL	2500	1050	28	Above
MISSION CYBER	U12P.02	Rainier Mesa	12/2/87	LLNL	1886	888	65	Above
MISTY ECHO	U12N.23	Rainier Mesa	12/10/88	LANL	3199	1310	119	Above
DISKO ELM	U12P.03	Rainier Mesa	9/14/89	LLNL	2186	857	64	Above
RANDSBURG	U12N.22	Rainier Mesa	7/25/90	LLNL	1886	1278	39	Above
MINERAL QUARRY	U12N.22	Rainier Mesa	7/25/90	LANL	1890	1280	80	Above
DISTANT ZENITH	U12P.04	Rainier Mesa	9/19/91	LANL	2195	870	80	Above
DIAMOND FORTUNE	U12P.05	Rainier Mesa	4/30/92	LANL	2122	770	29	Above
HUNTERS TROPHY	U12n.24	Rainier Mesa	9/18/92	LLNL	1886	1264	63	Above
Sum								
CLEARWATER	U12Q	Rainier Mesa	10/16/63	LLNL	1886	1788	116	Below
Sum								

DOE b(3)

SECRET

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Table X - Rainier Mesa - 1994

Shot Name
DIAMOND MINE
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD
DIABLO HAWK
MINERS IRON
HURON LANDING
DIAMOND ACE
MINI JADE
TOMME/MIDNIGHT ZEPH
MIDAS MYTH/MILAGRO
MISTY RAIN
DIAMOND BEECH
MILL YARD
MIGHTY OAK
MIDDLE NOTE
MISSION GHOST
MISSION CYBER
MISTY ECHO
DISKO ELM
RANDSBURG
MINERAL QUARRY
DISTANT ZENITH
DIAMOND FORTUNE
HUNTERS TROPHY
Sum
CLEARWATER
Sum

DOE b(3)

UNCLASSIFIED

SECRET

Table X - Rainier Mesa - 1994

Shot Name
DIAMOND MINE
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD
DIABLO HAWK
MINERS IRON
HURON LANDING
DIAMOND ACE
MINI JADE
TOMME/MIDNIGHT ZEPH
MIDAS MYTH/MILAGRO
MISTY RAIN
DIAMOND BEECH
MILL YARD
MIGHTY OAK
MIDDLE NOTE
MISSION GHOST
MISSION CYBER
MISTY ECHO
DISKO ELM
RANDSBURG
MINERAL QUARRY
DISTANT ZENITH
DIAMOND FORTUNE
HUNTERS TROPHY
Sum
CLEARWATER
Sum

SECRET
UNCLASSIFIED

DOE
b(3)

Table X - Rainier Mesa - 1994

Shot Name
DIAMOND MINE
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD
DIABLO HAWK
MINERS IRON
HURON LANDING
DIAMOND ACE
MINI JADE
TOMME/MIDNIGHT ZEPH
MIDAS MYTH/MILAGRO
MISTY RAIN
DIAMOND BEECH
MILL YARD
MIGHTY OAK
MIDDLE NOTE
MISSION GHOST
MISSION CYBER
MISTY ECHO
DISKO ELM
RANDSBURG
MINERAL QUARRY
DISTANT ZENITH
DIAMOND FORTUNE
HUNTERS TROPHY
Sum
CLEARWATER
Sum

UNCLASSIFIED
SECRET

Table X - Rainier Mesa - 1994

DOE
b(3)

Shot Name
DIAMOND MINE
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD
DIABLO HAWK
MINERS IRON
HURON LANDING
DIAMOND ACE
MINI JADE
TOMME/MIDNIGHT ZEPH
MIDAS MYTH/MILAGRO
MISTY RAIN
DIAMOND BEECH
MILL YARD
MIGHTY OAK
MIDDLE NOTE
MISSION GHOST
MISSION CYBER
MISTY ECHO
DISKO ELM
RANDSBURG
MINERAL QUARRY
DISTANT ZENITH
DIAMOND FORTUNE
HUNTERS TROPHY
Sum
CLEARWATER
Sum

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
PASCAL A	U3J	Yucca Flat	7/26/57	LANL	1600	500	19	Above
PASCAL B	U3D	Yucca Flat	8/27/57	LANL	1600	500	8	Above
PASCAL C	U3E	Yucca Flat	12/6/57	LANL	1600	250	16	Above
OTERO	U3Q	Yucca Flat	9/12/58	LANL	1600	500	17	Above
BERNALILLO	U3N	Yucca Flat	9/17/58	LANL	1600	500	12	Above
LUNA	U3M	Yucca Flat	9/21/58	LANL	1600	500	8	Above
VALENCIA	U3R	Yucca Flat	9/26/58	LANL	1600	500	8	Above
COLFAX	U3K	Yucca Flat	10/5/58	LANL	1600	350	9	Above
SAN JUAN	U3P	Yucca Flat	10/20/58	LANL	1600	230	6	Above
SHREW	U3AC	Yucca Flat	9/16/61	LANL	1620	330	28	Above
BOOMER	U3AA	Yucca Flat	10/1/61	LANL	1620	330	56	Above
MINK	U3AE	Yucca Flat	10/29/61	LANL	1620	640	43	Above
FISHER	U3AH	Yucca Flat	12/3/61	LANL	1600	1200	115	Above
MAD	U9A	Yucca Flat	12/13/61	LLNL	1811	596	31	Above
RINGTAIL	U3AK	Yucca Flat	12/17/61	LANL	1600	1200	79	Above
STOAT	U3AP	Yucca Flat	1/9/62	LANL	1620	1000	80	Above
AGOUTI	U3AO	Yucca Flat	1/18/62	LANL	1630	870	69	Above
DORMOUSE	U3AQ	Yucca Flat	1/30/62	LANL	1630	1200	112	Above
STILLWATER	U9C	Yucca Flat	2/8/62	LLNL	1814	595	76	Above
ARMADILLO	U3AR	Yucca Flat	2/9/62	LANL	1620	800	123	Above
HARD HAT	U15A	Yucca Flat	2/15/62	LANL	1500	950	68	Above
CODSAW	U9G	Yucca Flat	2/19/62	LLNL	1824	696	67	Above
CHINCHILLA	U3AG	Yucca Flat	2/19/62	LANL	1610	500	71	Above
CIMARRON	U9H	Yucca Flat	2/23/62	LLNL	1814	1000	107	Above
PLATYPUS	U3AD	Yucca Flat	2/24/62	LANL	1620	210	24	Above
PAMPAS	U3AL	Yucca Flat	3/1/62	LANL	1600	1200	119	Above
ERMINE	U3AB	Yucca Flat	3/6/62	LANL	1620	250	20	Above
BRAZOS	U9D	Yucca Flat	3/8/62	LLNL	1811	841	91	Above
HOGNOSE	U3AI	Yucca Flat	3/15/62	LANL	1610	800	108	Above
HOOSIC	U9J	Yucca Flat	3/28/62	LLNL	1844	613	85	Above
CHINCHILLA II	U3AS	Yucca Flat	3/31/62	LANL	1630	450	59	Above
DORMOUSE PRIME	U3AZ	Yucca Flat	4/5/62	LANL	1600	870	122	Above
PASSAIC	U9L	Yucca Flat	4/6/62	LLNL	1795	766	122	Above
HUDSON	U9N	Yucca Flat	4/12/62	LLNL	1811	495	35	Above
DEAD	U9K	Yucca Flat	4/21/62	LLNL	1870	635	71	Above
BLACK	U9P	Yucca Flat	4/27/62	LLNL	1824	714	86	Above
PACA	U3AX	Yucca Flat	5/7/62	LANL	1600	850	102	Above
ARIKAREE	U9R	Yucca Flat	5/10/62	LLNL	1811	546	56	Above
AARDVARK	U3AMS	Yucca Flat	5/12/62	LANL	1680	1430	155	Above

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DOE b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

[redacted]

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
BOOMER
MINK
FISHER
MAD
RINGTAIL
STOAT
AGOUTI
DORMOUSE
STILLWATER
ARMADILLO
HARD HAT
CODSAW
CHINCHILLA
CIMARRON
PLATYPUS
PAMPAS
ERMINE
BRAZOS
HOGNOSE
HOOSIC
CHINCHILLA II
DORMOUSE PRIME
PASSAIC
HUDSON
DEAD
BLACK
PACA
ARIKAREE
AARDVARK

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
BOOMER
MINK
FISHER
MAD
RINGTAIL
STOAT
AGOUTI
DORMOUSE
STILLWATER
ARMADILLO
HARD HAT
CODSAW
CHINCHILLA
CIMARRON
PLATYPUS
PAMPAS
ERMINE
BRAZOS
HOGNOSE
HOOSIC
CHINCHILLA II
DORMOUSE PRIME
PASSAIC
HUDSON
DEAD
BLACK
PACA
ARIKAREE
AARDVARK

DOE
b(3)

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DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
BOOMER
MINK
FISHER
MAD
RINGTAIL
STOAT
AGOUTI
DORMOUSE
STILLWATER
ARMADILLO
HARD HAT
CODSAW
CHINCHILLA
CIMARRON
PLATYPUS
PAMPAS
ERMINE
BRAZOS
HOGNOSE
HOOSIC
CHINCHILLA II
DORMOUSE PRIME
PASSAIC
HUDSON
DEAD
BLACK
PACA
ARIKAREE
AARDVARK

UNCLASSIFIED

[redacted]

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
BOOMER
MINK
FISHER
MAD
RINGTAIL
STOAT
AGOUTI
DORMOUSE
STILLWATER
ARMADILLO
HARD HAT
CODSAW
CHINCHILLA
CIMARRON
PLATYPUS
PAMPAS
ERMINE
BRAZOS
HOGNOSE
HOOSIC
CHINCHILLA II
DORMOUSE PRIME
PASSAIC
HUDSON
DEAD
BLACK
PACA
ARIKAREE
AARDVARK

DOE
b(3)

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
EEL	U9M	Yucca Flat	5/19/62	LLNL	1811	714	77	Above
WHITE	U9B	Yucca Flat	5/25/62	LLNL	1811	632	98	Above
RACCOON	U3AJS	Yucca Flat	6/1/62	LANL	1620	540	68	Above
PACKRAT	U3AW	Yucca Flat	6/6/62	LANL	1630	870	100	Above
DAMAN I	U3BE	Yucca Flat	6/21/62	LANL	1600	860	127	Above
HAYMAKER	U3AUS	Yucca Flat	6/27/62	LANL	1620	1350	167	Above
SACRAMENTO	U9V	Yucca Flat	6/30/62	LLNL	1791	489	86	Above
SEDAN	U10H	Yucca Flat	7/6/62	LLNL	1890	635	200	Above
MERRIMAC	U3BD	Yucca Flat	7/13/62	LLNL	1640	1356	114	Above
WICHITA	U9Y	Yucca Flat	7/27/62	LLNL	1834	493	63	Above
YORK	U9Z	Yucca Flat	8/24/62	LLNL	1814	743	99	Above
BOBAC	U3BL	Yucca Flat	8/24/62	LANL	1540	670	91	Above
RARITAN	U9U	Yucca Flat	9/6/62	LLNL	1811	516	68	Above
HYRAX	U3BH	Yucca Flat	9/14/62	LANL	1550	720	101	Above
PEBA	U3BB	Yucca Flat	9/20/62	LANL	1600	800	126	Above
ALLEGHENY	U9X	Yucca Flat	9/29/62	LLNL	1870	692	70	Above
ROANOKE	U9Q	Yucca Flat	10/12/62	LLNL	1804	580	53	Above
WOLVERINE	U3AV	Yucca Flat	10/12/62	LANL	1580	250	25	Above
TIOGA	U9F	Yucca Flat	10/18/62	LLNL	1811	195	2	Above
BANDICOOT	U3BJ	Yucca Flat	10/19/62	LANL	1570	800	133	Above
SANTEE	U10F	Yucca Flat	10/27/62	LLNL	1850	1045	90	Above
ST LAWRENCE	U2B	Yucca Flat	11/9/62	LLNL	1969	547	40	Above
GUNDI	U3BM	Yucca Flat	11/15/62	LANL	1560	800	78	Above
ANACOSTIA	U9I	Yucca Flat	11/27/62	LLNL	1873	744	99	Above
TAUNTON	U9AA	Yucca Flat	12/4/62	LLNL	1814	745	64	Above
TENDRAC	U3BA	Yucca Flat	12/7/62	LANL	1580	1000	135	Above
NUMBAT	U3BU	Yucca Flat	12/12/62	LANL	1610	780	101	Above
MANATEE	U9AF	Yucca Flat	12/14/62	LLNL	1811	196	22	Above
CASSELMAN	U10G	Yucca Flat	2/8/63	LLNL	1844	994	110	Above
HATCHIE	U8E	Yucca Flat	2/8/63	LLNL	1814	200	2	Above
FERRET	U3BF	Yucca Flat	2/8/63	LANL	1630	1070	61	Above
ACUSHI	U3BG	Yucca Flat	2/8/63	LANL	1550	860	109	Above
CHIPMUNK	U3AY	Yucca Flat	2/15/63	LANL	1580	200	18	Above
KAWEAH	U9AB	Yucca Flat	2/21/63	LLNL	1801	745	64	Above
CARMEL	U2H	Yucca Flat	2/21/63	LLNL	1982	539	61	Above
JERBOA	U3AT	Yucca Flat	3/1/63	LANL	1560	990	140	Above
TOYAH	U9AC	Yucca Flat	3/15/63	LLNL	1804	428	51	Above
GERBIL	U3BP	Yucca Flat	3/29/63	LANL	1590	930	108	Above
FERRET PRIME	U3BY	Yucca Flat	4/5/63	LANL	1550	790	112	Above

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
EEL
WHITE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
SACRAMENTO
SEDAN
MERRIMAC
WICHITA
YORK
BOBAC
RARITAN
HYRAX
PEBA
ALLEGHENY
ROANOKE
WOLVERINE
TIOGA
BANDICOOT
SANTEE
ST LAWRENCE
GUNDI
ANACOSTIA
TAUNTON
TENDRAC
NUMBAT
MANATEE
CASSELMAN
HATCHIE
FERRET
ACUSHI
CHIPMUNK
KAWEAH
CARMEL
JERBOA
TOYAH
GERBIL
FERRET PRIME

DOE b(3)

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
EEL
WHITE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
SACRAMENTO
SEDAN
MERRIMAC
WICHITA
YORK
BOBAC
RARITAN
HYRAX
PEBA
ALLEGHENY
ROANOKE
WOLVERINE
TIOGA
BANDICOOT
SANTEE
ST LAWRENCE
GUNDI
ANACOSTIA
TAUNTON
TENDRAC
NUMBAT
MANATEE
CASSELMAN
HATCHIE
FERRET
ACUSHI
CHIPMUNK
KAWEAH
CARMEL
JERBOA
TOYAH
GERBIL
FERRET PRIME

~~SECRET~~ UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
EEL
WHITE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
SACRAMENTO
SEDAN
MERRIMAC
WICHITA
YORK
BOBAC
RARITAN
HYRAX
PEBA
ALLEGHENY
ROANOKE
WOLVERINE
TIOGA
BANDICOOT
SANTEE
ST LAWRENCE
GUNDI
ANACOSTIA
TAUNTON
TENDRAC
NUMBAT
MANATEE
CASSELMAN
HATCHIE
FERRET
ACUSHI
CHIPMUNK
KAWEAH
CARMEL
JERBOA
TOYAH
GERBIL
FERRET PRIME

DOE b(3)

UNCLASSIFIED ~~SECRET~~

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
EEL
WHITE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
SACRAMENTO
SEDAN
MERRIMAC
WICHITA
YORK
BOBAC
RARITAN
HYRAX
PEBA
ALLEGHENY
ROANOKE
WOLVERINE
TIOGA
BANDICOOT
SANTEE
ST LAWRENCE
GUNDI
ANACOSTIA
TAUNTON
TENDRAC
NUMBAT
MANATEE
CASSELMAN
HATCHIE
FERRET
ACUSHI
CHIPMUNK
KAWEAH
CARMEL
JERBOA
TOYAH
GERBIL
FERRET PRIME

DOE b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
COYPU	U3AF	Yucca Flat	4/10/63	LANL	1580	240	3	Above
CUMBERLAND	U2E	Yucca Flat	4/11/63	LLNL	1939	743	110	Above
KOOTENAI	U9W	Yucca Flat	4/24/63	LLNL	1831	597	75	Above
PAISANO	U9W 1	Yucca Flat	4/24/63	LLNL	1834	187	25	Above
GUNDIPRIME	U3DB	Yucca Flat	5/9/63	LANL	1630	890	115	Above
HARKEE	U3BV	Yucca Flat	5/17/63	LANL	1600	790	75	Above
TEJON	U3CG	Yucca Flat	5/17/63	LANL	1580	240	8	Above
STONES	U9AE	Yucca Flat	5/22/63	LLNL	1821	1290	155	Above
PLEASANT	U9AH	Yucca Flat	5/29/63	LLNL	1801	692	62	Above
APSHAPA	U9AI	Yucca Flat	6/6/63	LLNL	1811	292	32	Above
HUTIA	U3BC	Yucca Flat	6/6/63	LANL	1520	440	54	Above
MATACO	U3BK	Yucca Flat	6/14/63	LANL	1570	640	76	Above
KENNEBEC	U2AF	Yucca Flat	6/25/63	LLNL	1873	742	118	Above
PEKAN	U3BW	Yucca Flat	8/12/63	LANL	1600	1000	100	Above
SATSOP	U2G	Yucca Flat	8/15/63	LLNL	1949	742	90	Above
KOHOCTON	U9AK	Yucca Flat	8/23/63	LLNL	1841	836	45	Above
NATCHES	U9AK 1	Yucca Flat	8/23/63	LLNL	1804	194	2	Above
AHTANUM	U2L	Yucca Flat	9/13/63	LLNL	2011	742	85	Above
NARRAGUAGUS	U2F	Yucca Flat	9/27/63	LLNL	1949	493	31	Above
CARP	U3CB	Yucca Flat	9/27/63	LANL	1600	1080	54	Above
TORNILLO	U9AO	Yucca Flat	10/11/63	LLNL	1850	491	43	Above
GRUNION	U3BZ	Yucca Flat	10/11/63	LANL	1560	860	115	Above
MULLETT	U2AG	Yucca Flat	10/17/63	LLNL	1870	198	2	Above
ANCHOVY	U3BQ	Yucca Flat	11/14/63	LANL	1600	850	97	Above
MUSTANG	U9AT	Yucca Flat	11/15/63	LLNL	1821	544	54	Above
GREYS	U9AX	Yucca Flat	11/22/63	LLNL	1795	988	117	Above
SARDINE	U3CH	Yucca Flat	12/4/63	LANL	1540	870	118	Above
BARRACUDA	U3CR	Yucca Flat	12/4/63	LANL	1630	870	45	Above
EAGLE	U9AV	Yucca Flat	12/12/63	LLNL	1811	541	94	Above
TUNA	U3DE	Yucca Flat	12/20/63	LANL	1600	1370	25	Above
OCONTO	U9AY	Yucca Flat	1/23/64	LLNL	1831	869	120	Above
CLUB	U2AA	Yucca Flat	1/30/64	LLNL	1896	593	58	Above
SOLENDON	U3CZ	Yucca Flat	2/12/64	LANL	1630	500	46	Above
BUNKER	U9BB	Yucca Flat	2/13/64	LLNL	1850	745	88	Above
BONEFISH	U3BT	Yucca Flat	2/18/64	LANL	1360	1000	103	Above
MACKEREL	U4B	Yucca Flat	2/18/64	LANL	1700	1100	94	Above
KLICKITAT	U10E	Yucca Flat	2/20/64	LLNL	1860	1616	176	Above
HANDICAP	U9BA	Yucca Flat	3/12/64	LLNL	1831	471	51	Above
PIKE	U3CY	Yucca Flat	3/13/64	LANL	1660	390	71.	Above

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
COYPU
CUMBERLAND
KOOTENAI
PAISANO
GUNDI PRIME
HARKEE
TEJON
STONES
PLEASANT
APSHAPA
HUTIA
MATACO
KENNEBEC
PEKAN
SATSOP
KOHOCTON
NATCHES
AHTANUM
NARRAGUAGUS
CARP
TORNILLO
GRUNION
MULLETT
ANCHOVY
MUSTANG
GREYS
SARDINE
BARRACUDA
EAGLE
TUNA
OCONTO
CLUB
SOLENDON
BUNKER
BONEFISH
MACKEREL
KLICKITAT
HANDICAP
PIKE

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
COYPU
CUMBERLAND
KOOTENAI
PAISANO
GUNDI PRIME
HARKEE
TEJON
STONES
PLEASANT
APSHAPA
HUTIA
MATACO
KENNEBEC
PEKAN
SATSOP
KOHOCTON
NATCHES
AHTANUM
NARRAGUAGUS
CARP
TORNILLO
GRUNION
MULLETT
ANCHOVY
MUSTANG
GREYS
SARDINE
BARRACUDA
EAGLE
TUNA
OCONTO
CLUB
SOLENDON
BUNKER
BONEFISH
MACKEREL
KLICKITAT
HANDICAP
PIKE

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
COYPU
CUMBERLAND
KOOTENAI
PAISANO
GUNDI PRIME
HARKEE
TEJON
STONES
PLEASANT
APSHAPA
HUTIA
MATACO
KENNEBEC
PEKAN
SATSOP
KOHOCTON
NATCHES
AHTANUM
NARRAGUAGUS
CARP
TORNILLO
GRUNION
MULLETT
ANCHOVY
MUSTANG
GREYS
SARDINE
BARRACUDA
EAGLE
TUNA
OCONTO
CLUB
SOLENDON
BUNKER
BONEFISH
MACKEREL
KLICKITAT
HANDICAP
PIKE

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
COYPU
CUMBERLAND
KOOTENAI
PAISANO
GUNDI PRIME
HARKEE
TEJON
STONES
PLEASANT
APSHAPA
HUTIA
MATACO
KENNEBEC
PEKAN
SATSOP
KOHOCTON
NATCHES
AHTANUM
NARRAGUAGUS
CARP
TORNILLO
GRUNION
MULLETT
ANCHOVY
MUSTANG
GREYS
SARDINE
BARRACUDA
EAGLE
TUNA
OCONTO
CLUB
SOLENDON
BUNKER
BONEFISH
MACKEREL
KLICKITAT
HANDICAP
PIKE

DoE
b(3)

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DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
HOOK	U9BC	Yucca Flat	4/14/64	LLNL	1870	670	74	Above
STURGEON	U3BO	Yucca Flat	4/15/64	LANL	1580	490	65	Above
BOGEY	U9AU	Yucca Flat	4/17/64	LLNL	1844	391	38	Above
PIPEFISH	U3CO	Yucca Flat	4/29/64	LANL	1550	860	112	Above
DRIVER	U9AR	Yucca Flat	5/7/64	LLNL	1811	492	42	Above
BACKSWING	U9AW	Yucca Flat	5/14/64	LLNL	1821	527	83	Above
MINNOW	U3CV	Yucca Flat	5/15/64	LANL	1610	790	73	Above
ACE	U2N	Yucca Flat	6/11/64	LLNL	1939	864	59	Above
BITTERLING	U3CU	Yucca Flat	6/12/64	LANL	1560	640	45	Above
DUFFER	U10D S	Yucca Flat	6/18/64	LLNL	1896	1466	48	Above
FADE	U9BE	Yucca Flat	6/25/64	LLNL	1896	873	99	Above
DUB	U10A	Yucca Flat	6/30/64	LLNL	1864	850	114	Above
BYE	U10I	Yucca Flat	7/16/64	LLNL	1909	1282	122	Above
CORMORANT	U3DF	Yucca Flat	7/17/64	LANL	1600	900	25	Above
LINKS	U9BF	Yucca Flat	7/23/64	LLNL	1873	395	19	Above
TROGON	U3DJ	Yucca Flat	7/24/64	LANL	1630	640	60	Above
ALVA	U2J	Yucca Flat	8/19/64	LLNL	2014	545	80	Above
CANVASBACK	U3CP	Yucca Flat	8/22/64	LANL	1710	1480	89	Above
PLAYER	U9CC	Yucca Flat	8/27/64	LLNL	1811	296	2	Above
HADDOCK	U3DL	Yucca Flat	8/28/64	LANL	1700	1200	73	Above
GUANAY	U3DI	Yucca Flat	9/4/64	LANL	1580	870	91	Above
SPOON	U9BD	Yucca Flat	9/11/64	LLNL	1919	590	54	Above
COURSER	U3DO	Yucca Flat	9/25/64	LANL	1770	1180	23	Above
AUK	U7B	Yucca Flat	10/2/64	LANL	1810	1480	109	Above
PAR	U2P	Yucca Flat	10/9/64	LLNL	1949	1331	160	Above
BARBEL	U3BX	Yucca Flat	10/16/64	LANL	1590	860	94	Above
TURNSTONE	U3DT	Yucca Flat	10/16/64	LANL	2130	420	18	Above
GARDEN	U9AJ	Yucca Flat	10/23/64	LLNL	1873	491	2	Above
FOREST	U7A	Yucca Flat	10/31/64	LLNL	1888	1269	83	Above
HANDCAR	U10B	Yucca Flat	11/5/64	LLNL	1949	1323	69	Above
CREPE	U2Q	Yucca Flat	12/5/64	LLNL	1801	1325	160	Above
DRILL 1	U2AI	Yucca Flat	12/5/54	LLNL	1886	718	41	Above
DRILL 2	U2AI	Yucca Flat	12/5/64	LLNL	1886	618	49	Above
MUDPACK	U10N	Yucca Flat	12/16/64	LLNL	1949	499	76	Above
CASSOWARY	U3BN	Yucca Flat	12/16/64	LANL	1590	500	12	Above
HOOPOE	U3CF	Yucca Flat	12/16/64	LANL	1630	240	8	Above
PARROT	[illegible]	Yucca Flat	12/16/64	LANL	1600	600	53	Above
[illegible]	[illegible]	Yucca Flat	1/14/65	LLNL	[illegible]	709	100	Above
[illegible]	[illegible]	Yucca Flat	1/20/65	LANL	[illegible]	700	74	Above

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOOK
STURGEON
BOGEY
PIPEFISH
DRIVER
BACKSWING
MINNOW
ACE
BITTERLING
DUFFER
FADE
DUB
BYE
CORMORANT
LINKS
TROGON
ALVA
CANVASBACK
PLAYER
HADDOCK
GUANAY
SPOON
COURSER
AUK
PAR
BARBEL
TURNSTONE
GARDEN
FOREST
HANDCAR
CREPE
DRILL 1
DRILL2
MUDPACK
CASSOWARY
HOOPOE
PARROT
WOOL
[illegible]

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOOK
STURGEON
BOGEY
PIPEFISH
DRIVER
BACKSWING
MINNOW
ACE
BITTERLING
DUFFER
FADE
DUB
BYE
CORMORANT
LINKS
TROGON
ALVA
CANVASBACK
PLAYER
HADDOCK
GUANAY
SPOON
COURSER
AUK
PAR
BARBEL
TURNSTONE
GARDEN
FOREST
HANDCAR
CREPE
DRILL 1
DRILL2
MUDPACK
CASSOWARY
HOOPOE
PARROT
WOOL
[illegible]

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOOK
STURGEON
BOGEY
PIPEFISH
DRIVER
BACKSWING
MINNOW
ACE
BITTERLING
DUFFER
FADE
DUB
BYE
CORMORANT
LINKS
TROGON
ALVA
CANVASBACK
PLAYER
HADDOCK
GUANAY
SPOON
COURSER
AUK
PAR
BARBEL
TURNSTONE
GARDEN
FOREST
HANDCAR
CREPE
DRILL 1
DRILL2
MUDPACK
CASSOWARY
HOOPOE
PARROT
WOOL

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOOK
STURGEON
BOGEY
PIPEFISH
DRIVER
BACKSWING
MINNOW
ACE
BITTERLING
DUFFER
FADE
DUB
BYE
CORMORANT
LINKS
TROGON
ALVA
CANVASBACK
PLAYER
HADDOCK
GUANAY
SPOON
COURSER
AUK
PAR
BARBEL
TURNSTONE
GARDEN
FOREST
HANDCAR
CREPE
DRILL 1
DRILL2
MUDPACK
CASSOWARY
HOOPOE
PARROT
[illegible]
[illegible]

DOE b(3)

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DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
CASHMERE	U2AD	Yucca Flat	2/4/65	LLNL	1854	765	101	Above
ALPACA	U2A	Yucca Flat	2/12/65	LLNL	1991	738	24	Above
MERLIN	U3CT	Yucca Flat	2/16/65	LANL	1640	980	99	Above
SEERSUCKER	U9BM	Yucca Flat	2/19/65	LLNL	1870	473	29	Above
SUEDE	U9BK	Yucca Flat	3/20/65	LLNL	1909	470	53	Above
CHENILLE	U9BG	Yucca Flat	4/22/65	LLNL	1890	462	88	Above
MUSCOVY	U3DX	Yucca Flat	4/23/65	LANL	1590	600	55	Above
TEE	U2AB	Yucca Flat	5/7/65	LLNL	1890	605	98	Above
SCAUP	U3DAS	Yucca Flat	5/14/65	LANL	1690	1470	154	Above
TWEED	U9BN	Yucca Flat	5/21/65	LLNL	1900	933	156	Above
ORGANDY	U9BO	Yucca Flat	6/11/65	LLNL	1939	554	94	Above
PETREL	U3DY	Yucca Flat	6/11/65	LANL	1610	600	57	Above
IZZER	U9BP	Yucca Flat	7/16/65	LLNL	1870	537	73	Above
PONGEE	U2AH	Yucca Flat	7/22/65	LLNL	1864	442	22	Above
MAUVE	U3DP	Yucca Flat	8/6/65	LANL	1580	1060	121	Above
TICKING	U9BJ	Yucca Flat	8/21/65	LLNL	1926	684	101	Above
CENTAUR	U2AK	Yucca Flat	8/27/65	LLNL	1896	570	98	Above
SCREAMER	U3DG	Yucca Flat	9/1/65	LANL	1590	1000	120	Above
MOA	U3ED	Yucca Flat	9/1/65	LANL	1580	650	76	Above
CHARCOAL	U7G	Yucca Flat	9/10/65	LANL	1710	1490	148	Above
ELKHART	U9BS	Yucca Flat	9/17/65	LLNL	1854	723	115	Above
SEPIA	U3EN	Yucca Flat	11/12/65	LANL	1640	800	87	Above
KERMET	U2C	Yucca Flat	11/23/65	LLNL	1959	644	141	Above
EMERSON	U2AL	Yucca Flat	12/16/65	LLNL	1886	855	124	Above
MAXWELL	U9BR	Yucca Flat	1/13/66	LLNL	1896	600	81	Above
SIENNA	U3CJ	Yucca Flat	1/18/66	LANL	1600	910	100	Above
DOVEKIE	U3CD	Yucca Flat	1/21/66	LANL	1600	1090	92	Above
RED	U10M	Yucca Flat	1/22/66	LLNL	1873	683	73	Above
PLAID II	U2R	Yucca Flat	2/3/66	LLNL	1850	881	106	Above
CINNAMON	U3DM	Yucca Flat	3/7/66	LANL	1600	400	8	Above
FINFOOT	U3DU	Yucca Flat	3/7/66	LANL	1601	640	83	Above
CLYMER	U9CE	Yucca Flat	3/12/66	LLNL	1841	1306	158	Above
[illegible]	U3DS	Yucca Flat	3/18/66	LANL	1580	1100	91	Above
TEMPLAR	U9BT	Yucca Flat	3/24/66	LLNL	1880	492	74	Above
STUTZ	U2CA	Yucca Flat	4/6/66	LLNL	1371	742	93	Above
TOMATO	U3EK	Yucca Flat	4/7/66	LANL	1630	740	100	Above
[illegible]	U2M 1	Yucca Flat	4/23/66	LLNL	2011	549	58	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	410	8	Above
[illegible]	U2C[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CASHMERE
ALPACA
MERLIN
SEERSUCKER
SUEDE
CHENILLE
MUSCOVY
TEE
SCAUP
TWEED
ORGANDY
PETREL
IZZER
PONGEE
MAUVE
TICKING
CENTAUR
SCREAMER
MOA
CHARCOAL
ELKHART
SEPIA
KERMET
EMERSON
MAXWELL
SIENNA
DOVEKIE
REO
PLAID II
CINNAMON
FINFOOT
CLYMER
PURPLE
TEMPLAR
STUTZ
TOMATO
FENTON
OCHRE
TRAVELER

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CASHMERE
ALPACA
MERLIN
SEERSUCKER
SUEDE
CHENILLE
MUSCOVY
TEE
SCALP
TWEED
ORGANDY
PETREL
IZZER
PONGEE
MAUVE
TICKING
CENTAUR
SCREAMER
MOA
CHARCOAL
ELKHART
SEPIA
KERMET
EMERSON
MAXWELL
SIENNA
DOVEKIE
FEO
PLAID II
CINNAMON
FINFOOT
CLYMER
PURPLE
TEMPLAR
STUTZ
TOMATO
FENTON
OCHRE
TRAVELER

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
MERLIN
SEERSUCKER
SUEDE
CHENILLE
MUSCOVY
TEE
SCAUP
TWEED
ORGANDY
PETREL
IZZER
PONGEE
MAUVE
TICKING
CENTAUR
SCREAMER
MOA
CHARCOAL
ELKHART
SEPIA
KERMET
EMERSON
MAXWELL
SIENNA
DOVEKIE
RED
PLAID II
CINNAMON
FINFOOT
CLYMER
PURPLE
TEMPLAR
STUTZ
TOMATO
FENTON
[illegible]

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CASHMERE
ALPACA
MERLIN
SEERSUCKER
SUEDE
CHENILLE
MUSCOVY
TEE
SCAUP
TWEED
ORGANDY
PETREL
IZZER
PONGEE
MAUVE
TICKING
CENTAUR
SCREAMER
MOA
CHARCOAL
ELKHART
SEPIA
KERMET
EMERSON
MAXWELL
SIENNA
DOVEKIE
FEO
PLAID II
CINNAMON
FINFOOT
CLYMER
PURPLE
TEMPLAR
STUTZ
TOMATO
FENTON
[illegible]

DOE b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
CYCLAMEN	U3CX	Yucca Flat	5/5/66	LANL	1630	1000	120	Above
TAPESTRY	U2AN	Yucca Flat	5/12/66	LLNL	1890	816	105	Above
DISCUS THROWER	U8A	Yucca Flat	5/27/66	LANL	2200	1110	107	Above
KANKAKEE	U10P	Yucca Flat	6/15/66	LLNL	1880	1492	122	Above
VULCAN	U2BD	Yucca Flat	6/25/66	LLNL	1939	1059	154	Above
SAXON	U2CC	Yucca Flat	7/28/66	LLNL	1214	504	56	Above
ROVENA	U10S	Yucca Flat	8/10/66	LLNL	1870	640	56	Above
TANGERINE	U3EB	Yucca Flat	8/12/66	LANL	1630	290	8	Above
NEWARK	U10U	Yucca Flat	9/29/66	LLNL	1870	752	89	Above
KHAKI	U3ET	Yucca Flat	10/15/66	LANL	1630	770	28	Above
SIMMS	U10W	Yucca Flat	11/5/66	LLNL	1873	652	63	Above
AJAX	U9AL	Yucca Flat	11/11/66	LLNL	1821	787	94	Above
CERISE	U3EU	Yucca Flat	11/18/66	LANL	1600	690	75	Above
VIGIL	U10AD	Yucca Flat	11/22/66	LLNL	1864	300	26	Above
SIDECAR	U3EZ	Yucca Flat	12/13/66	LANL	1620	790	76	Above
RIVET 1	U10AA	Yucca Flat	1/18/67	LLNL	1864	498	68	Above
NASH	U2CE	Yucca Flat	1/19/67	LLNL	1404	1198	95	Above
BOURBON	U7N	Yucca Flat	1/20/67	LANL	1960	1840	112	Above
RIVET 2	U10Z	Yucca Flat	1/26/67	LLNL	1860	648	88	Above
WARD	U10X	Yucca Flat	2/8/67	LLNL	1860	853	99	Above
PERSIMMON	U3DN	Yucca Flat	2/23/67	LANL	1600	980	83	Above
RIVET 3	U10Y	Yucca Flat	3/2/67	LLNL	1860	898	141	Above
MUSHROOM	U3EF	Yucca Flat	3/3/67	LANL	1630	590	65	Above
FIZZ	U3FA	Yucca Flat	3/10/67	LANL	1600	390	8	Above
OAKLAND	U2BI	Yucca Flat	4/4/67	LLNL	2014	543	30	Above
HEILMAN	U2CG	Yucca Flat	4/6/67	LLNL	1194	501	34	Above
FAWN	U3EO	Yucca Flat	4/7/67	LANL	1650	890	91	Above
CHOCOLATE	U3ES	Yucca Flat	4/21/67	LANL	1590	790	84	Above
EFFENDI	U2AP	Yucca Flat	4/27/67	LLNL	1886	725	94	Above
MICKEY	U7M	Yucca Flat	5/10/67	LANL	1880	1640	126	Above
ABSINTHE	U3EP	Yucca Flat	5/26/67	LANL	1600	390	8	Above
SWITCH	U9CV	Yucca Flat	6/22/67	LLNL	1873	991	54	Above
[illegible]	[illegible]	Yucca Flat	6/29/67	LANL	1600	1020	109	Above
VITO	U10AB	Yucca Flat	7/14/67	LLNL	1870	317	2	Above
STANLEY	U10Q	Yucca Flat	7/27/67	LLNL	1841	1587	168	Above
[illegible]	U3EW	Yucca Flat	8/4/67	LANL	1590	790	97	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1530	84	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	1570	1090	121	Above

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CYCLAMEN
TAPESTRY
DISCUS THROWER
KANKAKEE
VULCAN
SAXON
ROVENA
TANGERINE
NEWARK
KHAKI
SIMMS
AJAX
CERISE
VIGIL
SIDECAR
RIVET 1
NASH
BOURBON
RIVET 2
WARD
PERSIMMON
RIVET 3
MUSHROOM
FIZZ
OAKLAND
HEILMAN
FAWN
CHOCOLATE
EFFENDI
MICKEY
ABSINTHE
SWITCH
UMBER
VITO
STANLEY
GIBSON
WASHER
BORDEAUX
LEXINGTON

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CYCLAMEN
TAPESTRY
DISCUS THROWER
KANKAKEE
VULCAN
SAXON
ROVENA
TANGERINE
NEWARK
KHAKI
SIMMS
AJAX
CERISE
VIGIL
SIDECAR
RIVET 1
NASH
BOURBON
RIVET 2
WARD
PERSIMMON
RIVET 3
MUSHROOM
FIZZ
OAKLAND
HEILMAN
FAWN
CHOCOLATE
EFFENDI
MICKEY
ABSINTHE
SWITCH
UMBER
VITO
STANLEY
GIBSON
WASHER
BORDEAUX
LEXINGTON

DOE
b(3)

~~SECRET~~

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CYCLAMEN
TAPESTRY
DISCUS THROWER
KANKAKEE
VULCAN
SAXON
ROVENA
TANGERINE
NEWARK
KHAKI
SIMMS
AJAX
CERISE
VIGIL
SIDECAR
RIVET 1
NASH
BOURBON
RIVET 2
WARD
PERSIMMON
RIVET 3
MUSHROOM
FIZZ
OAKLAND
HEILMAN
FAWN
CHOCOLATE
EFFENDI
MICKEY
ABSINTHE
SWITCH
UMBER
VITO
STANLEY
GIBSON
WASHER
BORDEAUX
LEXINGTON

DOE b(3)

UNCLASSIFIED

~~SECRET~~

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
CYCLAMEN
TAPESTRY
DISCUS THROWER
KANKAKEE
VULCAN
SAXON
ROVENA
TANGERINE
NEWARK
KHAKI
SIMMS
AJAX
CERISE
VIGIL
SIDECAR
RIVET 1
NASH
BOURBON
RIVET 2
WARD
PERSIMMON
RIVET 3
MUSHROOM
FIZZ
OAKLAND
HEILMAN
FAWN
CHOCOLATE
EFFENDI
MICKEY
ABSINTHE
SWITCH
UMBER
VITO
STANLEY
GIBSON
WASHER
BORDEAUX
LEXINGTON

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
GILROY	U3EX	Yucca Flat	9/15/67	LANL	1610	790	34	Above
MARVEL	U10D S1	Yucca Flat	9/21/67	LLNL	1896	577	71	Above
WORTH	U10AG	Yucca Flat	10/25/67	LLNL	1850	615	43	Above
SAZERAC	U3FA	Yucca Flat	10/25/67	LANL	1610	990	113	Above
COGNAC	U3FM	Yucca Flat	10/25/67	LANL	1640	790	63	Above
POLKA	U10AI	Yucca Flat	12/6/67	LLNL	1860	625	63	Above
STILT	U3FH	Yucca Flat	12/15/67	LANL	1650	1090	86	Above
HUPMOBILE	U2Y	Yucca Flat	1/18/68	LLNL	1909	810	105	Above
STACCATO	U10AH	Yucca Flat	1/19/68	LLNL	1860	1455	152	Above
BRUSH	U3EQ	Yucca Flat	1/24/68	LANL	1620	400	28	Above
MALLET	U3FV	Yucca Flat	1/31/68	LANL	1570	790	97	Above
TORCH	U3FJ	Yucca Flat	2/21/68	LANL	1670	790	18	Above
RUSSET	U6A	Yucca Flat	3/5/68	LANL	1500	390	12	Above
POMMARD	U3EE	Yucca Flat	3/14/68	LANL	1640	690	75	Above
BEVEL	U3FU	Yucca Flat	4/4/68	LANL	1630	790	18	Above
NOOR	U2BE	Yucca Flat	4/10/68	LLNL	1982	1250	142	Above
THROW	U2BG	Yucca Flat	4/10/68	LLNL	1949	750	81	Above
SHUFFLE	U10T	Yucca Flat	4/18/68	LLNL	1886	1818	129	Above
HATCHET	U3FZ	Yucca Flat	5/3/68	LANL	1800	790	90	Above
CROCK	U10AK	Yucca Flat	5/8/68	LLNL	1900	596	77	Above
CLARKSMOBILE	U2AS	Yucca Flat	5/17/68	LLNL	1814	1550	139	Above
ADZE	U3FW	Yucca Flat	5/28/68	LANL	1600	790	21	Above
WEMBLEY	U3EY	Yucca Flat	6/5/68	LANL	1610	790	83	Above
TUB F	U10AJ A	Yucca Flat	6/6/68	LLNL	1880	620	26	Above
TUB B	U10AJ B	Yucca Flat	6/6/68	LLNL	1873	620	76	Above
TUB A	U10AJ C	Yucca Flat	6/6/68	LLNL	1886	620	81	Above
TUB D	U10AJ D	Yucca Flat	6/6/68	LLNL	1870	896	76	Above
TUB C	U10AJ F	Yucca Flat	6/6/68	LLNL	1986	620	51	Above
SEVILLA	U3FK	Yucca Flat	6/25/68	LANL	1720	1180	18	Above
FUNNEL	U3GA	Yucca Flat	6/25/68	LANL	1610	390	38	Above
SPUD	U3FY	Yucca Flat	7/17/68	LANL	1580	790	71	Above
TANYA	[illegible]	Yucca Flat	7/30/68	LLNL	1844	1250	119	Above
[illegible]	[illegible]	Yucca Flat	8/9/68	LLNL	1991	600	85	Above
RACK	U3AP	Yucca Flat	8/15/68	LLNL	1811	655	82	Above
KNIFE A	U3FB	Yucca Flat	9/12/68	LANL	1810	1090	51	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1535	153	Above
[illegible]	[illegible]	[illegible]	10/3/68	LANL	[illegible]	900	69	Above
[illegible]	[illegible]	[illegible]	10/3/68	LANL	[illegible]	300	17	Above

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
MP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
IMP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
IMP
RACK
KNIFE A
STODDARD
KNIFE C
[illegible]

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
MP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
VAT	U8CF	Yucca Flat	10/10/68	LLNL	1814	630	132	Above
[illegible]	[illegible]	Yucca Flat	10/29/68	LLNL	1814	658	70	Above
[illegible]	[illegible]	Yucca Flat	10/31/68	LANL	1590	750	90	Above
BIT A	U3GT	Yucca Flat	10/31/68	LANL	1630	390	8	Above
BIT B	[illegible]	Yucca Flat	10/31/68	LANL	1630	390	8	Above
CREW	U2DB	Yucca Flat	11/4/68	LLNL	1900	1180	264	Above
KNIFE B	U3DZ	Yucca Flat	11/15/68	LANL	1590	1190	81	Above
AUGER	U3FX	Yucca Flat	11/15/68	LANL	1710	790	65	Above
TINDERBOX	U9AZ	Yucca Flat	11/22/68	LLNL	1824	1450	111	Above
TYG A	U2DC 1	Yucca Flat	12/12/68	LLNL	1850	749	99	Above
TYG B	U2DC 2	Yucca Flat	12/12/68	LLNL	1850	824	80	Above
SCISSORS	U3GH	Yucca Flat	12/12/68	LANL	1580	790	84	Above
BAYLEAF	U3GO	Yucca Flat	12/12/68	LANL	1630	430	8	Above
TYG C	U2DC 3	Yucca Flat	12/12/68	LLNL	1841	749	85	Above
TYG D	U2DC 4	Yucca Flat	12/12/68	LLNL	1850	679	76	Above
TYG E	U2DC 5	Yucca Flat	12/12/68	LLNL	1841	649	106	Above
TYG F	U2DC 6	Yucca Flat	12/12/68	LLNL	1850	869	110	Above
PACKARD	U2U	Yucca Flat	1/15/69	LLNL	1909	810	109	Above
SHAVE	U3GK	Yucca Flat	1/22/69	LANL	1610	790	90	Above
BIGGIN	U9BZ	Yucca Flat	1/30/69	LLNL	1821	800	19	Above
VISE	U3EJ	Yucca Flat	1/30/69	LANL	1650	1490	123	Above
WINCH	U3GF	Yucca Flat	2/4/69	LANL	1590	790	47	Above
NIPPER	U3GL	Yucca Flat	2/4/69	LANL	1580	790	75	Above
VALISE	U9BY	Yucca Flat	3/18/69	LLNL	1824	300	9	Above
CHATTY	U2BN	Yucca Flat	3/18/69	LLNL	1991	640	97	Above
BARSAC	U3GC	Yucca Flat	3/20/69	LANL	1590	1000	130	Above
COFFER	U2DE	Yucca Flat	3/21/69	LLNL	1919	1525	155	Above
GOURD A	U2BF	Yucca Flat	4/24/69	LLNL	2011	595	73	Above
GOURD B	U2BL	Yucca Flat	4/24/69	LLNL	2001	744	73	Above
ALIMENT	U3GJ	Yucca Flat	5/15/69	LANL	1650	800	71	Above
IPECAC A	U3HK-A	Yucca Flat	5/27/69	LANL	1580	410	12	Above
IPECAC B	U3HK-B	Yucca Flat	5/27/69	LANL	1590	410	24	Above
TORRIDO	U7W	Yucca Flat	5/27/69	LANL	1860	1690	130	Above
[illegible]	[illegible]	Yucca Flat	6/12/69	LANL	1690	990	120	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	[illegible]	650	84	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	750	101	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	1346	155	Above
[illegible]	[illegible]	Yucca Flat	9/14/69	LLNL	1926	700	60	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Above

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
[illegible]
SPIDER
SPIDER

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
ILDRIM
SPIDER
[illegible]

Table XI - Yucca Flat (Above Water Table) - 1994

DoE
b(3)

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BOGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
LINK
SPIDER
SPIDER

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
LOAM
SPIDER
SPIDER

DOE
b(3)

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
HOREHOUND	U3GM	Yucca Flat	8/27/69	LANL	1560	1090	81	Above
[illegible]	[illegible]	Yucca Flat	8/27/69	LANL	1560	780	92	Above
KYACK 1	[illegible]	Yucca Flat	9/20/69	LLNL	1959	610	93	Above
KYACK 2	[illegible]	Yucca Flat	9/20/69	LLNL	1959	630	74	Above
SEAWEED E	U3HK-C	Yucca Flat	10/1/69	LANL	1590	410	8	Above
SEAWEED C	U3HK-E	Yucca Flat	10/1/69	LANL	1590	390	8	Above
SEAWEED D	U3HK-F	Yucca Flat	10/1/69	LANL	1590	390	8	Above
SEAWEED B	U3HK-D	Yucca Flat	10/16/69	LANL	1590	390	8	Above
CRUET	U2CN	Yucca Flat	10/29/69	LLNL	1959	865	145	Above
POD A	[illegible]	Yucca Flat	10/29/69	LLNL	1171	875	95	Above
POD B	U2CI	Yucca Flat	10/29/69	LLNL	1391	816	21	Above
POD C	U2CJ	Yucca Flat	10/29/69	LLNL	1335	560	26	Above
POD D	U2CK	Yucca Flat	10/29/69	LLNL	1260	1025	119	Above
SCUTTLE	U2BH	Yucca Flat	11/13/69	LLNL	1982	540	59	Above
PLANER	U3EL	Yucca Flat	11/21/69	LANL	1570	1240	16	Above
PICCALILLI	U3FC	Yucca Flat	11/21/69	LANL	1610	1290	122	Above
TUN 1	U10AM 1	Yucca Flat	12/10/69	LLNL	2014	655	86	Above
TUN 2	U10AM 2	Yucca Flat	12/10/69	LLNL	2024	636	88	Above
CULANTRO A	U3HI-A	Yucca Flat	12/10/69	LANL	1580	440	38	Above
CULANTRO B	U3HI-B	Yucca Flat	12/10/69	LANL	1580	490	50	Above
TUN 3	U10AM 3	Yucca Flat	12/10/69	LLNL	2005	635	87	Above
TUN 4	U10AM 4	Yucca Flat	12/10/69	LLNL	2011	841	97	Above
LOVAGE	U3FE	Yucca Flat	12/17/69	LANL	1560	1240	144	Above
TERRINE A	U9BI 1	Yucca Flat	12/18/69	LLNL	1841	1500	152	Above
TERRINE B	U9BI 2	Yucca Flat	12/18/69	LLNL	1880	1370	149	Above
FOB A	U9IV 24	Yucca Flat	1/23/70	LLNL	1850	802	103	Above
FOB B	U9IV 27	Yucca Flat	1/23/70	LLNL	1841	872	93	Above
FOB C	U9IY 27	Yucca Flat	1/23/70	LLNL	1870	330	4	Above
AJO	[illegible]	Yucca Flat	1/30/70	LANL	1600	1000	110	Above
[illegible]	[illegible]	Yucca Flat	2/4/70	LANL	1650	1380	162	Above
LABIS	U10AN	Yucca Flat	2/5/70	LLNL	1900	1450	107	Above
CUMARIN	U3GZ	Yucca Flat	2/25/70	LANL	1650	1340	134	Above
[illegible] A	U2AY 1	Yucca Flat	2/26/70	LLNL	1901	1286	192	Above
[illegible]	[illegible]	Yucca Flat	2/26/70	LLNL	[illegible]	1295	172	Above
[illegible] C	[illegible]	Yucca Flat	2/26/70	LLNL	[illegible]	1193	158	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	954	118	Above
[illegible]	[illegible]	[illegible]	3/6/70	LLNL	[illegible]	820	96	Above
ARABIS B	[illegible]	Yucca Flat	3/6/70	LLNL	1854	849	64	Above
ARABIS C	U9IZ 26	Yucca Flat	3/6/70	LLNL	[illegible]	330	2	Above

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOREHOUND
FLEES
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRLET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
[illegible]
[illegible]
[illegible] C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE b(3)

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SECRET

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOREHOUND
PLIERS
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOREHOUND
PLIERS
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
HOREHOUND
PLIERS
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
JAL	U3HH	Yucca Flat	3/19/70	LANL	1550	1000	88	Above
CAN A	U2DD 1	Yucca Flat	4/21/70	LLNL	1831	900	106	Above
SNUBBER	U3EV25	Yucca Flat	4/21/70	LANL	1800	1130	106	Above
CAN B	U2DD 4	Yucca Flat	4/21/70	LLNL	1841	1310	109	Above
HOD A	U9IZ 25	Yucca Flat	5/1/70	LLNL	1841	870	100	Above
BEEBALM	U3FN	Yucca Flat	5/1/70	LANL	1650	1280	104	Above
HOD B	U9IX 20	Yucca Flat	5/1/70	LLNL	1850	790	115	Above
HOD C	U9IX 23	Yucca Flat	5/1/70	LLNL	1873	330	5	Above
CORNICE A	U10AP 1	Yucca Flat	5/15/70	LLNL	1916	1260	145	Above
CORNICE B	U10AP 3	Yucca Flat	5/15/70	LLNL	1890	1455	183	Above
MORRONES	U3EI	Yucca Flat	5/21/70	LANL	1750	1580	139	Above
MANZANAS	U3GR	Yucca Flat	5/21/70	LANL	1610	789	48	Above
FLASK 2 (B)	U2AZ 2	Yucca Flat	5/26/70	LLNL	1831	1100	21	Above
FLASK 3 (C)	U2AZ 3	Yucca Flat	5/26/70	LLNL	1831	500	16	Above
PITON A	U9IAA25	Yucca Flat	5/28/70	LLNL	1870	775	69	Above
PITON B TAN	U9IY30	Yucca Flat	5/28/70	LLNL	1854	754	71	Above
PITON C YELL	U9IAA 25	Yucca Flat	5/28/70	LLNL	1854	330	11	Above
ARNICA A	U2DD 2	Yucca Flat	6/26/70	LLNL	1844	1015	134	Above
ARNICA B	U2DD 3	Yucca Flat	6/26/70	LLNL	1850	865	63	Above
SCREE A (T)	U9IZ 24	Yucca Flat	10/13/70	LLNL	1850	820	88	Above
SCREE B (Y)	U9IZ 21	Yucca Flat	10/13/70	LLNL	1870	330	2	Above
SCREE C (G)	U9IX 24	Yucca Flat	10/13/70	LLNL	1864	630	55	Above
RODARTE-TRUCHAS	U3HM	Yucca Flat	10/28/70	LANL	1570	870	71	Above
CHACON-TRUCHAS	U3HN	Yucca Flat	10/28/70	LANL	1570	390	8	Above
CHAMISAL-TRUCHAS	U3HO	Yucca Flat	10/28/70	LANL	1570	390	8	Above
ABEYTAS	U3IX	Yucca Flat	11/5/70	LANL	1600	1290	124	Above
PENASCO	U3IL	Yucca Flat	11/19/70	LANL	1570	889	90	Above
CORAZON	U3HX	Yucca Flat	12/3/70	LANL	1580	790	40	Above
CARRIZOZO	U3HH	Yucca Flat	12/3/70	LANL	1570	910	29	Above
AVENS (ALK.)	U9IX 29	Yucca Flat	12/16/70	LLNL	1831	1004	23	Above
CANJILON	U3FO	Yucca Flat	12/16/70	LANL	1720	990	17	Above
ARTESIA	U7X	Yucca Flat	12/16/70	LANL	1960	1590	192	Above
AVENS (AND.)	U9IW 21	Yucca Flat	12/16/70	LLNL	1894	1245	123	Above
[illegible]	[illegible]	Yucca Flat	12/16/70	LLNL	[illegible]	1005	109	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	965	146	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	912	122	Above
[illegible]	[illegible]	Yucca Flat	4/16/71	LANL	[illegible]	990	124	Above
DEXTER	U3HS	Yucca Flat	6/23/71	LANL	1570	390	8	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Above

DOE b(3)

UNCLASSIFIED

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
JAL
CAN A
SNUBBER
CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS
PENASCO
CORAZON
CARRIZOZO
AVENS (ALK.)
CANJILON
ARTESIA
AVENS (AND.)
AVENS (ASM.)
[illegible]
[illegible]
[illegible]
DEXTER
HAREBELL

DOE b(3)

UNCLASSIFIED

SECRET

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
JAL
CAN A
SNUBBER
CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS
PENASCO
CORAZON
CARRIZOZO
AVENS (ALK.)
CANJILON
ARTESIA
AVENS (AND.)
AVENS (ASM.)
[illegible]
BARBERRY
EMBUDO
DEXTER
HAREBELL

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
JAL
CAN A
SNUBBER
CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS
PENASCO
CORAZON
CARRIZOZO
AVENS (ALK.)
CANJILON
ARTESIA
AVENS (AND.)
AVENS (ASM.)
[illegible]
[illegible]
EMBUDO
DEXTER
HAREBELL

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
JAL
CAN A
SNUBBER
CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS
PEÑASCO
CORAZON
CARRIZOZO
AVENS (ALK.)
CANJILON
ARTESIA
AVENS (AND.)
AVENS (ASH.)
[illegible]
BAYBERRY
EMBUDO
DEXTER
HAREBELL

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
[illegible]	U10AQ	Yucca Flat	7/8/71	LLNL	1929	1000	62	Above
[illegible]	[illegible]	Yucca Flat	7/21/71	LANL	1510	790	50	Above
[illegible]	[illegible]	Yucca Flat	8/4/71	LANL	1590	890	13	Above
NAMA A	U9IZ 27	Yucca Flat	8/5/71	LLNL	1870	895	13	Above
NAMA B	U9IXY31	Yucca Flat	8/6/71	LLNL	1873	800	27	Above
BALTIC	U9IS 25	Yucca Flat	8/6/71	LLNL	1824	1350	24	Above
GUAJE-FRIJOLES	U3HF	Yucca Flat	9/22/71	LANL	1580	840	55	Above
POCA-FRIJOLES	U3HZ	Yucca Flat	9/22/71	LANL	1580	740	50	Above
ESPUELA-FRIJOLES	U3AJ	Yucca Flat	9/22/71	LANL	1580	490	8	Above
DEMING-FRIJOLES	U3HW	Yucca Flat	9/22/71	LANL	1580	490	8	Above
CHANTILLY	U2DI	Yucca Flat	9/29/71	LLNL	1880	1085	24	Above
PEDERNAL	U3HB	Yucca Flat	9/29/71	LANL	1560	1240	78	Above
CATHAY	U8CH	Yucca Flat	10/8/71	LLNL	1864	1240	148	Above
LAGOON	U10AR	Yucca Flat	10/14/71	LLNL	1890	1000	114	Above
PARNASSIA	U2BC	Yucca Flat	11/30/71	LLNL	1949	1085	134	Above
CHAENACTIS	U2DL	Yucca Flat	12/14/71	LLNL	1864	1085	115	Above
YERBA	U1C	Yucca Flat	12/14/71	LANL	1570	1090	106	Above
HOSPAH	U3JE	Yucca Flat	12/14/71	LANL	1590	990	106	Above
MESCALERO	U3GU	Yucca Flat	1/5/72	LANL	1620	390	8	Above
COWLES	U3HX	Yucca Flat	2/3/72	LANL	1550	990	81	Above
DIANTHUS	U10AT	Yucca Flat	2/17/72	LLNL	1844	1000	131	Above
SAPPHO	U2DH 2	Yucca Flat	3/23/72	LLNL	1831	649	55	Above
OCATE	U3JP	Yucca Flat	3/30/72	LANL	1550	690	68	Above
ONAJA	U3JS	Yucca Flat	3/30/72	LANL	1560	920	113	Above
LONGCHAMPS	U2DM	Yucca Flat	4/19/72	LLNL	1850	1071	116	Above
JICARILLA	U3JM	Yucca Flat	4/19/72	LANL	1560	490	24	Above
[illegible]	U2DH 3	Yucca Flat	5/11/72	LLNL	1831	850	85	Above
ZINNIA	U2DK	Yucca Flat	5/17/72	LLNL	1964	1059	124	Above
[illegible]	U2DN	Yucca Flat	6/7/72	LLNL	1850	670	78	Above
HAPLOPAPPUS	U9IW 22	Yucca Flat	6/28/72	LLNL	1884	605	37	Above
CAPITAN	U3JJ	Yucca Flat	6/28/72	LANL	1550	440	8	Above
TAJIQUE	U7AA	Yucca Flat	6/28/72	LANL	1850	1090	60	Above
[illegible]	[illegible]	Yucca Flat	7/25/72	LANL	[illegible]	970	76	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	940	14	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	8	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	970	102	Above
[illegible]	[illegible]	Yucca Flat	11/9/72	LLNL	1880	875	95	Above
ARSENATE	[illegible]	Yucca Flat	11/9/72	LLNL	[illegible]	821	74	Above

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
BRACKEN
[illegible]
BARRANCA
NAMA A
NAMA B
BALTIC
GUAJE-FRIJOLES
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
CHANTILLY
PEDERNAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
ONAJA
LONGCHAMPS
JICARILLA
KARA
ZINNIA
MERIDA
HAPLOPAPPUS
CAPITAN
TAJIQUE
ATARQUE
CEBOLLA
CUCHILLO
[illegible]
[illegible]
AKBAR
[illegible]

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
APODACA
BARRANCA
NAMA A
NAMA B
BALTIC
GUAJE-FRIJOLES
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
CHANTILLY
PEDERNAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
ONAJA
LONGCHAMPS
JICARILLA
KARA
ZINNIA
MERIDA
HAPLOPAPPUS
CAPITAN
TAJIQUE
ATARQUE
CEBOLLA
CUCHILLO
SOLANO
DELPHINIUM
AKBAR
ARSENATE

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
BRACKEN
APODACA
BARRANCA
NAMA A
NAMA B
BALTIC
GUAJE-FRIJOLES
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
CHANTILLY
PEDERNAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
ONAJA
LONGCHAMPS
JICARILLA
KARA
ZINNIA
MERIDA
HAPLOPAPPUS
CAPITAN
TAJIQUE
ATARQUE
CEBOLLA
CUCHILLO
SOLANO
DELPHINIUM
AKBAR
ARSENATE

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
BARRANCA
NAMA A
NAMA B
BALTIC
GUAJE-FRIJOLES
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
CHANTILLY
PEDERNAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
ONAJA
LONGCHAMPS
JICARILLA
KARA
ZINNIA
MERIDA
HAPLOPAPPUS
CAPITAN
TAJIQUE
ATARQUE
CEBOLLA
CUCHILLO
SOLANO
[illegible]
AKBAR
[illegible]

DOE
b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]			[illegible]	[illegible]	[illegible]	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
			[illegible]			530	[illegible]	[illegible]
			[illegible]			700	14	[illegible]
[illegible]	[illegible]	[illegible]	12/14/72	LANL	[illegible]	800	56	Above
[illegible]	[illegible]	[illegible]	12/14/72	LLNL	1715	660	29	Above
FLAX W68	U3DJ	Yucca Flat	12/21/72	LLNL	1893	1427	160	Above
FLAX W68	U3DJ	Yucca Flat	12/21/72	LLNL	1893	1460	25	Above
ALLAMOOT	U3CJ	Yucca Flat	2/14/73	LLNL	1950	600	35	Above
GAZOOK	U2DD	Yucca Flat	3/23/73	LLNL	1950	1070	56	Above
NATOMA	U10AW	Yucca Flat	4/5/73	LLNL	1877	800	21	Above
VELARDE	U3NR	Yucca Flat	4/25/73	LANL	1530	910	105	Above
COLMOR	U3HV	Yucca Flat	4/26/73	LANL	1550	810	60	Above
MESITA	U3JD	Yucca Flat	5/9/73	LANL	1560	490	33	Above
KASHAN	**U10AV**	**Yucca Flat**	**5/24/73**	**LLNL**	**1844**	**870**	**106**	**Above**
CABRESTO	U7H	Yucca Flat	5/24/73	LANL	1700	650	7	Above
PORTULACA	U9CK	Yucca Flat	6/28/73	LLNL	1939	1530	179	Above
SILENE	U2BV	Yucca Flat	6/28/73	LLNL	1811	650	31	Above
POLYGONUM	U2BZ	Yucca Flat	10/2/73	LLNL	1749	700	15	Above
WALLER	U2BY	Yucca Flat	10/2/73	LLNL	1923	1020	77	Above
BERNAL	U3JY	Yucca Flat	11/28/73	LANL	1550	940	123	Above
PAJARA	U3JI	Yucca Flat	12/12/73	LANL	1550	910	132	Above
SEAFOAM	U2EA	Yucca Flat	12/13/73	LLNL	1969	650	43	Above
ELIDA	**U3HY**	**Yucca Flat**	**12/19/73**	**LANL**	**1540**	**1250**	**20**	**Above**
SPAR	U3JR	Yucca Flat	12/19/73	LANL	1560	490	8	Above
PINEDROPS B	U10AS	Yucca Flat	1/10/74	LLNL	1880	1125	27	Above
PINEDROPS T	**U10AS**	**Yucca Flat**	**1/10/74**	**LLNL**	**1880**	**925**	**12**	**Above**
PINEDROPS S	U10AS	Yucca Flat	1/10/74	LLNL	1880	700	36	Above
HULSEA	U2BX	Yucca Flat	3/14/74	LLNL	1909	640	28	Above
SAPELLO	U3GE	Yucca Flat	4/12/74	LANL	1550	590	30	Above
POTRERO	U2EB	Yucca Flat	4/23/74	LLNL	1939	690	80	Above
PLOMO	**U3FF**	**Yucca Flat**	**5/1/74**	**LANL**	**1650**	**490**	**8**	**Above**
JIB	**U3HB**	**Yucca Flat**	**5/8/74**	**LANL**	**1520**	**590**	**25**	**Above**
GROVE	**U2DS**	**Yucca Flat**	**5/22/74**	**LLNL**	**1873**	**1030**	**139**	**Above**
FALLON	**U2DV**	**Yucca Flat**	**5/23/74**	**LLNL**	**1831**	**1530**	**179**	**Above**
JARA	U3HP	Yucca Flat	6/6/74	LANL	1500	1240	108	Above
CRESTLAKE B	U2DW	Yucca Flat	7/18/74	LLNL	1841	1226	49	Above
[illegible]	[illegible]	[illegible]	7/18/74	LLNL	[illegible]	891	111	Above
	[illegible]		[illegible]			1410	97	Above
PRATT	U3HO	Yucca Flat	7/23/74	LANL	1560	1030	114	Above
						[illegible]	81	Above

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]
[illegible]
SOLANUM
FLAX W68
FLAX W68
ALUMROOT
GAZOOK
NATCHIA
VELARDE
COLMOR
MESITA
KASHAN
CABRESTO
PORTULACA
SILENE
POLYGONUM
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA
SPAR
PINEDROPS B
PINEDROPS T
PINEDROPS S
HULSEA
SAPELLO
POTRERO
PLOMO
JIB
GROVE
FALLON
JARA
CRESTLAKE B
CRESTLAKE T
[illegible]
[illegible]
[illegible]

Table XI - Yucca Flat (Above Water Table) - 1994

TILLOSO	SOLANUM	FLAX W68	FLAX W68	ALUMROOT	GAZDOK	NATOMA	VELARDE	COLMOR	MESITA	KASHAN	CABRESTO	PORTULACA	SILENE	POLYGONUM	WALLER	BERNAL	PAJARA	SEAFOAM	ELIDA	SPAR	PINEDROPS B	PINEDROPS T	PINEDROPS S	HULSEA	SAPELLO	POTRERO	PLOMO	JB	GROVE	FALLON	JARA	CRESTLAKE B	[illegible]	[illegible]	[illegible]	[illegible]

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

CASSIA (UMB.)
CANNA (LIM.)
TULOSO
SOLANUM
FLAX W68
FLAX W68
ALUMROOT
GAZOOK
NATOMA
VELARDE
COLMOR
MESITA
KASHAN
CABRESTO
PORTULACA
SILENE
POLYGONUM
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA
SPAR
PINEDROPS B
PINEDROPS T
PINEDROPS S
HULSEA
SAPELLO
POTRERO
PLOMO
JIB
GROVE
FALLON
JARA
CRESTLAKE B
CRESTLAKE T
PIKE
PRATT
TRUMBULL

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]
CANNA ([illegible])
CANNA (LIM.)
TULOSO
SOLANUM
FLAX W68
FLAX W68
ALUMROOT
GAZOOK
NATOMA
VELARDE
COLMOR
MESITA
KASHAN
CABRESTO
PORTULACA
SILENE
POLYGONUM.
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA
SPAR
PINEDROPS B
PINEDROPS T
PINEDROPS S
HULSEA
SAPELLO
POTRERO
PLOMO
JIB
GROVE
FALLON
JARA
CRESTLAKE B
CRESTLAKE T
[illegible]
PRATT
TRUMBULL

DOE b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

					[illegible]	Depth of	Cavity	Above or Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1050	18	Above
[illegible]	[illegible]	[illegible]	11/2/74	[illegible]	1775	652	16	Above
[illegible]	[illegible]	Yucca Flat	11/26/74	LANL	1530	600	8	Above
[illegible]	[illegible]	Yucca Flat	12/16/74	LANL	1550	1000	98	Above
PORTOLA	U10BB	Yucca Flat	2/6/75	LLNL	1890	650	70	Above
LARKIN	U10BB	Yucca Flat	2/6/75	LLNL	1890	900	30	Above
TELEME	U9CL	Yucca Flat	2/6/75	LLNL	1850	1000	114	Above
BILGE	U3KC	Yucca Flat	2/19/75	LANL	1540	1040	50	Above
EDAM	U2DY	Yucca Flat	4/24/75	LLNL	1870	1350	149	Above
ALVISO	[illegible]	Yucca Flat	6/11/75	LLNL	1886	600	2	Above
FUTTOCK	U3EH	Yucca Flat	6/18/75	LANL	1880	610	8	Above
MARSH	U3KB	Yucca Flat	9/6/75	LANL	1580	1400	112	Above
DECK	U3HD	Yucca Flat	11/18/75	LANL	1510	1070	105	Above
LEYDEN	[illegible]	Yucca Flat	11/26/75	LLNL	2011	1070	112	Above
SHALLOWS	U3JF	Yucca Flat	2/26/76	LANL	1560	800	74	Above
RIVOLI	U2EG	Yucca Flat	5/20/76	LLNL	1837	656	58	Above
GOUDA	U2EF	Yucca Flat	10/6/76	LLNL	1841	656	62	Above
SPRIT	U3HC	Yucca Flat	11/10/76	LANL	1530	600	33	Above
CHEVRE	U104Y	Yucca Flat	11/23/76	LLNL	1864	1040	94	Above
FEDAHD	U7AB	Yucca Flat	12/8/76	LANL	1800	1400	107	Above
ASIAGO	U2AR	Yucca Flat	12/21/76	LLNL	1785	1085	118	Above
SUTTER	U2BW	Yucca Flat	12/21/76	LLNL	1841	656	54	Above
COVE	U3KI	Yucca Flat	2/16/77	LANL	1550	1100	92	Above
OARLOCK	U3KM	Yucca Flat	2/16/77	LANL	1510	1040	125	Above
DOFINO	U10BA	Yucca Flat	3/8/77	LLNL	1804	600	45	Above
LAWTON	U10BA	Yucca Flat	3/8/77	LLNL	1804	925	21	Above
[illegible]	[illegible]	Yucca Flat	6/2/77	LANL	1520	640	31	Above
[illegible]	[illegible]	Yucca Flat	7/28/77	LLNL	1755	682	92	Above
GRUYERE	[illegible]	Yucca Flat	8/16/77	LLNL	1742	679	69	Above
GRADINO	[illegible]	Yucca Flat	8/16/77	LLNL	1742	1050	.32	Above
FLOTOST	U2AO	Yucca Flat	8/16/77	LLNL	1827	902	87	Above
SCUPPER	U3HJ	Yucca Flat	8/19/77	LANL	1570	1480	55	Above
[illegible]	U3KT	Yucca Flat	9/15/77	LANL	1600	1250	115	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1250	137	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1210	139	Above
[illegible]	[illegible]	Yucca Flat	12/14/77	LANL	1550	700	68	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1050	93	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1088	116	Above
TOPMAST	[illegible]	Yucca Flat	3/23/78	LANL	1810	1500	102	Above

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Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]
[illegible]
KEEL
PORTOLA
LARKIN
TELEME
BILGE
EDAM
ALVISO
FUTTOCK
MARSH
DECK
LEYDEN
SHALLOWS
RIVOLI
GOUDA
SPRIT
CHEVRE
REDMUD
ASIAGO
SUTTER
COVE
OARLOCK
DOFINO
LAWTON
FOREFOOT
CARNELIAN
GRUYERE
GRADINO
FLOTOST
SCUPPER
EBBTIDE
BOBSTAY
SEAMOUNT
FIB
CAMPOS
KARAB
TOPMAST

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
PUDDLE
KEEL
PORTOLA
LARKIN
TELEME
BILGE
EDAM
ALVISO
FUTTOCK
MARSH
DECK
LEYDEN
SHALLOWS
RIVOLI
GOUDA
SPRIT
CHEVRE
REDMUD
ASIAGO
BUTTER
COVE
DARLOCK
DOFINO
LAWTON
FOREFOOT
CARNELIAN
GRUYERE
GRADINO
FLOTOST
SCUPPER
EBBTIDE
BOBSTAY
[illegible]
FIB
CAMPOS
[illegible]
TOPMAST

DOE b(3)

UNCLASSIFIED

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name		
[illegible]		
[illegible]		
KEEL		
PORTOLA		
LARKIN		
TELEME		
BILGE		
EDAM		
ALVISO		
FUTTOCK		
MARSH		
DECK		
LEYDEN		
SHALLOWS		
RIVOLI		
GOUDA		
SPRIT		
CHEVRE		
REDMUD		
ASIAGO		
SUTTER		
COVE		
OARLOCK		
DORINO		
LAWTON		
FOREFOOT		
CARNELIAN		
GRUYERE		
GRADINO		
FLOTOST		
SCUPPER		
[illegible]		
[illegible]		
[illegible]		
FB		
[illegible]		
KARAB		
TOPMAST		
	7.95E-03	4.15E-04

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SECRET
UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]
[illegible]
[illegible]
KIEL
PORTOLA
LARKIN
TELEME
BILGE
EDAM
ALVISO
FUTTOCK
MARSH
DECK
LEYDEN
SHALLOWS
RIVOLI
GOUDA
SPRIT
CHEVRE
REDMUD
ASIAGO
SUTTER
COVE
OARLOCK
DOFINO
LAWTON
FOREFOOT
CARNELIAN
GRUYERE
GRADINO
FLOTOST
SCUPPER
[illegible]
BOBSTAY
SEAMOUNT
[illegible]
CAMPOS
KARAB
TOPMAST

DOE b(3)

UNCLASSIFIED
SECRET

Table XI - Yucca Flat (Above Water Table) - 1994

					Static Water	Depth of	Cavity	Above or Below
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	[illegible]	1033	121	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	[illegible]	689	62	Above
[illegible]	U7AL	Yucca Flat	9/27/78	LANL	1680	1450	128	Above
[illegible]	[illegible]	Yucca Flat	9/27/78	LLNL	1857	1378	15	Above
CONCENTRATION	U3KN	Yucca Flat	12/1/78	LANL	1570	810	70	Above
BACCARAT	U7AX	Yucca Flat	1/24/79	LANL	1680	1070	95	Above
[illegible]	U3KQ	Yucca Flat	3/14/79	LANL	1600	1200	106	Above
[illegible]	U3KW	Yucca Flat	5/11/79	LANL	1550	1100	120	Above
[illegible]	U7AT	Yucca Flat	6/20/79	LANL	1880	1100	90	Above
[illegible]	U4AI	Yucca Flat	[illegible]	LLNL	1673	1476	138	Above
OFFSHORE	U3KS	Yucca Flat	8/8/79	LANL	1530	1300	142	Above
[illegible]	U2EP	Yucca Flat	[illegible]	LLNL	1775	1522	202	Above
[illegible]	U10BD	Yucca Flat	[illegible]	LLNL	1814	656	71	Above
BACKGAMMON	U3JH	Yucca Flat	11/29/79	LANL	1550	750	81	Above
AZUL	U2EM	Yucca Flat	12/14/79	LLNL	1841	673	66	Above
[illegible]	U2FD	Yucca Flat	2/28/80	LLNL	1850	1211	135	Above
[illegible]	[illegible]	Yucca Flat	3/8/80	LLNL	1814	889	77	Above
LIPTAUER	U2EH	Yucca Flat	4/3/80	LLNL	1906	1368	172	Above
CANFIELD	U3KX	Yucca Flat	5/2/80	LANL	1630	1150	108	Above
FLORA	U3LG	Yucca Flat	5/22/80	LANL	1550	1100	66	Above
HURON KING	U3KY	Yucca Flat	6/24/80	LANL	1580	1050	106	Above
VERDELLO	[illegible]	Yucca Flat	7/31/80	LANL	1640	1200	112	Above
[illegible]	[illegible]	Yucca Flat	9/25/80	LLNL	1696	1391	64	Above
BONARDA	U3GV	Yucca Flat	9/25/80	LANL	1640	1250	85	Above
DUTCHESS	U7BM	Yucca Flat	10/24/80	LANL	1750	1400	105	Above
DAUPHIN	U3CO	Yucca Flat	11/14/80	LLNL	1903	1050	115	Above
CLAIRETTE	[illegible]	Yucca Flat	2/5/81	LANL	1560	1160	36	Above
[illegible]	[illegible]	Yucca Flat	2/25/81	LLNL	[illegible]	656	27	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1060	44	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1050	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	650	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	656	22	Above
[illegible]	[illegible]	Yucca Flat	8/27/81	LLNL	[illegible]	965	111	Above
[illegible]	[illegible]	Yucca Flat	9/4/81	LANL	1630	1000	67	Above
[illegible]	[illegible]	Yucca Flat	9/24/81	LANL	1550	700	53	Above
[illegible]	[illegible]	Yucca Flat	10/1/81	LANL	1740	1550	167	Above

[redacted]

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
CAERPHILLY
CONCENTRATION
BACCARAT
MEMORY
FREEZEOUT
CHESS
BURZET
OFFSHORE
NESSEL
FERIA
BACKGAMMON
AZUL
TARKO
NORBO
LIPTAUER
CANFIELD
FLORA
HURON KING
VERDELLO
RIOLA
BONARDA
DUTCHESS
DAUPHIN
CLAIRETTE
SECO
VIDE
[illegible]
ISLAY
TREBBIANO
CERNADA
PALIZA

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
SATZ
CREMINO
[illegible]
CAERPHILLY
CONCENTRATION
BACCARAT
MEMORY
FREEZEOUT
CHESS
BURZET
OFFSHORE
NESSEL
FERIA
BACKGAMMON
AZUL
TARKO
NORBO
UPTAUER
CANFIELD
FLORA
HURON KING
VERDELLO
RIOLA
BONARDA
DUTCHESS
DAUPHIN
CLAIRETTE
SECO
VIDE
[illegible]
HAVARTI
ISLAY
TREBBIANO
CERNADA
PALIZA

DOE b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
SATZ
[illegible]
DRAUGHTS
CAERPHILLY
CONCENTRATION
BACCARAT
MEMORY
FREEZEOUT
CHESS
BUFFET
OFFSHORE
NESSEL
FERA
BACKGAMMON
AZUL
TARKO
NORBO
LIPTAUER
CANFIELD
FLORA
HURON KING
VERDELLO
RIOLA
BONARDA
DUTCHESS
DAUPHIN
CLAIRETTE
SECO
VIDE
ALIGOTE
[illegible]
HAVARTI
ISLAY
TREBBIANO
CERNADA
PALIZA

DOE
b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]
[illegible]
[illegible]
[illegible]
CAERPHILLY
CONCENTRATION
BACCARAT
MEMORY
FREEZEOUT
CHESS
BURZET
OFFSHORE
NESSEL
PERA
BACKGAMMON
AZUL
TARKO
NORBO
LIPTAUER
CANFIELD
FLORA
HURON KING
VERDELLO
RIOLA
BONARDA
DUTCHESS
DAUPHIN
CLAIRETTE
SEDO
VIDE
ALIGOTE
[illegible]
HAVARTI
ISLAY
TREBBIANO
CERNADA
PALIZA

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	[illegible]	[illegible]	Date	[illegible]	Static Water [illegible]	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
						[illegible]	[illegible]	Above
		Yucca Flat	[illegible]	[illegible]	[illegible]	1170	104	Above
						[illegible]	[illegible]	[illegible]
						948	78	Above
		[illegible]	[illegible]	[illegible]	[illegible]	1312	110	Above
[illegible]	[illegible]	Yucca Flat	8/11/82	LLNL	[illegible]	709	51	Above
[illegible]	U3LF	Yucca Flat	9/2/82	LANL	1550	750	49	Above
FRISCO	[illegible]	Yucca Flat	9/23/82	LLNL	1854	1480	134	Above
SEYVAL	[illegible]	Yucca Flat	11/12/82	LANL	[illegible]	1200	118	Above
MANTECA	[illegible]	Yucca Flat	12/10/82	LLNL	[illegible]	1355	137	Above
COALORA	[illegible]	Yucca Flat	2/11/83	LANL	[illegible]	900	76	Above
CHEEDAM	[illegible]	Yucca Flat	2/17/83	LLNL	1900	1125	105	Above
ARMADA	[illegible]	Yucca Flat	4/22/83	LLNL	1900	869	101	Above
CROWDIE	U2FE	Yucca Flat	5/5/83	LLNL	1900	1280	156	Above
FAHADA	[illegible]	Yucca Flat	5/26/83	LANL	1970	1260	107	Above
DANABLU	U2EU	Yucca Flat	6/9/83	LLNL	1916	1050	134	Above
LABAN	U2FF	Yucca Flat	8/3/83	LLNL	1867	1070	125	Above
SABADO	U3LC	Yucca Flat	8/11/83	LANL	1510	1050	96	Above
JARLSBERG	U10CA	Yucca Flat	8/27/83	LLNL	1703	656	85	Above
HERKIMER	U2EW	Yucca Flat	9/21/83	LLNL	1775	1401	26	Above
BRANCO	U2EW	Yucca Flat	9/21/83	LLNL	1775	961	103	Above
NAVATA	U3LB	Yucca Flat	9/29/83	LANL	1610	600	8	Above
MUGGINS	U3LS	Yucca Flat	12/9/83	LANL	1580	800	73	Above
[illegible]	[illegible]	Yucca Flat	1/31/84	LLNL	1952	1273	148	Above
[illegible]	[illegible]	Yucca Flat	1/31/84	LLNL	1900	1050	126	Above
ORKNEY	U10GE	Yucca Flat	5/2/84	LLNL	1896	689	73	Above
[illegible]	U4AC	Yucca Flat	5/16/84	LLNL	1755	680	82	Above
[illegible]	U3LV	Yucca Flat	6/20/84	LANL	1570	1250	135	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	656	76	Above
		[illegible]	[illegible]	[illegible]	[illegible]	1100	120	Above
		[illegible]	[illegible]	[illegible]	[illegible]	1030	108	Above
						[illegible]	[illegible]	[illegible]
						[illegible]	[illegible]	Above
		[illegible]	[illegible]	LANL	[illegible]	1220	119	Above
		[illegible]	[illegible]	[illegible]	[illegible]	800	73	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		1400	118	Above
[illegible]	[illegible]	Yucca Flat	9/23/85	LLNL	[illegible]	1500	172	Above

DOE b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
TENAJA
[illegible]
[illegible]
[illegible]
CUESO
CERRO
FRISCO
SEYVAL
MANTECA
COALORA
CHEEDAM
ARMADA
CROWDIE
FAHADA
DANABLU
LABAN
SABADO
JARLSBERG
HERKIMER
BRANCO
NAVATA
MUGGINS
GORBEA
AGRINI
ORKNEY
BELLOW
DUORO
NORMANNA
COFFER
[illegible]
[illegible]
[illegible]
VILLITA
MINERO
VAUGHN
COTTAGE

DOE b(3)

Table VI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
QUESO
CERRO
FRISCO
SEYVAL
MANTECA
COALORA
CHEEDAM
ARMADA
CROWDIE
FAHADA
DANABLU
LABAN
SABADO
JARLSBERG
HERKIMER
BRANCO
NAVATA
MUGGINS
GORBEA
AGRINI
ORKNEY
BELLOW
[illegible]
[illegible]
[illegible]
WEXFORD
[illegible]
[illegible]
VILLITA
[illegible]
VAUGHN
COTTAGE

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
TILCI
[illegible]
CALICO
TIERRA
[illegible]
[illegible]
MONTEREY
QUESO
CERRO
FRISCO
SEYVAL
MANTECA
COALORA
CHEEDAM
ARMADA
CROWDIE
FAHADA
DANABLU
LABAN
SABADO
JARLSBERG
HERKIMER
BRANCO
NAVATA
MUGGINS
GORBEA
AGRINI
ORKNEY
BELLOW
DUORO
[illegible]
COFFER
WEXFORD
DOLCETTO
VERMEJO
VILLITA
MINERO
VAUGHN
COTTAGE

DOE (3)

SECRET

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
TECI
AMMI
[illegible]
[illegible]
[illegible]
[illegible]
QUESO
CERRO
FRISCO
SEYVAL
MANTECA
COALORA
CHEEDAM
ARMADA
CROWDIE
FAHADA
DANABLU
LABAN
SABADO
JARLSBERG
HERKIMER
BRANCO
NAVATA
MUGGINS
GORBEA
AGRINI
ORKNEY
BELLOW
DUORO
NORMANNA
[illegible]
[illegible]
DOLCETTO
VERMEJO
VILLITA
MINERO
VAUGHN
COTTAGE

DOE b(3)

DOE b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Static Water [illegible]	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	952	129	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1250	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	24	Above
[illegible]	[illegible]	[illegible]	[illegible]	LANL	[illegible]	850	72	Above
[illegible]	[illegible]	Yucca Flat	5/21/86	LLNL	[illegible]	1575	70	Above
CORNUCOPIA	U2GA S	Yucca Flat	7/24/86	LLNL	1841	1250	135	Above
HAZEBROOK A	[illegible]	Yucca Flat	2/3/87	LLNL	1870	860	5	Above
HAZEBROOK C	[illegible]	Yucca Flat	2/3/87	LLNL	1570	741	14	Above
[illegible]	[illegible]	Yucca Flat	2/3/87	LLNL	1570	510	11	Above
TORNERO	U3LL	Yucca Flat	2/11/87	LANL	1570	980	106	Above
[illegible]	[illegible]	Yucca Flat	4/22/87	LANL	1500	1050	75	Above
[illegible]	U10CC	Yucca Flat	[illegible]	LLNL	1703	656	78	Above
PANCHUELA	[illegible]	Yucca Flat	6/30/87	LANL	1400	1050	124	Above
MIDLAND	U7BY	Yucca Flat	7/16/87	LANL	1820	1600	136	Above
WACO	U3LU	Yucca Flat	12/1/87	LANL	1510	600	25	Above
ABILENE	[illegible]	Yucca Flat	4/7/88	LANL	1580	800	77	Above
[illegible]	[illegible]	Yucca Flat	5/13/88	LLNL	1775	1519	166	Above
LAREDO	[illegible]	Yucca Flat	5/21/88	LANL	1570	1150	123	Above
RHYOLITE	U2EY	Yucca Flat	6/22/88	LLNL	1877	680	42	Above
NIGHTINGALE	U2EY	Yucca Flat	6/22/88	LLNL	1877	780	11	Above
HARLINGEN A	[illegible]	Yucca Flat	8/23/88	LANL	1510	950	82	Above
HARLINGEN B	[illegible]	Yucca Flat	8/23/88	LANL	1510	950	66	Above
MONAHANS A	U3LK	Yucca Flat	11/9/88	LANL	1510	950	65	Above
MONAHANS B	[illegible]	Yucca Flat	11/9/88	LANL	1510	950	53	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	1772	1211	11	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	1772	1260	7	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1214	117	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1414	2	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1640	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1100	[illegible]	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1280	2	Above
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1325	129	Above
[illegible]	[illegible]	Yucca Flat	5/26/89	LANL	[illegible]	1310	71	Above
[illegible]	[illegible]	[illegible]	[illegible]	LANL	[illegible]	800	61	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	847	8	Above

Table XI - Yucca Flat (Above Water Table) - [illegible]

Shot Name
[illegible]
[illegible]
CERERO
[illegible]
[illegible]
MOGOLLON
PANAMINT
CORNUCOPIA
HAZEBROOK A
HAZEBROOK C
HAZEBROOK E
TORNERO
PRESIDO
BRIE
PANCHUELA
MIDLAND
WACO
ABILENE
SCHELLBOURNE
LAREDO
RHYOLITE
NIGHTINGALE
HARLINGEN A
HARLINGEN B
MONAHANS A
MONAHANS B
KAWICH A WHITE
KAWICH A BLUE
PALISADE 1
PALISADE 2
PALISADE 3
TULIA
MULESHOE
WHITEFACE A

DoE b(3)

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Table XI. Yucca Flat (Above Water Table) - 1994

Shot Name
VILLE
[illegible]
[illegible]
[illegible]
[illegible]
MOGOLLON
PANAMINT
CORNUCOPIA
HAZEBROOK A
HAZEBROOK C
HAZEBROOK E
TORNERO
PRESIDIO
ERIE
PANCHUELA
MIDLAND
WACO
ABILENE
SCHELLBOURNE
LAREDO
RHYOLITE
NIGHTINGALE
HARLINGEN A
HARLINGEN B
MONAHANS A
MONAHANS B
KAWICH A WHITE
[illegible]
KAWICH A RED
[illegible]
INGOT
PALISADE 1
PALISADE 2
PALISADE 3
TULIA
MULESHOE
WHITEFACE A

DOE b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
PANAMINT
CORNUCOPIA
HAZEBROOK A
HAZEBROOK C
HAZEBROOK E
[illegible]
PRESIDIO
ERIE
PANCHUELA
MIDLAND
WACO
ABILENE
SCHELLBOURNE
LAREDO
RHYOLITE
NIGHTINGALE
HARLINGEN A
HARLINGEN B
MONAHANS A
MONAHANS B
KAWICH A WHITE
KAWICH A BLUE
[illegible]
[illegible]
[illegible]
PALISADE 1
PALISADE 2
PALISADE 3
TULIA
MULESHOE
WHITEFACE A

DOE b(3)

UNCLASSIFIED

DOE b(3)

UNCLASSIFIED

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name	Hole	Area	Date	Agency	Static Water Level (feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	1600	600	8	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	1770	700	[illegible]	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	1150	[illegible]	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	800	[illegible]	Above
[illegible]	U10	Yucca Flat	[illegible]	LANL	1610	840	8	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	1640	950	13	Above
COSO Bronze	U4AN	Yucca Flat	3/8/91	LLNL	1624	1093	117	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	1624	1450	6	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	1624	1558	2	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	1650	66	Above
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	1500	114	Above
VICTORIA	U3KV	Yucca Flat	6/19/92	LANL	1535	800	31	Above
GALENA Y	U8CV	Yucca Flat	6/23/92	LLNL	1831	951	95	Above
[illegible]	[illegible]	Yucca Flat	6/23/92	LLNL	[illegible]	1250	2	Above
GALENA G	U8CV	Yucca Flat	6/23/92	LLNL	1831	1316	2	Above
[illegible]	U3ML	Yucca Flat	9/23/92	LANL	1585	1115	127	Above

DOE (3)

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
WHITEFACE B
BOWIE
AUSTIN
SUNDOWN A
SUNDOWN B
LEDOUX
COSO Bronze
COSO Gray
COSO Silver
FLOYDADA
BRISTOL
VICTORIA
GALENA Y
GALENA O
GALENA G
DIVIDER
[illegible]

DOE
b(3)

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Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
WHITEFACE B
BOWIE
AUSTIN
SUNDOWN A
SUNDOWN B
LEDOUX
COSO Bronze
COSO Gray
COSO Silver
FLOYDADA
BRISTOL
VICTORIA
GALENA Y
GALENA O
GALENA G
DIVIDER
Sum

DOE
b(3)

UNCLASSIFIED

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
WHITEFACE B
BOWIE
AUSTIN
SUNDOWN A
SUNDOWN B
LEDOUX
COSO Bronze
COSO Gray
COSO Silver
FLOYDADA
BRISTOL
VICTORIA
GALENA Y
GALENA O
GALENA G
DIVIDER
Sum

DOE
b(3)

Table XI - Yucca Flat (Above Water Table) - 1994

Shot Name
WHITEFACE B
BOWIE
AUSTIN
SUNDOWN A
SUNDOWN B
LEROUX
COSO Bronze
COSO Gray
COSO Silver
FLOYDADA
BRISTOL
VICTORIA
GALENA Y
GALENA O
GALENA G
DIVIDER
Sum

DOE
b(3)

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Table VII - Yucca Flat (Below Water Table) - 1994

[illegible]			[illegible]		[illegible] Water [illegible]	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
		[illegible]	[illegible]	[illegible]	[illegible]	1620	225	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	209	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	1511	222	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1551	204	[illegible]
						[illegible]	[illegible]	[illegible]
			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
					[illegible]	[illegible]	[illegible]	[illegible]
		[illegible]	[illegible]	[illegible]	[illegible]	1750	200	Below
[illegible]	[illegible]	[illegible]	12/3/65	[illegible]	[illegible]	2227	182	Below
[illegible]	[illegible]	Yucca Flat	12/16/65	LANL	1710	1650	157	Below
[illegible]	[illegible]	Yucca Flat	1/18/66	LANL	[illegible]	1840	105	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1850	41	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1820	204	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2201	184	Below
[illegible]	[illegible]	[illegible]	6/2/66	[illegible]	[illegible]	1520	154	Below
TAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1840	156	Below
RICE	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	1590	103	Below
[illegible]	[illegible]	[illegible]	9/23/66	[illegible]	[illegible]	1840	46	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2406	176	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2445	241	Below
[illegible]	[illegible]	[illegible]	9/7/67	[illegible]	[illegible]	1710	181	Below
ZAZA	[illegible]	[illegible]	9/27/67	LANL	[illegible]	2190	210	Below
LANPHER	U2K	Yucca Flat	10/18/67	LLNL	1811	2346	360	Below
[illegible]	[illegible]	Yucca Flat	11/8/67	LANL	[illegible]	2200	98	Below
KNOX	U2AT	Yucca Flat	2/21/68	LLNL	1801	2115	210	Below
[illegible]	[illegible]	Yucca Flat	9/6/68	LLNL	[illegible]	1910	205	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1830	127	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1840	90	Below
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
					[illegible]	[illegible]	[illegible]	[illegible]
					[illegible]	[illegible]	312	[illegible]
			[illegible]		[illegible]	1840	152	[illegible]
		[illegible]	[illegible]	[illegible]	1	1734	116	Below
		[illegible]	[illegible]	LANL	[illegible]	1840	207	Below
		[illegible]	[illegible]	LLNL	[illegible]	2171	185	Below
		[illegible]	[illegible]	LANL	[illegible]	1490	122	Below
		[illegible]	[illegible]	LLNL	[illegible]	1735	180	Below
		[illegible]	[illegible]	LANL	[illegible]	1731	135	Below

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Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
LAMPBLACK
LIME
PIRANHA
[illegible]
PILE DRIVER
TAN
RUDE
DAIQUIRI
AGILE
[illegible]
YARD
ZAZA
LANPHER
COBBLER
KNOX
NOGGIN
BLENTON
THISTLE
[illegible]
[illegible]
[illegible]
[illegible]

DOE b(3)

UNCLASSIFIED

Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
CORDUROY
BUFF
LAMPBLACK
LIME
PIRANHA
DUMONT
PILE DRIVER
TAN
RICE
DAIQUIRI
[illegible]
COMMODORE
YARD
ZAZA
LANPHER
COBBLER
KNOX
NOGGIN
GLENTON
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
ALGODONES

UNCLASSIFIED

Table VII. [illegible] (Below Water Table) - 19[illegible]

Shot Name
MISSISSIPPI
[illegible]
[illegible]
[illegible]
CUP
[illegible]
CORDUROY
BUFF
LAMPBLACK
LIME
[illegible]
[illegible]
PILE DRIVER
TAN
PUCE
[illegible]
[illegible]
[illegible]
YARD
ZAZA
LANPHER
COBBLER
KNOX
NOGGIN
BUSHTOW
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

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Table XII - Yucca Flat (Below Water Table) - 1994

[illegible]	Pu-241	Pu-242	Am-241	Am-243	Cm-244
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	0.00E+00	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	4.62E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	4.70E+01	0.00E+00	0.00E+00
GUFF	3.75E+02	1.62E-04	3.82E+01	0.00E+00	0.00E+00
LAMPBLACK	3.02E+02	2.26E-04	3.07E+01	0.00E+00	0.00E+00
[illegible]	3.57E+02	8.23E-05	3.56E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	3.46E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	3.75E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	2.57E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	4.44E+01	0.00E+00	0.00E+00
YARD	1.20E+02	9.01E-04	4.32E+01	0.00E+00	0.00E+00
ZAZA	[illegible]	1.85E-03	2.30E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	2.17E-03	1.21E+02	0.00E+00	1.24E+01
[illegible]	2.75E+02	1.98E-03	2.51E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	4.20E-03	4.44E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	5.74E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	1.61E+01	0.00E+00	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.00E+00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	4.10E+01	[illegible]	0.00E+00

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Table XII - Yucca Flat (Below Water Table) - 1994

					Depth to Water (Feet)	Depth of Burial (feet)	Cavity Radius	Above or Below Water Table
[illegible]	[illegible]	Yucca Flat	5/1[illegible]/72	LANL	17[illegible]0	1760	74	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1830	152	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2100	[illegible]	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	1650	2090	196	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	2150	213	Below
STANYAN	U2AW	Yucca Flat	9/26/74	LLNL	1814	1880	179	Below
TOPGALLANT	U4E	Yucca Flat	2/28/75	LANL	1690	2340	161	Below
CABRILLO	[illegible]	Yucca Flat	3/7/75	LLNL	1850	1970	15[illegible]	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	17[illegible]0	1870	[illegible]	Below
[illegible]	[illegible]	Yucca Flat	6/3/75	LANL	1690	2090	210	Below
[illegible]	[illegible]	Yucca Flat	12/20/75	LLNL	1759	2349	252	Below
[illegible]	[illegible]	Yucca Flat	2/[illegible]/76	[illegible]	1716	2150	219	Below
[illegible]	[illegible]	Yucca Flat	2/4/76	[illegible]	1640	2100	194	Below
[illegible]	[illegible]	Yucca Flat	[illegible]/17/76	[illegible]	[illegible]	2570	249	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	2090	[illegible]	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	[illegible]	[illegible]	1760	139	Below
[illegible]	[illegible]	Yucca Flat	12/28/76	LANL	1710	2100	163	Below
MARSILLY	U2EL	Yucca Flat	4/5/77	LLNL	1775	2264	177	Below
BULKHEAD	U7AR	Yucca Flat	4/27/77	LANL	1750	1950	160	Below
CREWLINE	U7AP	Yucca Flat	5/25/77	LANL	1650	1850	172	Below
STRAKE	[illegible]	Yucca Flat	8/4/77	LANL	[illegible]	1700	151	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	2300	213	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	LLNL	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	LANL	[illegible]	[illegible]	161	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1850	137	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
MONERO
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
PORTMANTEAU
STANYAN
TOPGALLANT
CABRILLO
OBAR
MIZZEN
CHIBERTA
ESROM
KEELSON
STRAIT
BILLET
BANON
RUDDER
MARSILLY
BULKHEAD
CREWLINE
STRAKE
SCANTLING
[illegible]
[illegible]
[illegible]
LOWBALL
RUMMY
[illegible]
[illegible]
[illegible]
[illegible]

DOE b(3)

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Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
MONERO
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
LATIR
[illegible]
PORTMANTEAU
STANYAN
TOPGALLANT
CABRILLO
CEBAR
MIZZEN
CHIBERTA
ESROM
KEELSON
STRAIT
[illegible]
BARON
RUDDER
MARSILLY
BULKHEAD
CREWLINE
STRAKE
SCANTLING
[illegible]
[illegible]
[illegible]
LOWBALL
RUMMY
QUARGEL
[illegible]
[illegible]
[illegible]

UNCLASSIFIED

Table XII Yucca Flat (Below Water Table) - 1994

Shot Name
MONERO
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
ESCABOSA
PORTMANTEAU
STANYAN
TOPGALLANT
CABRILLO
OBAR
MIZZEN
CHIBERTA
ESROM
KEELSON
STRAIT
BILLET
BANON
RUDDER
MARSILLY
BULKHEAD
CREWLINE
STRAKE
SCANTLING
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
MONERO
OSCURO
FLAX P T
[illegible]
ANGUS
[illegible]
[illegible]
[illegible]
[illegible]
PORTMANTEAU
STANYAN
TOPGALLANT
CABRILLO
OBAR
MIZZEN
CHIBERTA
ESROM
KEELSON
STRAIT
[illegible]
[illegible]
RUDDER
MARSILLY
BULKHEAD
CREWLINE
STRAKE
SCANTLING
COULOMMIERS
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
TAXY

DOE b(3)

UNCLASSIFIED

Table XII - Yucca Flat (Below Water Table) - 1994

[illegible]	[illegible]	Area	Date	[illegible]	[illegible]	Depth of Burial (feet)	Cavity Radius	[illegible] Below Water Table
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2100	202	Below
[illegible]	[illegible]	Yucca Flat	3/7/82	LANL	[illegible]	1850	145	Below
ATRISCO	U7EP	Yucca Flat	8/5/82	LANL	1770	2100	224	Below
BORREGO	U7BR	Yucca Flat	9/29/82	LANL	1840	1850	43	Below
TURQUOISE	[illegible]	Yucca Flat	4/14/83	LANL	1640	1750	165	Below
[illegible]	[illegible]	Yucca Flat	9/22/83	LANL	[illegible]	1750	50	Below
[illegible]	[illegible]	Yucca Flat	12/16/83	LANL	[illegible]	1690	172	Below
[illegible]	[illegible]	Yucca Flat	3/1/84	LANL	[illegible]	2100	183	Below
[illegible]	[illegible]	Yucca Flat	3/1/84	LANL	[illegible]	1860	212	Below
[illegible]	[illegible]	Yucca Flat	5/31/84	LANL	[illegible]	1970	184	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1585	150	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2090	233	Below
[illegible]	[illegible]	Yucca Flat	12/5/85	LANL	[illegible]	1900	157	Below
GLENCOE	[illegible]	Yucca Flat	3/22/86	LANL	[illegible]	2000	118	Below
TAJO	[illegible]	Yucca Flat	6/5/86	LANL	[illegible]	1700	215	Below
[illegible]	[illegible]	Yucca Flat	9/11/86	LANL	[illegible]	1650	11	Below
GASCON	U4T	Yucca Flat	11/14/86	LANL	1560	1950	184	Below
TAHOKA	[illegible]	Yucca Flat	8/13/87	LANL	1620	2100	180	Below
[illegible]	[illegible]	Yucca Flat	10/23/87	LANL	[illegible]	1780	175	Below
[illegible]	[illegible]	Yucca Flat	[illegible]	LANL	[illegible]	1540	163	Below
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1500	139	Below

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[redacted]

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Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
BOUSCHET
ATRISCO
BORREGO
TURQUOISE
TECHADO
ROMANO
TORTUGAS
MUNDO
CAPROCK
BRETON
HERMOSA
KINIBITO
GLENCOE
TAJO
ALEMAN
GASCON
TAHOKA
BORATE
[illegible]
METROPOLIS
[illegible]

DOE b(3)

UNCLASSIFIED

[redacted]

Table XII - Yucca Flat (Below Water Table) - 1994

[illegible]
[illegible]
[illegible]
[illegible]
ROUSSANNE
[illegible]
BOUSCHET
ATRISCO
BORREGO
TURQUOISE
TECHADO
ROMANO
TORTUGAS
MUNDO
CAPROCK
BRETON
HERMOSA
KINIBITO
GLENCOE
TAJO
ALEMAN
GASCON
TAHOKA
[illegible]
TEXARKANA
[illegible]
LUBBOCK
[illegible]

DOE b(3)

Table XII - Yucca Flat (Below Water Table) - 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
ATRISCO
BORREGO
TURQUOISE
TECHADO
ROMANO
TORTUGAS
MUNDO
CAPROCK
BRETON
HERMOSA
KINIBITO
GLENCOE
TAJO
ALEMAN
GASCON
TAHOKA
[illegible]
[illegible]
METROPOLIS
LUBBOCK
Sum

DOE b(3)

Table XII - Yucca Flat (Below Water Table) - 1994

[illegible]
[illegible]
[illegible]
[illegible]
BOUSCHET
ATRISCO
BORREGO
TURQUOISE
TECHADO
ROMANO
TORTUGAS
MUNDO
CAPROCK
BRETON
HERMOSA
KINIBITO
GLENCOE
TAJO
ALEMAN
GASCON
[illegible]
[illegible]
TEXARKANA
[illegible]
LUBBOCK
Sum

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Table XIV - Frenchman Flat - 2094

E1
E2
70
61
68A
36
60A
66
33
32
72
67
WISHBONE
PINSTRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE
Sum

DOE b(3)

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Table XIV - Frenchman Flat - 2094

Shot Name
E1
E2
70
61
68A
36
[illegible]
66
33
32
72
67
WISHBONE
PIN STRIPE
DERRINGER
NEWPOINT
DIANA MOON
MINUTE STEAK
DIAGONAL LINE

[illegible]
MILKSHAKE

DoE b(3)

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Table XIV - Frenchman Flat - 2094

E2	70	61	68A	38	[illegible]	68	33	32	72	87	WISHBONE	PIN STRIPE	DERRINGER	NEWPOINT	[illegible]	DIAGONAL LINE

DOE
b(3)

UNCLASSIFIED

Table XIV - Frenchman Flat - 2094

[illegible]
E1
E2
70
61
[illegible]A
[illegible]
[illegible]A
66
33
32
72
67
WISHBONE
PIN STRIPE
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

DOE b(3)

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Table XV - Pahute Mesa Area 19 - 2094

Shot Name
SCROLL
EMMENTHAL
SHEEPSHEAD
[illegible]
[illegible]
GALVESTON
LOCKNEY
KEARSARGE (JVE-1
HOUSTON
BEXAR
Sum
[illegible]
MAST
CAMEMBERT
INLET
MUENSTER
ESTUARY
POOL
FONDUTTA
BACKBEACH
PANIR
[illegible]
[illegible]
[illegible]
JUNCTION
[illegible]
[illegible]
HALFBEAK
[illegible]
Sum

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Table XV - Pahute Mesa Area 19 - 2094

Shot Name
SCROLL
EMMENTHAL
SHEEPSHEAD
[illegible]
[illegible]
GALVESTON
LOCKNEY
KEARSARGE
HOUSTON
BEXAR
Sum
MAST
CAMEMBERT
INLET
[illegible]
ESTUARY
POOL
FONDUTTA
BACKBEACH
[illegible]
[illegible]
[illegible]
JUNCTION
[illegible]
[illegible]
[illegible]
Sum

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Table XV - Pahute Mesa Area 19 - 2094

Shot Name
SCROLL
EMMENTHAL
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
CAMEMBERT
INLET
[illegible]
POOL
FONDUTTA
BACKBEACH
PANIR
[illegible]
HARZER
HOSTA
[illegible]

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Table XV - Pahute Mesa Area 19 ... 1994

Shot Name
SCROLL
EMMENTHAL
[illegible]
[illegible]
[illegible]
[illegible]
LOWBALL
[illegible]
[illegible]
[illegible]
CAMEMBERT
[illegible]
[illegible]
[illegible]
FONDUTTA
BACKBEACH
[illegible]
SERPA
HARZER
HOSTA

Table [illegible] - Pahute Mesa Area 20 - [illegible]

Shot Name
PALANQUIN
[illegible]
CABRIOLET
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
BUTEO
[illegible]
BOXCAR
[illegible]
HANDLE
TYBO
STILTON
KASSERI
FONTINA
[illegible]
[illegible]
[illegible]

Table XVI. Pahute Mesa Area 20 - [illegible]

Shot Name
PALANQUIN
[illegible]
CABRIOLET
[illegible]
[illegible]
CONTACT
BARNWELL
[illegible]
[illegible]
[illegible]
JORUM
PIRKIN
HANDLEY
[illegible]
FONTINA
[illegible]
[illegible]

September 26, 1994
(Revised January 1995)

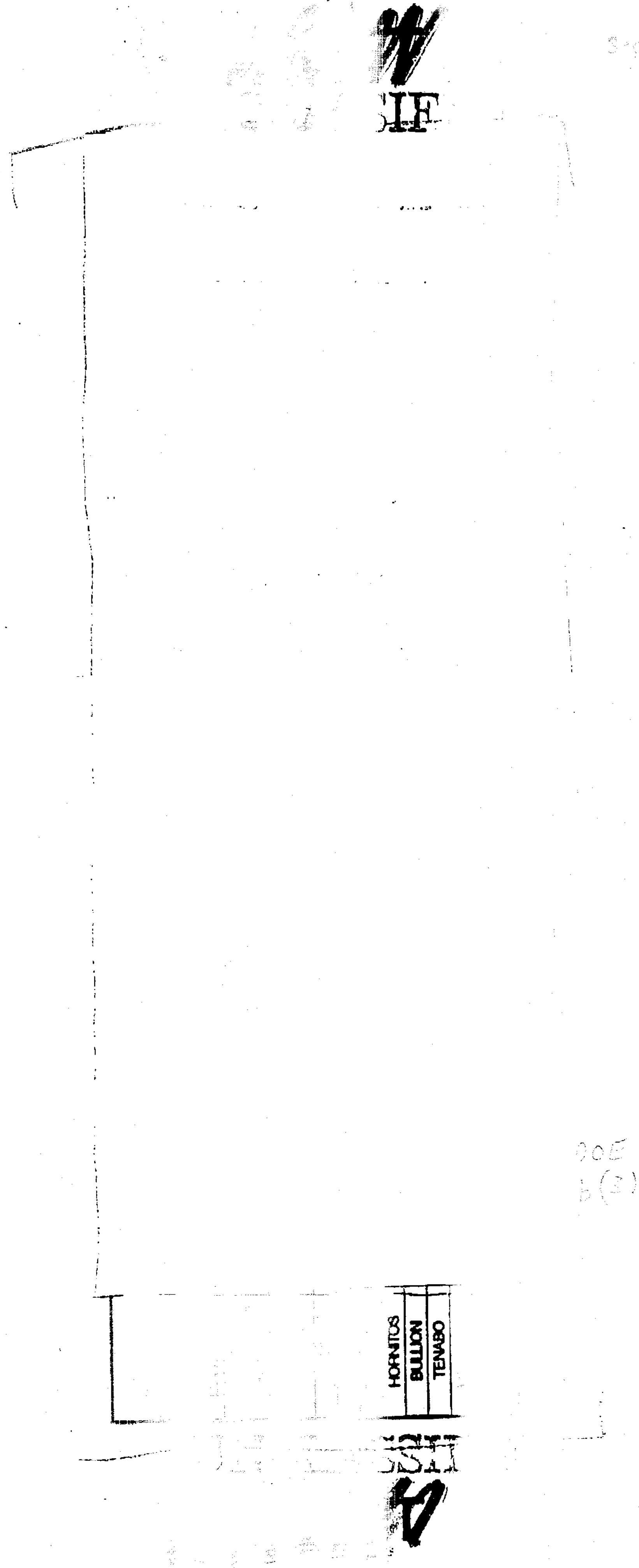
Table XVI - Pahute Mesa Area 20 - 2094

Shot Name
PALANQUIN
DURYEA
CABRIOLET
[illegible]
[illegible]
CONTACT
[illegible]
Sum
BO[illegible]
CHATEAUGAY
[illegible]
[illegible]
PIPKIN
HANDLEY
[illegible]
FONTINA

Table XVI - Pahute Mesa Area 20 - 2004

Shot Name
[illegible]
DERBEA
CHARTREUSE
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
CABRIOLET
[illegible]
[illegible]
CIRALE

T-ble XVI - Pahute Mesa Area 20 - 2094



Pahute Mesa Area 20 - 2094

September 26, 1994
(Revised January 1995)

Table XVI - Pahute Mesa Area 20 - 2094

Shot Name
[illegible]
MONTELLO
HOYA

[illegible] - Pahute Mesa Area 20 - 2094

[illegible]	KERMALE	MONTELLO

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Table XVII - Rainier Mesa - 2004

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPAIS
NEPTUNE
LOGAN
EVANS
BLANCA
[illegible]
[illegible]
[illegible]
MESA
DIDY
[illegible]
[illegible]
DOUBLE PLAY
MIDI MIST
WINESKIN
CYPRESS
[illegible]
[illegible]

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Table XVII. [illegible]

Shot Name
ESS
SATURN
RAINIER
VENUS
URANUS
MERCURY
MARS
TAMALPAIS
NEPTUNE
LOGAN
EVANS
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Table XVII - Rainier Mesa - [illegible]

Shot Name
ESS
SATURN
RAINIER
VENUS
[illegible]
[illegible]
[illegible]
TAMALPIAS
NEPTUNE
LOGAN
EVANS
BLANCA
[illegible]
DANNY [illegible]
[illegible]
[illegible]
[illegible]

Shot Name
ESS
SATURN
RAINIER
[illegible]
URANUS
[illegible]
[illegible]
[illegible]
NEPTUNE
LOGAN
[illegible]

XVII - Rainier Mesa

Shot Name
MISTY NORTH
DIAMOND SCULLS
[illegible]
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD
HUNTERS TROPHY

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Table XVII - Rainier Mesa - 2004

Shot Name
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
[illegible]
[illegible]
[illegible]

tember 26, 1994
vised January 1995)

T ble XVII - Rainier Mesa - 2094

Shot Name
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
MING BLADE
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD

Table XVII - Rainier Mesa - 2004

Shot Name
MISTY NORTH
DIAMOND SCULLS
DIDO QUEEN
HUSKY ACE
[illegible]
HYBLA FAIR
DINING CAR
HUSKY PUP
MIGHTY EPIC
HYBLA GOLD

Table XVIII - [illegible] (Above Water Table) - [illegible]

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
[illegible]
[illegible]

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
BOOMER
[illegible]
[illegible]

Shot Name
PASCAL A
PASCAL B
PASCAL C
OTERO
BERNALILLO
LUNA
VALENCIA
COLFAX
SAN JUAN
SHREW
[illegible]

Stud Name	EEL	WHITE	RACCOON	PACKRAT	DAMAN	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Ship Name
ESL
WAKE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
[illegible]
[illegible]
[illegible]
[illegible]

ember 26, 1994
(ised January 1995)

... (Above Water Table) - ...

Shot Name
EEL
WHITE
RACCOON
PACKRAT
DAMAN I
HAYMAKER
SACRAMENTO
SEDAN
[illegible]
[illegible]
[illegible]

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HAYMAKER

Table XVIII [illegible]

Dist Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

[illegible]ember 26, 1994

Table XVIII [illegible] (Above Water Table) [illegible]

Site Name
[illegible]
CUMBERLAND
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Table XVIII - Yucca Flat (Above Water Table) - 2004

Shot Name
[illegible]
CUMBERLAND
KOOTENAI
PAISANO
GUNDI PRIME
HARKEE
TEJON
[illegible]
[illegible]
[illegible]
[illegible]

tember 26, 1994

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Table XVIII ... (Above Water Table) ...

[illegible]
[illegible]
[illegible]
[illegible]
FABANO
GERDIPRIME
HARKEE
TILDEN
[illegible]
[illegible]
[illegible]
[illegible]

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S

tember 26, 1994

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
ACE
[illegible]

Shot Name
[illegible]
[illegible]
[illegible]
[illegible]
DRIVER
BACKSWING
[illegible]
ACE

September 26, 1994

Shot Name
HOOK
STURGEON
[illegible]
[illegible]
[illegible]
BACKSWING
[illegible]
[illegible]

CP-94-0222

[illegible] (Above Water Table) - [illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
MINNOW
ACE
[illegible]

[illegible]ber 26, 1994

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...mber 26, 1994

26, 1994

[illegible]	KANKAKEE	VULCAN	SAXON	[illegible]

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KANKAKEE	VULCAN	SAXON

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VULCAN

SAXON

noE

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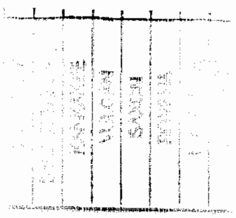

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Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
BUGGY
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SFLD
TANYA
IMP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE b(3)

SECRET

UNCLASSIFIED

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
BUGGY
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
MP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE b(3)

UNCLASSIFIED

SECRET

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
IMP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE
b(3)

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
GILROY
MARVEL
WORTH
SAZERAC
COGNAC
POLKA
STILT
HUPMOBILE
STACCATO
BRUSH
MALLET
TORCH
RUSSET
POMMARD
BEVEL
NOOR
THROW
SHUFFLE
HATCHET
CROCK
CLARKSMOBILE
ADZE
WEMBLEY
TUB F
TUB B
TUB A
TUB D
TUB C
SEVILLA
FUNNEL
SPUD
TANYA
IMP
RACK
KNIFE A
STODDARD
KNIFE C
WELDER

DOE
b(3)

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BOGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
LIDRIM
SPIDER
SPIDER

DOE b(3)

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Nam[illegible]
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
LDRM
SPIDER
SPIDER

DOE b(3)

SECRET

UNCLASSIFIED

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
ILDRIM
SPIDER
SPIDER

DOE b(3)

UNCLASSIFIED

SECRET

Shot Name
VAT
HULA
FILE
BIT A
BIT B
CREW
KNIFE B
AUGER
TINDERBOX
TYG A
TYG B
SCISSORS
BAYLEAF
TYG C
TYG D
TYG E
TYG F
PACKARD
SHAVE
BIGGIN
VISE
WINCH
NIPPER
VALISE
CHATTY
BARSAC
COFFER
GOURD A
GOURD B
ALIMENT
IPECAC A
IPECAC B
TORRIDO
TAPPER
BOWL 1
BOWL 2
LDRM
SPIDER
SPIDER

DOE
b(3

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
HOREHOUND
PLIERS
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE b(3)

Table XVIII - Yucca Flat (Above Water Table) - 2094

Shot Name
[illegible]
[illegible]
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE
b(3)

Table XVIII - Yucca Flat (Above Water Table) - 2004

[illegible]
[illegible]
[illegible]
KYACK 1
KYACK 2
SEAWEED E
SEAWEED C
SEAWEED D
SEAWEED B
CRUET
POD A
POD B
POD C
POD D
SCUTTLE
PLANER
PICCALILLI
TUN 1
TUN 2
CULANTRO A
CULANTRO B
TUN 3
TUN 4
LOVAGE
TERRINE A
TERRINE B
FOB A
FOB B
FOB C
AJO
BELEN
LABIS
CUMARIN
YANNIGAN A
YANNIGAN B
YANNIGAN C
CYATHUS
ARABIS A
ARABIS B
ARABIS C

DOE b(3)

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~~SECRET~~
UNCLASSIFIED

September 26, 1994

(Above Water

DOE b(3)

[illegible]	[illegible]	KYACK 2	SEAWEED E	SEAWEED C	SEAWEED D	SEAWEED B	CRUET	POD A	POD B	POD C	POD D	SCUTTLE	PLANER	PICCALILLI	TUN 1	TUN 2	CULANTRO A	CULANTRO B	TUN 3	TUN 4	LOVAGE	TERRINE A	TERRINE B	FOB A	FOB B	FOB C	AJO	BELEN	LABIS	CUMARIN	YANNIGAN A	YANNIGAN B	YANNIGAN C	CYATHUS	ARABIS A	ARABIS B	ARABIS C

UNCLASSIFIED
~~SECRET~~

Table [illegible] - [illegible] Flat (Above Water Table) - [illegible]

[illegible]
[illegible]
CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS
PENASCO
CORAZON
CARRIZOZO
AVENS (ALK.)
CANJILON
ARTESIA
AVENS (AND.)
AVENS (ASM.)
AVENS(CR.)
BANEBERRY
EMBUDO
DEXTER
[illegible]

DOE b(3)

~~SECRET~~

UNCLASSIFIED

September 26, 1994

DOE (3)

[illegible]	CAN B	HOD A	BEEBALM	HOD B	HOD C	CORNICE A	CORNICE B	MORRONES	MANZANAS	FLASK 2 (B)	FLASK 3 (C)	PITON A	PITON B TAN	PITON C YELL	ARNICA A	ARNICA B	SCREE A (T)	SCREE B (Y)	SCREE C (G)	RODARTE-TRUCHAS	CHACON-TRUCHAS	CHAMISAL-TRUCHAS	ABEYTAS	PENASCO	CORAZON	CAPULOZO	AVENS (ALK.)	CANJILON	[illegible]	AVENS (AND.)	AVENS (ASM.)	AVENS (OR.)	[illegible]	[illegible]	[illegible]

UNCLASSIFIED

~~SECRET~~

Table XVIII - Yucca Flat (Above Water Table) - 2094

[illegible]
[illegible]
[illegible]
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ASEYTAS
PENASCO
CORAZON
[illegible]
AVENS (ALK)
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

Table XVIII - Yucca Flat (Above Water Table) - 2094

CAN B
HOD A
BEEBALM
HOD B
HOD C
CORNICE A
CORNICE B
MORRONES
MANZANAS
FLASK 2 (B)
FLASK 3 (C)
PITON A
PITON B TAN
PITON C YELL
ARNICA A
ARNICA B
SCREE A (T)
SCREE B (Y)
SCREE C (G)
RODARTE-TRUCHAS
CHACON-TRUCHAS
CHAMISAL-TRUCHAS
ABEYTAS

Table XVIII - Yucca Flat (Above Water Table) - 2094

BRACKEN
AFODACA
BARRANCA
NAMA A
NAMA B
BALTIC
GUAJE-FRIJOLES
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
CHANTILLY
PEDERNAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
ONAJA
LONGCHAMPS
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]

SECRET

UNCLASSIFIED

Table XVIII - Yucca Flat (Above Water Table) - 2094

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
FEDERAL
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
[illegible]
LONGCHAMPS

SECRET

Table XVIII - Yucca Flat (Above Water Table) - 1994

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
CHANTILLY
[illegible]
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
OCATE
[illegible]
LONGCHAMPS
[illegible]

94-0222

SECRE[illegible]

[illegible]NCLASSI[illegible]

Table XVII[illegible] - Y[illegible] Flat (Above Water Table) - [illegible]

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
PETACA-FRIJOLES
ESPUELA-FRIJOLES
DEMING-FRIJOLES
[illegible]
[illegible]
CATHAY
LAGOON
PARNASSIA
CHAENACTIS
YERBA
HOSPAH
MESCALERO
COWLES
DIANTHUS
SAPPHO
[illegible]
[illegible]

DOE
(b)

UNCLASSI[illegible]

Table XVIII - Yucca Flat (Above Water Table) - 2084

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
GAZOOK
NATOMA
VELARDE
COLMOR
[illegible]
[illegible]
CABRESTO
PORTULACA
SILENE
POLYGONUM
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA

4-0222

Table XVIII [illegible] Flat (Above Water Table) - 2004

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
ALUMFOOT
GAZOOK
NATOMA
VELARDE
COLMOR
[illegible]
[illegible]
CABRESTO
PORTULACA
SILENE
POLYGONUM
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA

Table XVIII - Yucca Flat (Above Water Table) - 2004

GAZOOK
NATOMA
VELARDE
COLMOR
MESITA
PORTULACA
SILENE
POLYGONUM
WALLER
BERNAL
PAJARA
SEAFOAM
ELIDA
SPAR

94-0222

UNCLASS

26, 1994

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ALUMROOT	GAZOOK	NATOMA	VELARDE	[illegible]	

[illegible]	PORTULACA	SILENE	POLYGONUM	WALLER	BERNAL	PAJARA	[illegible]	

UNCLASSI

Table XVIII. [illegible] (Above Water Table) - 1994

[illegible]
[illegible]
PORTOLA
LARKIN
[illegible]
BILGE
EDAM
ALVISO
FUTTOCK
MARSH
SHALLOWS
RIVOLI
GOUDA
SPRIT
CHEVRE
REDMUD
ASIAGO
SUTTER
[illegible]
TOMAST

CLASSI

GOUDA
SPRIT
CHEVRE
ASIAGO
BUTTER

Table XVIII - Yucca Flat (Above Water Table) - [illegible]

1994

OFFSHORE

OFFSHORE

VESSEL

CHEMICALLY
CONCENTRATION

FREEZEOUT
CHESS
BUDGET
OFFSITE

26, 1994
(... 1995)

[illegible]
CATEGORY
CONCENTRATION
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
VESSEL

[illegible]

994

SABADO

JARLSBERG

KESTI

QUESO

CERRO

FRESCO

LABAN

SABADO

JARLSBERG

1994
(1995)

FAHAGA
SABADO
JARLSBERG

[illegible]
[illegible]
[illegible]
CEFFO
[illegible]

[illegible]
FALLADA

MOGOLLON
PANAMINT
CORNUCOPIA

ABO
MOGOLLON
PANAMINT
CORNUCOPIA

DOE b(3)

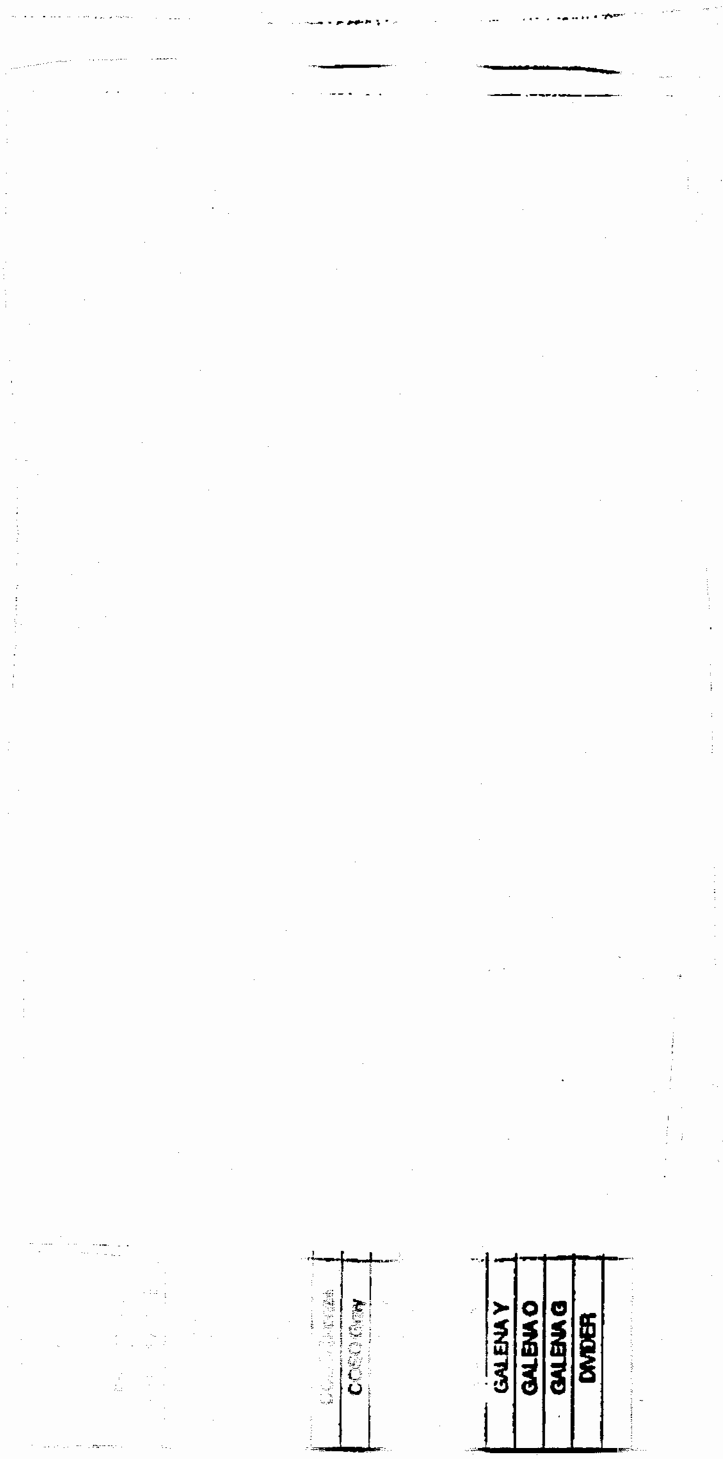
COSO Gray
COSO Silver
FLORADA

GALENA G
GALENA G
DIVIDER

CL SIFIED

1994

995)



CL SSIFI

SSIFI

DOE
b(3)

COBBLER	KNOX	NOGGIN	BLENTON	THISTLE

SSIFI

SIFIE

COBELER	KNOX	NOGGIN	BLENTON	THISTLE

SSIF

SSIF[illegible]

[illegible]

[illegible]FIED

26E
(3)

(3)

ATRISCO
BORREGO

JORNADA
BOUSCHET
ALFREDO

KINEUTO

[illegible]

[illegible]