United States
Atmospheric & Underwater
Atomic Weapon Activities

1945 "TRINITY"
ALAMOGORDO, N. M.

1945 "LITTLE BOY"
HIROSHIMA, JAPAN

1945 "FAT MAN"
NAGASAKI, JAPAN

1946 "CROSSROADS"
BIKINI ISLAND

1948 "SANDSTONE"
ENEWETAK ATOLL

1951 "RANGER"
NEVADA TEST SITE

1951 "GREENHOUSE"
ENEWETAK ATOLL

1951 "BUSTER – JANGLE"
NEVADA TEST SITE

1952 "TUMBLER - SNAPPER"
NEVADA TEST SITE

1952 "IVY"
ENEWETAK ATOLL

1953 "UPSHOT - KNOTHOLE"
NEVADA TEST SITE

1954 "CASTLE"
BIKINI ISLAND

1955 "TEAPOT"
NEVADA TEST SITE

1955 "WIGWAM"
OFFSHORE SAN DIEGO

1955 "PROJECT 56"
NEVADA TEST SITE

1956 "REDWING"
ENEWETAK & BIKINI

1957 "PLUMBOB"
NEVADA TEST SITE

1958 "HARDTACK-I"
ENEWETAK & BIKINI

1958 "NEWSREEL"
JOHNSTON ISLAND

1958 "ARGUS"
SOUTH ATLANTIC

1958 "HARDTACK-II"
NEVADA TEST SITE

1961 "NOUGAT"
NEVADA TEST SITE

1962 "DOMINIC-I"
CHRISTMAS ISLAND
JOHNSTON ISLAND

1965 "FLINTLOCK"
AMCHITKA, ALASKA

1969 "MANDREL"
AMCHITKA, ALASKA

1971 "GROMMET"
AMCHITKA, ALASKA

1974 "POST TEST EVENTS"
ENEWETAK CLEANUP

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" IF YOU WERE THERE,
YOU ARE AN
ATOMIC VETERAN "

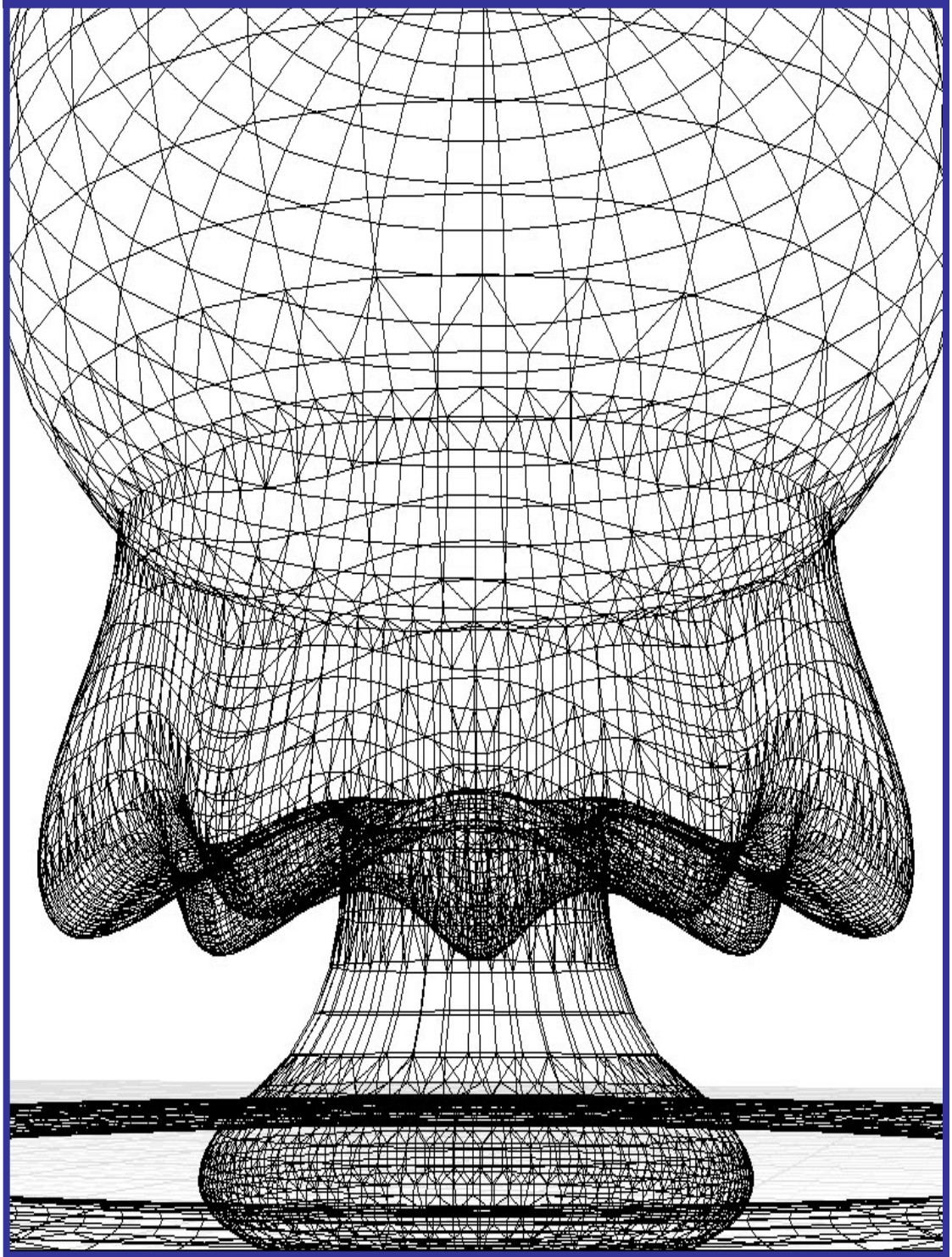
N A A V

National Association of Atomic Veterans, Inc.

"Assisting America's Atomic Veterans Since 1979"

Website: www.naav.com E-mail: naav.cmdr@naav.com

R. J. RITTER - Editor **July, 2013**



WHAT'S INSIDE THE MUSHROOM CLOUD ? ?

The Newsletter for America's Atomic Veterans

COMMANDER'S COMMENTS

As a reminder, the Veterans Advisory Board on Radiogenic Health Issues (***VBDR***) is scheduled to meet on ***July 23*** (***2013***) at the **Hilton Hotel** (950 N. Stafford St., Arlington, Va. - 703-528-6000). ***NAAV*** extends an open invitation to all Atomic-Veterans, and their guests, who may wish to attend. . . . .

This will afford Atomic-Vet's the opportunity to gather in an informal reunion fashion. We also extend an invitation to all Veteran's who may have been assigned duties at, or who may have visited the (Antarctic) ***McMurdo Station***, when the (mini) nuclear power plant may have been experiencing "radiation-leak" events, or any military personnel who could have been exposed to radiation from the ***Fukushima-Daiiachi*** (Japan) power plant meltdown, or military personnel who may have been exposed to radiation emitted by Long Range Aid to Navigation (***LORAN***) power & signal generation equipment at any of the "Master" or "Slave" station sites, during the 1950's, 60's & 70's . . . .

Additionally, given that ***NAAV*** was organized ***34*** years ago, we have approached the time frame where attempting to put together a re-union is getting difficult, as the majority of our members are at the age when driving is no longer a comfort experience, and they must depend upon a family member, or friend to get them from point **A** to point **B** . . . Likewise, traveling, in most cases, must include a host of medical devices & support equipment . . . And, of course I don't need to tell our members that it sure is Hell to get old ! !

Also, it is too expensive to set up a reunion where only a handful of members are able to participate, and given the drain on our financial resources, from our recent "out-reach" activities, we are in a "cash-tight" situation at this time . . . . Given these circumstances, it is the general consensus of the ***NAAV*** Directors, that we will continue to publish the ***NAAV*** newsletters, while continuing our "outreach" efforts, as long as funds will allow . . . .

Reaching out to assist Atomic-Veterans, or their surviving family members, has been a great success over the last three years. It gives us great satisfaction to get a phone call, e-mail, or a letter from the widow, or children (of a deceased Atomic-Veteran) saying *"I just wanted to let you know that my **RECA** claim has been approved", or "Our check arrived today, and we wish to thank you & **NAAV** for your kind assistance."* Now this is what our ***Mission Statement*** is all about . . . . .

And, as usual, we want to extend our thanks to our members & friends for their continued support in all areas, and wish you the very best in all of your aspirations and endeavors . . . . and we hope that support continues, because we can sure use it ! ! !

FINAL MUSTER

America's (secret) Wounded Warriors are dying off at the rate of 1,600 per month. We are not privy to all of their names, or place of residence. And so, to properly bestow our respects and share the grief experienced by their respective families, we ask our members to observe a special moment of silence so as to respectfully recognize their dedication to their God & family, and give thanks for their honorable service, to their Country.

"Rest in peace,
our Atomic-Veteran friends."

ARE YOUR DUES UP TO DATE ? ? ? ?

To insure that you receive your periodic newsletters, we must remind you to keep your dues current. You can do this my looking at the mailing label on your newsletter. The numbers following your name, is your dues expiration date . . . . .

Be sure to send your ($25.00) annual dues before the expiration date, if at all possible. The average age of our membership is now 86, and not many folks (that age) want to pay dues to any organization, and so, we are absolutely dependent upon your continued support . . . .

Also, if you change address, phone number or e-mail address – please let us know so we can keep your record current. . . .

NUKE SUB HITS (HORMUZ) FISHING BOAT

THE PERSIAN GULF – The U.S. Navy is investigating what some called a "love-tap" given by a Nuclear powered Submarine to a fishing vessel in the Strait of Hormuz. It seems the billion-dollar *U.S.S. Jacksonville* (*SSN-699*) struck the smaller boat and had a portion of its periscope knocked off while skulking under the surface. The Navy says it assumed that no damage was done to the fishing boat which it claimed had stayed on course. A helicopter search failed to locate any floating debris or disabled boats . . . .

Reuters & Russian Television – Jan. 11, 2013

U.S.S. ENTERPRISE - TO THE BONEYARD

NORFOLK, VA. - The (now retired) Aircraft Carrier *U.S.S. Enterprise (**CVN-65**)* has eight propulsion reactors that are currently being de-fueled at the (Virginia) Norfolk Naval Station. The waste fuel will be shipped across country by rail to the Idaho National Laboratory's Naval Reactors Facility. The Department of Energy intends to use its waste which, because of the length of time it is used, is the most radioactive of all high-level wastes. The fuel is not expected to arrive until well into 2015. . . . .

Once the fuel is unloaded, the *Enterprise* will be towed 7,500 miles to the (Washington) Puget Sound Naval Shipyard, at Bremerton, where it will be further dismantled. The reactors will be cut out and barged up the Columbia River to the (massively contaminated) Hanford site, where the Navy has been burying its poisoned hulls and reactor cores since 1986. The remaining parts of the *Enterprise* will be scrapped at Bremerton. The entire dismantling of the Carrier is expected to take up to eight years. . . . .

The Navy has announced plans to spend $14 billion building a new *Enterprise (**CVN-80**)* designed to carry nearly 6,000 crew members and 90 jet bombers. If completed it would be the Navy's 11th. active Carrier. . . . .

Forbes – Dec. 4, 2012

The "Glory-Days" of the U.S.S. Enterprise (CVN-65)

INSIDE THE MUSHROOM CLOUD

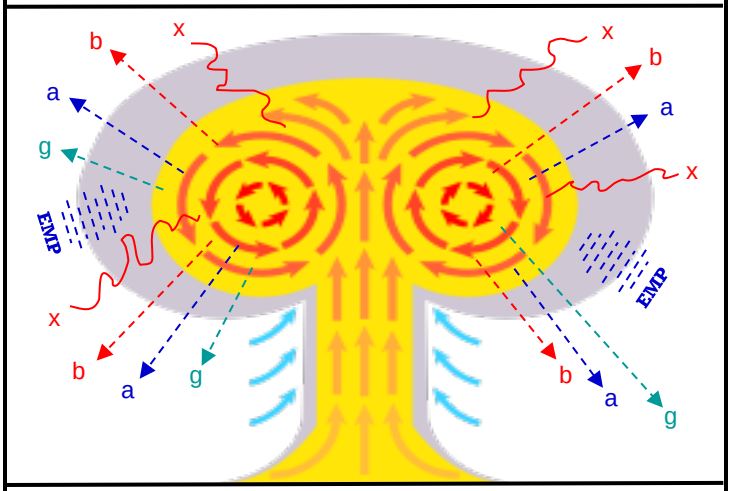
In the ***November*** (***2012***) issue of the ***NAAV*** newsletter, we described, in detail, the destructive effects of a nuclear weapon detonation. Given the interest of our members (& website visitors) and the requests for more information regarding the makeup of a mushroom cloud, we have put together the following article for such purposes, and look forward to your continued inquiries accordingly . . . . .

THE PHYSICS: Mushroom clouds are formed by many types of large explosions, and are influenced by earth's gravity. But they are best known for their (mushroom) appearance after nuclear weapon detonations. In space, out of the earth's atmosphere, such an explosion would be somewhat spherical, or donut shaped," the appearance of which most would describe as a large "smoke-ring". . .

Nuclear weapons are usually detonated above the ground (not upon impact, because most of the energy would be dissipated by the ground surface itself) in order to maximize the effects of their spherical expanding fireball and the resulting high temperature & blast waves. Immediately after detonation, the fireball itself begins to rise into the air, acting on the same principles as a hot-air balloon . . .

One way to analyze the motion, once the hot gas has cleared the ground sufficiently, is as a 'spherical cap bubble,' as this gives agreement between the rate of rise and the observed cloud diameter. As it rises, a *"Rayleigh–Taylor"* instability factor forms, and air is drawn upwards and into the cloud (similar to the updraft of a chimney), thus producing strong air currents known as "after-winds," while inside the head of the cloud the hot gases begin to rotate in a "toroidal" shape. . .

When the detonation altitude is low enough, these after-winds will draw in dirt, pebbles, rocks, coral, and an assortment of other debris from the ground below, that will then form the stem of the mushroom cloud. After the boiling mass of hot gases reaches the equilibrium level, the ascent stops and the cloud starts forming the characteristic mushroom shape. This same format can sometimes occur during a standard explosive demolition event . . .



At the instant of the initial nuclear detonation, the fission process generates & emits Alpha (a) & Beta (b) particles, Gamma (g) & X-ray's (x), and Elecro-Magnetic Pulse (EMP), from within the boiling fireball, after which cooler air is drawn into the center of the rising "toroidal" formation, which itself begins to cool into the familiar mushroom-cloud shape & appearance as it begins to rise to higher altitudes. EMP is the root cause of electronic instrumentation and communication device failures, shortly thereafter, and in close proximity, to the nuclear weapon detonation event . . . .

NUCLEAR MUSHROOM CLOUDS: Nuclear detonations that occur high above the ground (or at high altitudes) do not create mushroom clouds. The heads of the clouds themselves consist of highly radioactive particles, primarily the fission products, and are usually dispersed by the wind, though weather patterns (especially rain) can produce problematic & dangerously hazardous radiation particle fallout. Detonations significantly below ground level or deep below the ocean surface (such as deep-water anti-submarine [***ASW***] nuclear depth charges) also do not produce a mushroom cloud, as the explosion causes the vaporization of huge amounts of (ocean bottom materials) and sea-water, in these instances . . . . .

On the other hand, shallow-water (near-surface) detonations produce a gigantic pillar of water, which, in collapsing, forms a cauliflower-shape that can then be misidentified as a mushroom cloud on many pictures, such as that seen in the well-known photos of the (1946) *Crossroads* ***"Baker"*** test at Bikini Atoll, as shown above. This nuclear weapon was a *21* kiloton (spherical lens-type) Pu-239 fission core bomb, identical to the one used to destroy the city of Nagasaki, Japan, in August, 1945, and was suspended 90 ft. below a test-barge in the Bikini lagoon . . .

As the (detonation) water depth increases, the amount of radiation vented & dispersed into the atmosphere decreases. And, accordingly, with surface, or near-surface & low air bursts, the amount of (surface) debris lofted into the air decreases rapidly with the increase in detonation altitude. On the other hand, underground detonations, at a shallow depth, will produce a mushroom cloud and a base surge, which are two different and distinct cloud shapes . . .

At (detonation) altitudes of approx. 23 ft. / kiloton (yield), a crater is not formed, and a correspondingly lower amount of dust and debris is produced. The fallout-free height, above which the radioactive particles consist only of the fine fireball particle condensation, is approx. 180 ft. / kiloton (yield). However, even at these burst altitudes, dangerous radioactive fallout may be formed by a number of mechanisms . . .

The distribution of radiation in the mushroom cloud varies with the total yield of the explosion, the type of weapon, the fusion / fission ratio, the burst altitude, the terrain type, and the prevailing weather patterns. Generally it can be said that lower-yield (Kiloton-range) explosions have about ***90%*** of radioactivity in the mushroom head and ***10%*** in the (heat-chute) stem, while Megaton-range detonations tend to have most of the radioactivity in the lower third of the mushroom cloud . . .

At the instant of detonation, the (fission process) fireball is formed, and the ascending, roughly spherical, mass of hot incandescent gases changes shape due to atmospheric friction and cools its surface by energy radiation, thus turning from

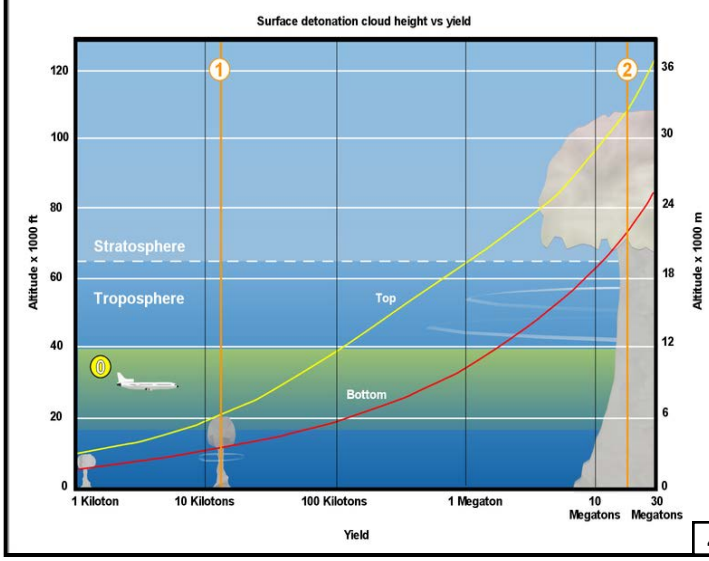
a sphere to a violently swirling annular vortex. A (*Rayleigh–Taylor*) instability is formed at the boundary between the hot fireball and the surrounding cooler air. This will then cause turbulence and forms a vortex, which sucks air into its center, creating after-winds and thus cooling itself. As it begins to cool, the speed of it's swirling motion begins to slow down, and may stop entirely during later phases. The vaporized parts of the weapon, and other materials, then condense into visible dust (and water vapor mist) forming the cloud; while the white-hot vortex core becomes yellow, then red, then loses any visible incandescence . . .

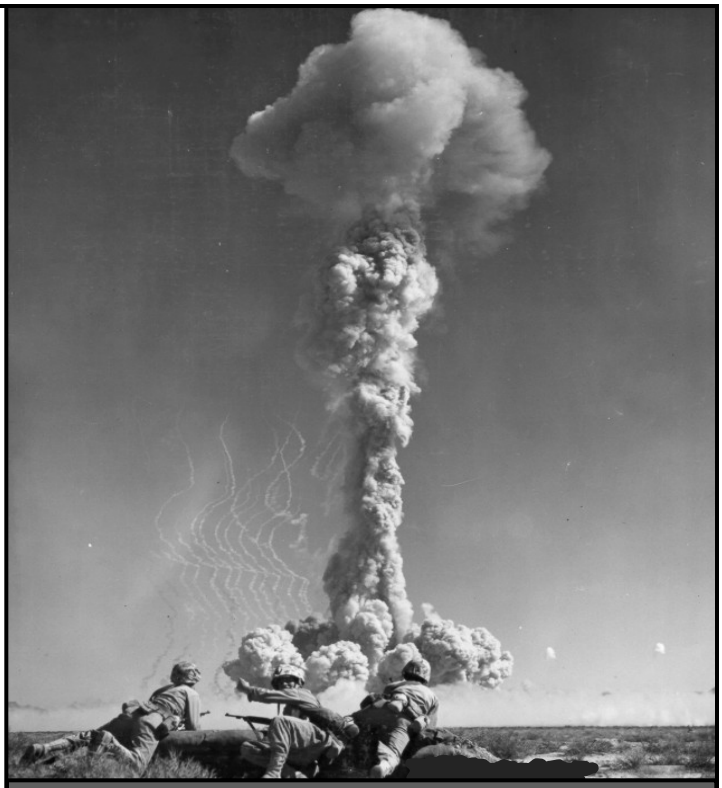
With further cooling, the bulk of the cloud continues to grow as larger volumes of atmospheric moisture condenses, and as the cloud ascends and further cools, its buoyancy lessens, and its ascent is also slowed. If the fireball is comparable to the size of the atmospheric density scale-height, the movement of the cloud will be ballistic, and will overshoot large volumes of denser air, that will cause it to rise to greater altitudes. Significantly smaller fireballs will produce clouds with a stronger buoyancy governed ascent. After reaching the tropo-pause, the region of strong static stability, the cloud will tend to slow its ascent and spread out over a larger area. And, if it contains sufficient energy, part of it may continue rising to even higher altitudes, even up into strato-sphere . . .

A mass of air ascending from tropo-sphere to strato-sphere leads to the formation of acoustic-gravity waves, virtually identical to those sounds created by intense stratosphere-penetrating thunderstorms. Smaller scale explosions generate waves of higher frequency, classified as "infrasound". . .

These explosions raise a large amount of moisture-laden air from the lower altitudes. As the air rises, the temperature drops and the water vapor condenses, forming water droplets (rain), and later freezes as ice crystals (snow). This phase-change releases latent heat which heats the cloud, driving it to yet higher altitudes. An example of the evolution of a nuclear mushroom cloud, can be described by the (Tumbler-Snapper) ***"Dog"*** test, which are divided into three distinct phases . . .

The Early Time is the ***20*** second period after the initial detonation, when the nuclear fission products are forming in the fireball and are rapidly mixing with the materials aspired, either from the ground, or ejected from the resulting crater, most intensely during fireball temperatures between *3,500* & *4,100* degrees (Kelvin). As this is happening, condensation





SNAPPER "DOG" - 05-01-52 - YUCCA FLATS, NV.

of evaporated ground substances, and moisture vapors now begins . . .

The Rise & Stabilization Phase occurs anywhere from 10 seconds to approx. 10 minutes, when the hot gases are rising up and early particle fallout is beginning to be deposited . . .

The Late Time include these continued activities, until approx. ***2*** days later, when the airborne particles are being widely distributed by the prevailing winds, are deposited by gravity, and are then scavenged by precipitation . . .

Thus, a mushroom cloud will undergo several phases of formation. The shape of the cloud is influenced by the atmospheric conditions and wind patterns. Fallout distribution is predominantly a downwind plume. However if the cloud reaches the tropo-pause, it may spread against the wind direction, as the convection speed is higher than the ambient wind speed. The tropo-pause cloud shape is roughly circular and widely spread in an outwardly direction . . .

The initial colors of some radioactive clouds can be red, or reddish brown, due to the presence of nitrogen dioxide and nitric acids, which are formed from the combination of nitrogen, oxygen, and atmospheric moisture. In the high temperature, high radiation environment of the blast, ozone is also formed. It is estimated that each Megaton of yield produces about ***5,000*** tons of nitrogen oxides . . .

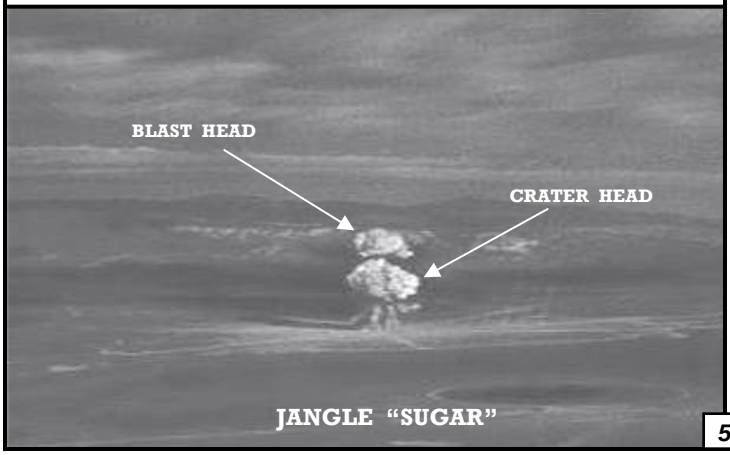
Yellow and orange hues are also described. And a reddish hue is later obscured by the white color of water vapor (condensing in the fast flowing air as the fireball begins to cool) and the dark color of smoke and debris that is sucked into the strong updraft. The ozone will give the blast its characteristic corona & discharge like smell . . .

The droplets, of condensed water vapor, will gradually begin to evaporate, leading to the apparent disappearance of the mushroom cloud. The radiogenic particles, however, remain suspended in the air, and the (now-invisible) radiation cloud continues to deposit radiation fallout along its path . . .

Another example of the characteristic's of a (near) ground detonation can be seen in the photo of the (*1951*) *Greenhouse* ***"George"*** test, a 225 Kiloton (tower) shot at Enewetak Atoll, (as shown below). The stem of the rising cloud is a mixture of grey & brown, with a pronounced vapor-mist cone, mixed in with vaporized particles of sea-water & coral reef having been sucked up into the vortex. The fission process is still under way, and the mushroom shape is just beginning to form, and is now beginning to rise at an increasing rate of speed . . .

Most air bursts produce white - steamy stems, while dark mushrooms from ground bursts contain irradiated material from the ground, in addition to the bomb components and it's casing, and therefore they produce more radioactive fallout with larger particles being dispersed and deposited locally. And, a higher-yield detonation can carry the nitrogen oxides high enough into the atmosphere to cause a significant depletion of the ozone layer . . . .

Under certain conditions, a double mushroom, with two levels, can occasionally be formed. For example, the (*1951*) *Buster-Jangle* ***"Sugar"*** test, at the Nevada Test Site, formed the first head from the blast detonation itself, followed by a second head propelled by the heat from the freshly formed crater. The fallout itself may appear as dry ash-like flakes, or as particles too small to be visible; in the latter case they are often deposited by clinging to rain drops . . .



Higher amounts of newer, more radioactive particles deposited on skin can cause Beta burns, often presented as discolored spots and lesions on the backs of exposed animals. The fallout from the (*1954*) *Castle* ***"Bravo"*** test had the appearance of white dust and was nicknamed "*Bikini Snow*;" the tiny white flakes resembling snowflakes stuck to surfaces, and according to those present, had a "salty" taste . . .

The fallout from the (*1955*) *Operation* "***Wigwam"*** test, off the coast of San Diego, Ca., consisted of **41.4%** irregular opaque particles, a bit over **25%** of particles with transparent and opaque areas, about **20%** of which were microscopic marine organisms, and **2%** of which were microscopic radioactive threads – of unknown origin . . .

The typical mushroom cloud contains three (3) main classes of materials: the remains of the weapon and its fission products, the material acquired from the ground (for those burst altitudes below the fallout-free altitude, which depends on the weapon yield), and water vapor. The bulk of radiation particles contained in the cloud consists of the nuclear fission product's; a variety of neutron activation isotopes from the weapon materials. Of this mix, air and ground debris are only a minor fraction . . .

The neutron activation occurs during the neutron burst at the instant of the blast itself, and the range of neutron reach is limited by atmospheric absorption. Most of the radiation is created by the actions of the fission materials. In the case of thermonuclear weapons, a significant part of their yield is produced from the combination of nuclear fission & fusion. Fusion products are typically non-radioactive. The degree of radiation fallout production is therefore measured in kilotons of fission . . .

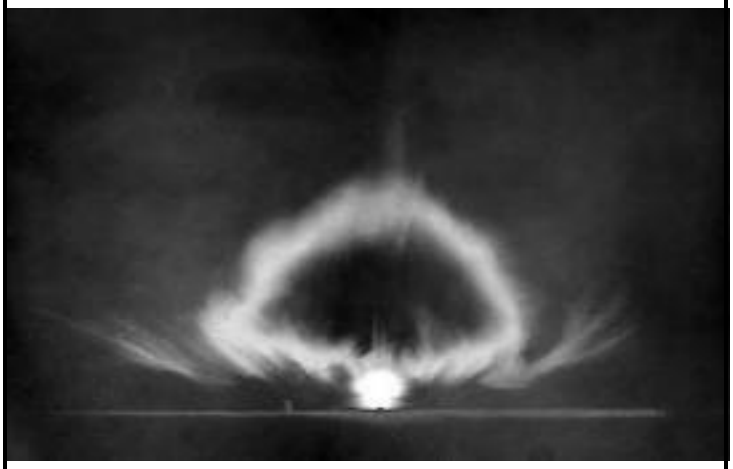
U.S.S.R. - "Tsar-Bomba" - 10-30-61 - Novaya Zemlya

On October 30 (*1961*) the Soviet Union detonated their mega-nuke "***Tsar-Bomba"*** at *Novaya Zemlya,* an Island off the north-eastern coast of Russia. Russian President *Nikita Khrushchev* had instructed his scientists to produce a ***100*** Megaton "super-nuke," so as to intimidate President *John F. Kennedy*, as both the U.S. and Russia were in a heated nuclear development race at that time. The Russian scientists, fearing that such a powerful weapon would rip open the earth's crust, thus causing a catastrophic and uncontrollable environmental event, informed *Khrushchev* that the technology-of-the-day could only allow them to produce a ***50*** Megaton device. Additionally, their largest strategic bomber could not deliver a weapon with a larger destructive yield . . . .

While assembling the "super-bomb" device, the scientists had deliberately removed the "Oralloy" (super enriched Uranium-238) first stage tamper and replaced it with a Lead based material. Therefore; when the weapon detonated, **97%** (of the ***50*** Megaton yield) was produced by the (second-stage) fusion process, otherwise the yield would have been ***101*** Megatons, of which the ***51*** Megaton boost would have been

gained from the fission-side process. If this were the case, the contamination fallout would have been equal to ***25%*** of the total dispersion from all nuclear weapons tested, to that date. .

Initially, the fireball contains a highly ionized plasma consisting of atoms of the weapon materials, it's fission products, and a mix of atmospheric gases. The "plasma-effect" (shown below) can only be captured by a special high-speed camera. As the plasma cools, the atoms react, forming fine droplets and then solid particles of oxides. These particles then begin to coalesce into larger ones, and are then deposited on the surface of surrounding (larger) particles . . . .



Larger particles will usually originate from the degradation of materials aspired into the cloud by the up-winds. Particles aspired while the cloud is still hot enough to melt, or vaporize them will readily mix with the fission products throughout their volume. Molten radioactive materials are then being rapidly deposited on the surface of larger particles. Those (dust & surface material) articles, aspired into the cloud later, when its temperature is low enough, do not become significantly contaminated with radiation activity . . . .

Particles that are formed directly from the weapon itself are fine enough to stay airborne for a long period of time, and become widely dispersed and may then also become diluted (half-life decayed) to non-hazardous levels. Higher-altitude blasts - which do not aspire ground debris, or which aspire dust only after cooling enough and where the radioactive fraction of the particles is therefore small – will cause a much smaller degree of localized fallout than lower-altitude blasts, while forming much larger radioactive particles. . . .

The generation & concentration of condensation products is the same for both small particles and the (deposited) surface layers of larger particles. Thus the volume formation of small radiogenic particles are approx. ***100*** kg. / kiloton of yield. The volume, and therefore activity, of the small particles is almost three orders of magnitude lower than the volume of the deposited surface layers on larger particles. . . .

For blasts at higher altitudes, the primary particle forming processes are condensation and (subsequent) coagulation. For lower-altitude (and ground blasts), with involvement of soil particles, the primary process is radiation deposition on those foreign particles. A low-altitude detonation produces a cloud with dust loading of ***100*** tons / megaton of yield . . . .

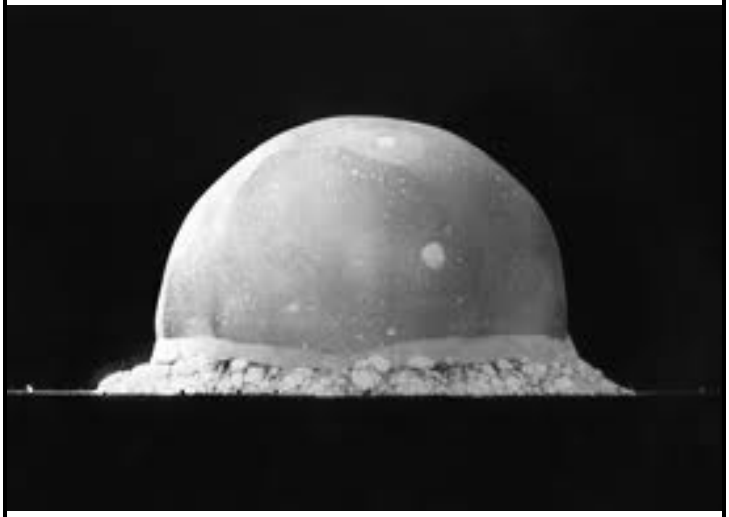
A ground detonation will produce clouds that will contain three times as much dust & dirt particulates. Approximately ***200*** tons (of surface soil) / kiloton (of yield) will be melted down, and will thus be contaminated with radioactive nuclides produced by the nuclear fission process . . . .

So, for example, a ***45*** kiloton surface burst will contaminate ***9,000*** tons of surface soil & debris with radioactive isotope particles. The total volume of the fireball is the same for either a surface or atmospheric detonation . . . .

In the first case, the initial (fission-process) surface burst fireball forms a hemisphere (as shown below) instead of a sphere, while generating a correspondingly larger radius. At this time, the concentrated particle sizes will range from submicrometer & micrometer (created by the condensation of plasma within the fireball) and will contain ***10*** to ***500*** micrometers of surface material (agitated by the blast wave & sucked into the heat-chute by the effects of the powerful afterwinds), to ***1*** millimeter & larger (crater ejecta), that will include an assortment of pebbles, rock chips, coral, etc. . . .

The larger sized particles will then fall back into the blast crater, while the smaller particles will be lofted upwards, and higher into the atmosphere where they may remain aloft & airborne for days, months, or even years. The size of particles, together with the final altitude they are carried to, will determine the length of their stay in the atmosphere, as larger particles are subject to exposure to "dry" precipitation. . . .

Smaller particles can also be influenced & scavenged by precipitation, whether by the moisture condensing in the cloud itself or by the mushroom activity rising up through a rain cloud. Radioactive fallout that is carried down-ward, by riding piggy-back on rain drops, is known as "rainout" if they are scavenged during the formation of a raincloud, and "washout," if the radiation particles are absorbed into (already) formed & falling raindrops. . . .



Approximately **80%** of this activity is present in more volatile elements, which condense only after the fireball cools to a considerably lower temperature. For example, Strontium (***90***) will have much less time to condense & coalesce into larger particles that will then result in a greater degree of mixing into the volume of air that may contain a variety of smaller (finite) particulates. . . .

Those particles that are produced immediately after the (nuclear fission) burst are small, with ***90%*** of the radiation activity present in particles below ***300*** nanometers in size. These radiogenic particles will then coagulate & blend in with the normal stratospheric aerosol elements. On the other hand, Tropospheric coagulation is more extensive, and at ground levels most of the activity is present in particle sizes between ***300*** nanometers and ***1.0*** micron. This coagulation activity will offset the fractionation processes at particle formation, thus evening out the isotopic distribution. . . . .

For ground and low-altitude bursts, the mushroom cloud also contains an assortment of vaporized - melted and fused soil particles & substances. The distribution of radiogenic activity through these particles depends entirely on their formation characteristics. Those particles that are formed by vaporization / condensation will have radioactivity evenly distributed throughout the total volume, as in the case of airburst particles. And the larger (molten) particles will have the fission products diffused through their outer layers, while fused and non-melted particles, that were not heated sufficiently, but came into contact with the vaporized material, or that was scavenged liquid droplets before their solidification, will have a relatively thin layer of high radioactivity materials evenly deposited upon their surfaces. . . .

The composition of such particles depends on the character of the soil makeup, and in most cases, will form a dark glass-like residue from silicate minerals mixed in with dirt. This black glassy residue, is referred to as ***"Trinitite,"*** and is shown as the dark spot surrounding "ground-zero" after the (July 16, 1945) ***"Trinity"*** test at Alamogordo, New Mexico. Glass-like particle sizes do not depend on the yield of the weapon, but instead on the character of the soil, as they are based on individual grains (or clusters) soil, sand or coral . . . . .

Radiation particles, from air bursts, are generally smaller than ***10*** to ***25*** micrometers and are more-closely measured in the sub-micrometer range. They are composed mostly of oxides of Iron, and are intermixed with smaller proportions of oxides of Aluminum, Uranium & Plutonium . . . .

Particles larger than ***1*** to ***2*** micrometers are very spherical, corresponding to those vaporized materials that will condense into droplets, and that will later solidify. This radioactivity is then evenly distributed throughout the entire particle volume, making total activity of the particles linearly dependent upon total particle volume, as a whole . . . .

In every nuclear detonation, two types of particles are present. The first is a spherical type, that is formed by complete ***fission*** vaporization & condensation or at least the melting of the soil, with activity distributed evenly through the volume (or with a ***10*** to ***30%*** volume of inactive core - for larger particles between ***0.5*** & ***2.0*** micrometers). The second is irregular-shaped particles that are formed at the edges of the fireball, by the ***fusion*** of soil particles, with the resulting activity being deposited over a thin surface layer. . . .

The amount of large (irregular) particle deposit's is insignificant. Those particles that are formed from detonations above, or in, the ocean, will contain short-lived radioactive (Sodium) isotopes, and salt's from the surrounding sea water. Molten silica is a very good solvent for metal-oxides and will scavenge small particles very easily; while explosions above silica-containing soils will produce particles with isotopes mixed through their volume. . . .

In contrast, coral debris, based on Calcium Carbonate, tends to easily adsorb radioactive particles on its surface. During particle formation, these elements will undergo fractionation, due to their very different volatility. Refractory elements, including *Strontium*, *Yttrium*, *Zirconium*, *Niobium*, *Barium*, *Lanthanum*, *Cerium*, *Praseodymium*, *Neodymium*, & *Promethium* will also form oxides with high boiling points. These oxides will then tend to precipitate the fastest and at the time of particle solidification (at temperatures in the area of 1,400 °C), are then considered to be fully condensed. While other volatile elements, including *Krypton*, *Xenon*, *Iodine* & *Bromine,* are not condensed at those temperatures . . . .

Intermediate elements (or their Oxides) have their boiling points close to the solidification temperature of the particles themselves, and include *Rubidium*, *Cesium*, *Molybdenum*, *Ruthenium*, *Rhodium*, *Technetium*, *Antimony* & *Tellurium*. These elements, within the fireball, are also present as Oxides, unless the temperature is above the decomposition temperature of each given Oxide, where it will then produce individual radioactive isotope particles . . . .

Less refractory products will be prone to condense on the surfaces of other particles that have reached the solidification state. Those isotopes with gaseous precursors will then solidify on the surface of those particles which will then be produced by the norm (half-life) decay process. . . .

For instance, radioactive decay, also referred to as nuclear decay or radioactivity, is the process by which a nucleus of an unstable atom loses its energy by emitting particles of *ionizing* radiation. A material that spontaneously emits this kind of radiation - which includes the emission of energetic Alpha & Beta particles, and Gamma rays - is considered to be **radioactive** . . . .

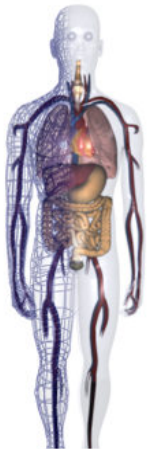
In the human body, and over a period of time, an ionizing radiation particle, in close proximity to any of the atoms that make up the body substance, will strip away one, or more electrons that orbit the effected atom, or atoms. An atom that has lost electrons has now been "ionized" and is unbalanced. As this process continues, unbalanced atoms may join together to form unbalanced molecules, that may join together to form unbalanced compounds, that may then effect the reproductive DNA, causing mutations, or that may cause a host of various cancers within the body mechanism. . . .

RADIOIODINE (131)
Half-Life - 8 days
Thyroid Cancer

CAESIUM (137)
Half-Life – 30.1 years
Organ & Bone Cancer

STRONTIUM (90)
Half-Life – 27.7 years
Organ & Bone Cancer

PLUTONIUM (239)
Half-Life – 24,200 years
Organ & Bone Cancer



PROTACTIMIUM (231)
Half-Life – 32,700 years
Thyroid Cancer

AMERICIUM (241)
Half-Life – 431 years
Organ & Bone Cancer

URANIUM (235)
Half-Life – 704 Mill. yrs.
Organ & Bone Cancer

THORIUM (231)
Half-Life – 25.5 hours
Skin Cancer

THESE ARE SOME OF THE (PRIMARY) ISOTOPES COMMON TO THE DETONATION OF NUCLEAR WEAPONS THAT WILL PRODUCE BOTH SHORT-TERM AND LONG-TERM RADIOGENIC HEALTH ISSUES WITHIN THE HUMAN MECHANISM . . .

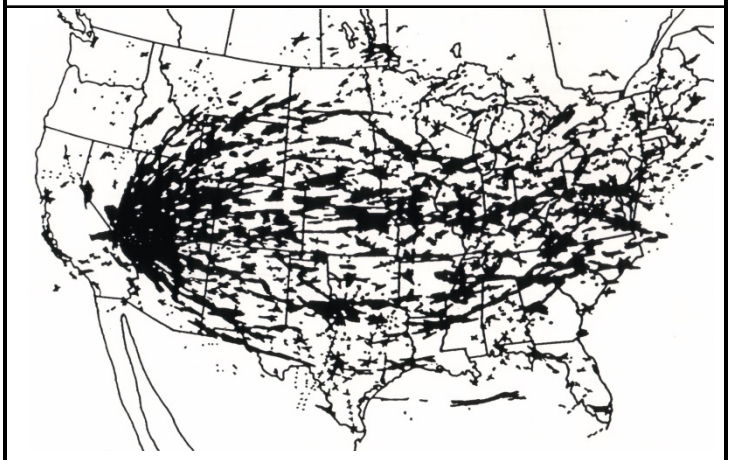
There are many different types of radioactive decay. A decay, or the loss of energy, results when an atom with one type of nucleus, called the *parent-radionuclide*, transforms to an atom with a nucleus in a different state, or to a different nucleus containing different numbers of protons and neutrons. Either of these secondary products is called the "*daughter-nuclide*." In some decays the parent & daughter are two different chemical elements, and thus the decay process results in nuclear transmutation, or the creation of an atom of an entirely new element . . . .

The first decay processes to be discovered were ***Alpha***, ***Beta*** and ***Gamma*** decay. ***Alpha*** decay occurs when the nucleus ejects an Alpha particle (helium nucleus). This is the most common process of emitting nucleons, but in rarer types of decays, nuclei can eject protons, or specific nuclei of other elements (and in the process) called cluster decay. ***Beta*** decay occurs when the nucleus emits an electron or positron and a type of neutrino, in a process that changes a proton to a neutron or the other way around. The nucleus may capture an orbiting electron (electron capture) thus converting a proton into a neutron. All of these processes result in nuclear transmutation activities. . . .

By contrast, there does exist some radioactive decay processes that do not result in any transmutations. The energy of an excited nucleus may be emitted as a Gamma ray in Gamma decay, or it may be used to eject an orbital electron by interaction with the excited nucleus in a process called internal conversion . . .

Radioisotopes occasionally emit neutrons, and this results in a change in an element from one isotope to another. One type of radioactive decay results in products which are not defined, but appear in a range of "pieces" of the original nucleus. This decay is called *"spontaneous-fission,"* and occurs when a large unstable nucleus spontaneously splits into two (and occasionally three) smaller *"daughter"* nuclei, while emitting Gamma rays, neutrons, or other particles as a consequence of those activities . . . .

Radioactive decay is a "*stochastic*" (or random) process at the level of single atoms, in that, according to *Quantum* theory, it is impossible to predict when a particular atom will decay. However, the chance that a given atom will decay is constant over a given time period. For a large number of atoms, the decay rate for the collection is computable from the measured decay constants of the nuclides (or equivalently from their known half-life). . . .



Potential fallout patterns across the United States, effected by radioactive clouds produced from the atmospheric testing of nuclear weapons at the Nevada Test Site, from 1951 to 1962 . . . . .

The largest, and therefore the most radioactive particles, are deposited (by fallout) within the first few hours after the nuclear weapon detonation. Smaller particles, carried to higher altitudes will descend at a much slower rate, and thus will reach the ground in a somewhat reduced radioactive state, as those radiogenic isotopes with the shortest half-lives will decay the quickest. This time-weighted retention factor allowed radioactive clouds (from the Nevada Test Site) to cover the entire width of the United States, as shown in the lower left (cloud-pattern) diagram . . . .

And, of course, the smallest particles can reach the stratosphere and stay there for weeks, months, or even years, circling the earth, and returning at random spots, in concert with prevailing atmospheric currents. The high-danger (short-term) localized fallout is deposited primarily downwind from the blast site, and most generally in a cigar-shaped pattern, assuming the prevailing winds are of constant-strength, and constant-direction. And, crosswinds, or changes in wind directions, coupled with sporadic precipitation will greatly alter any (predictable) fallout pattern . . . .

The condensation of water droplets in the mushroom cloud depends on the density of any available condensation (water vapor) nuclei. Too many condensation nuclei will actually inhibit the condensation process, as the particles compete for a relatively insufficient amount of water vapor. . . .

Chemical reactivity of the elements and their Oxides, ion adsorption properties, and compound solubility will greatly influence particle distribution in the environment after deposition from the atmosphere. And bio-accumulation influences the propagation of fallout radioisotopes in the biosphere. . .

Radioisotopes: The primary fallout hazard is ***Gamma*** radiation, from short-lived radioisotopes, which represent the bulk of all radiogenic activity. Within ***24*** hours after the burst, the fallout (*Gamma*) radiation level drops ***60*** times. Longer-life radio-isotopes, typically *Cesium* (***137***) & *Strontium* (**90**), present a long-term hazard. . . .

Intense ***Beta*** radiation, from fallout particles, can cause severe skin burns to people and animals coming in contact with the fallout shortly after the nuclear blast, as exhibited in the photo (right) of a survivor of the (August, 1945) nuclear bombing of Japan. Additionally, ingested, or inhaled particles cause an internal dose of ***Alpha*** or ***Beta*** radiation, which may lead to a host of long-term deleterious health effects, including several types of cancers. The neutron irradiation of the atmosphere itself produces a small amount of activation, mainly as long-lived ***Carbon*** (***14***) and short-lived ***Argon*** (***41***). . . .

Those elements that are most important for induced radioactivity from sea water are *Sodium* (***24***), *Chlorine*, *Magnesium*, and *Bromine*. For ground bursts, the elements of concern are *Aluminium* (***28***), *Silicon* (***31***), *Sodium* (***24***), *Manganese* (***56***), *Iron* (***59***), and *Cobalt* (***60***). . . .

The nuclear bomb casing can also be a significant source of neutron-activated radioisotopes. The bomb's neutron flux, especially from thermonuclear devices, is sufficient enough for additional high-threshold nuclear reactions. These induced isotopes include *Cobalt* (***60***), (***57***) & (***58***), *Iron* (***59***) & (***55***),

Manganese (***54***), *Zinc* (***65***), *Yttrium* (***88***), and possibly *Nickel* (***58***) & (***62***), *Niobium* (***63***), *Holmium* (***165***), *Iridium* (***191***), and short-lived *Manganese* (***56***), *Sodium* (***24***), *Silicon* (***31***), and *Aluminium* (***28***). Other isotopes that can be present include *Europium* (***152***) & (***154***), as well as two nuclear isomers of *Rhodium* (***102***). . .

During the (1958) "***Hardtack-I"*** test series, in the Pacific, *Tungsten* (***185***), (***181***) & (***187***), and *Rhenium* (***188***) were produced from elements added (as tracers) to the bomb warhead casings, so as to allow identification of fallout produced from specific test detonations. Additionally, *Antimony* (***124***), *Cadmium* (***109***), and (***113***) were also used as tracer elements. All of these radioactive isotopes were detected from airborne samples gathered by ***U-2*** (high-altitude) cloud sampling missions, as shown below. . . .

The most significant radiation sources are the fission products from the primary stage (tamper) materials, and in the case of fission-fusion-fission weapons, from the fission of the fusion stage *Uranium* tamper. Many more neutrons (per unit of energy) are released in a thermonuclear explosion in comparison with a (pure) fission yield device, thus influencing the composition of the fission by-products . . . .

As an example, the *Uranium* (***237***) isotope is a unique thermo-nuclear (explosion) marker, as it is produced by a (***n,2n***) reaction from *Uranium* (***238***), with the minimal (required) neutron energy of approx. ***5.9 MeV***. Considerable amounts of *Neptunium* (***239***) and *Uranium* (***237***) are indicators that a fission-fusion-fission detonation has occurred. .

Minor amounts of *Uranium* (***240***) are also formed, and the capture of large numbers of neutrons by individual nuclei leads to the formation of negligible amounts of higher trans-*Uranium* elements, such as *Einsteinium* (**255**) and *Fermium* (***255***). . . .

One of the important fission products is *Krypton* (***90***), which is a radio-active *"noble"* gas. It diffuses easily in the cloud, and undergoes two fissions, first forming *Rubidium* (***90***) and then transforming into *Strontium* (***90***), with respective half-lives of ***33*** seconds and ***3*** minutes accordingly. The noble gas non-reactivity and rapid diffusion is responsible for the depletion of local fallout in *Strontium* (***90***), and corresponding *Strontium* (***90***) enrichment of remote fallout . . . .

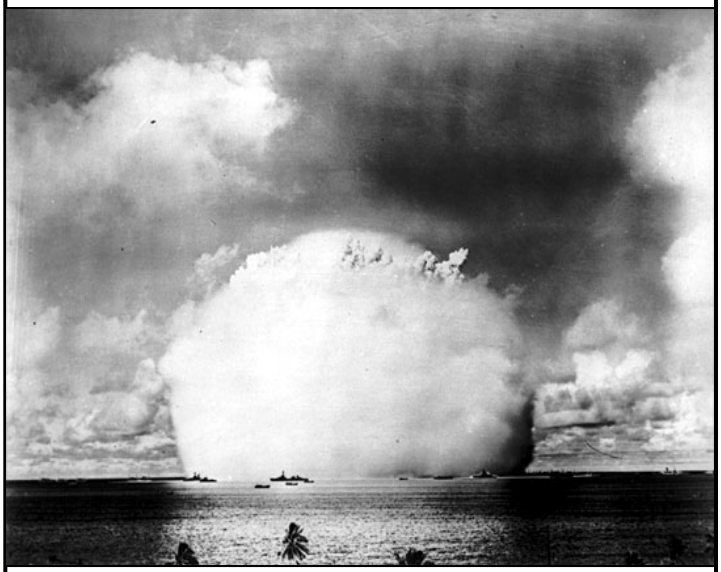
The radioactivity of the particles decreases with time, with different isotopes being significant at different time spans. For soil activation products, *Aluminium* (***28***) is the most important contributor during the first ***15*** minutes. while *Manganese* (***56***) and *Sodium* (***24***) follow until about ***200*** hours after the detonation event. *Iron* (***59***) then follows at ***300*** hours, or so, and after ***100*** to ***300*** days, the significant contributor then becomes *Cobalt* (***60***). . . .

Radioactive particles can be carried for considerable distances. Radiation from the (1945) ***Trinity*** test was washed out by a rainstorm in Illinois. This was deduced, and the origin traced, when *Eastman Kodak* discovered that some of their x-ray films were being fogged by cardboard packaging, containing radiation particles, that were produced by a mid-west company . . . .

And in 1954, (unanticipated) wind currents carried lethal doses of *Castle* ***"Bravo"*** radiation particle fallout over the *Rongelap Atoll*, forcing its evacuation. This fallout also contaminated the crewmembers of *Daigo Fukuryu Maru (Luck Dragon-5)*, a Japanese fishing boat that was outside of the predicted danger zone. *Strontium* (***90***) found in worldwide fallout later led to the (1962) Partial Test Ban Treaty. . . . .

Fluorescent glow : The intense radiation in the first seconds after a nuclear blast may cause an observable aura of fluorescence, that emits an eerie blue-violet-purple glow of ionized oxygen and nitrogen at some distance from the fireball, surrounding the rapidly forming radioactive cloud. The light is best visible during the night or just before daylight, or just after sundown. The brightness then decreases rapidly, becoming barely visible in ***20*** to ***45*** seconds. . . .

Condensation effects: Nuclear mushroom clouds are often accompanied by short-lived vapor clouds known variously as *"Wilson"* clouds, condensation clouds, or vapor rings. The "negative-phase" leading the shock front causes sudden rarefaction of the surrounding medium. This (low pressure) region then causes a sharp drop in temperature, which will then cause moisture in the air to condense (as snow) into a shell (or vapor ball) surrounding the explosion, as shown in the photo of the expanding surface eruption of the (1946) Crossroads "Baker" test at Bikini Atoll. . . .



Scientists observing the "Baker" test phenomena named that transitory, white puff-ball formation a "Wilson cloud" because of its similarity to a Wilson-cloud chamber; which is use to track the path of electrically charged subatomic particles. As the pressure and temperature in the rising fireball begin to return to normal, the *"Wilson"* cloud effect will then slowly dissipate. Analysts, of later nuclear bomb tests, adopted the more general term *"Condensation"* cloud, thus retiring the term *"Wilson"* cloud. . . .

The same kind of condensation is sometimes seen above the wings of high-speed (low-altitude) jet aircraft in moist atmospheres, as shown above. The top of a wing is a curved surface. The curvature (and increased air velocity) causes a reduction in air pressure, as given by *Bernoulli's Law*. This reduction in air pressure causes rapid cooling, resulting in water vapor condensation. Hence, the small, transient clouds appear. In technical terms, the *"Wilson"* cloud is also an example of the *Prandtl–Glauert* singularity aerodynamic factor . . . .

The shape of the shock wave is influenced by variation of the speed of sound with altitude, and the temperature and humidity of different atmospheric layers determines the appearance of the *Wilson* clouds. Condensation rings around or above the nuclear fireball are commonly observed. Rings around the fireball may become stable and may also form rings around the rising stem. . . .

Higher-yield explosions cause intense updrafts where the air speed can reach ***300*** (or more) miles per hour. The entrainment of higher-humidity air together with the associated drop of pressure and temperature leads to formation of "*skirts"* and "*bells"* around the stem (as shown on page 5). If the water droplets become sufficiently large, the cloud structure they form may then become heavy enough to descend . . . .

A rising stem, with a descending bell around it, can be formed. The layering of humidity in the atmosphere that is responsible for the appearance of the condensation rings also influences the shape of the condensation artifacts along the mushroom stem, as the updraft causes laminar flows. These same effects, above the top of the cloud, where the expansion of the rising cloud pushes a layer of humid air above the cloud, from a lower altitude, and the lower temperatures at high altitudes, causes condensation of water vapor and droplet freezing, that will form "*ice-caps"*, similar in the appearance, and mechanism to the formation of *"scarf"* clouds . . . . .

As we have demonstrated, the resulting structures of a rapidly rising nuclear mushroom cloud can be fairly complex. The (*1954*) Castle ***"Bravo"*** cloud, at various phases of its development, exhibited ***4*** condensation rings, ***3*** ice caps, ***2*** skirts and ***3*** bells. Now that is a lot of orchestrated formation activity, and brings us to the close of this article . . . .

VOICES FROM NUCLEAR HELL

I was assigned to the 57th Weather Recon Squadron, based at Hickham AFB (Hawaii) and assigned to monitor nuclear tests in the Marshall Islands. At that time, our unit was flying WB50's (a B-29 with larger engines) for weather recon prior to each nuclear weapon test. I must say, that for a young 20yr., watching one of those nukes detonate was quite an eye opener. We were not told what these weapons were, and I did not realize what I had seen until many years later . . . .

For those Atomic-Vets that are not aware of it, the VA is giving a full physical for any possible ionizing radiation injuries, and there is quite a list of possible injuries from the radiation. All one has to do is go to a VA facility and tell them that you are an Atomic-Veteran, and would like to set up an examination and be placed on the Ionizing Radiation Registry (IRR) and they will set you up. If they give you any guff, let us know, and we will help you get that physical. I am the (NAAV) Florida State Commander and invite you to visit our (naav.com) website. Good luck to all "Atomic Vets."

Tom Botchie – Atomic Veteran – Florida State Cmdr.
Email: toppop59@comcast.net

I was stationed at Eniwetok in 1958 during Operation "Hardtack-I," and assigned to the 24th Helicopter Squadron, Det-4. We would transport personnel & equipment from the different Islands & ships in the test area. Sometimes we picked up instrumentation that was set up to monitor the blast results. At that time, we were flying Sikorski H-19 & H-21 Helicopters. On one evening flight (I think it was April 1st., as I recall), we lost one of our H-19's that had flown into a small storm, was caught in a down-draft, and crashed into the Atoll lagoon, in about 7 feet of water. . . .

The Chopper then rolled onto it's right side, blocking the passenger door. It was assumed that everyone had escaped through the left side emergency exit. Then, after inflating the (20 man) life raft, the flight crew soon realized that one passenger was unaccounted for, and was apparently trapped somewhere in the Chopper. The pilot tried to let himself in through the emergency exit to search for any one who may have not gotten out. It was dark they had very little light. He could never find the body that was trapped in the cabin.

The missing passenger was Mark Muir Mills a Nuclear Physicist who was on one of the Scientist Teams that developed and designed Atomic Bombs. I remember, after they eventually found his body, there was a real intense investigation of how all of this happened . . .

Other than that incident I remember that we were given an option to use dark glasses, to watch the bomb blast, or turn our backs to the blast and cover our eyes with our arms, or hands, until we were told it was OK to turn around again and look at the mushroom cloud . . . .

The funny thing was when the blast went off you could see right through your hands, or arms. After we observed the test, we had to wash down with sea water, as fresh water was used to wash down the cloud sampling aircraft. . . .

I have seen the massive destruction that those bombs can cause. You can't start to explain to someone who wasn't there the massive power those bombs have. It would be like trying to describe the Grand Canyon on the phone to someone on the other end who had never heard of it before. I hope to God that I will never see one of those nukes used in a war. I am still around, at age 73, and just now trying to get a little help

from the ***VA*** for some of my health problems. I was also in ***Vietnam*** and all they want to do is argue if my health problems are caused from Radiation or Agent Orange. According to those yokels at the ***VA***, my problems could be caused by both, and no one there seems to know the difference between a chemical and radiation illness. . .

I feel strongly that my problems could be related to our drinking water that could have been contaminated with fallout radiation. But, the folks down at the ***VA*** seem to think that I am one of the characters from Duffy's Tavern, and that my Kidney & Bladder problems are caused by Agent Orange. . . .

After watching those tests, we took in movies, on the sand beach, and enjoyed cheap haircuts (more like scalp trims), and sometimes enjoyed fairly decent food rations. Then we would fly over and have an occasional dinner with the Holms & Narver Crew. Well, that was a long time ago, and many thanks for allowing me to tell my tale of those events. I does me good to get these things out of my system every now and then. God bless all of those that are still out there to read this, and God bless our Atomic Veteran buddies. . .

Charlie Nachbar – Atomic Veteran
Email: cnachbar@hotmail.com

I was stationed aboard the U.S.S. Catamount (LSD-17) in 1956 when we were assigned to the Atomic Energy Commission (AEC) as a support ship for Operation "Redwing." This included setting up weather stations, transporting vehicles, personnel and (in some cases) an H-bomb (or two). Before each test countdown, the ship was dispatched to a point about thirty miles away from 'Surface-Zero'. . .

Each person above decks was instructed to lay down facing aft, away from the shot, and put his eyes in the crook of his arm and close them until instructed to open them, which was approximately ten to twenty seconds after the detonation. I recall afterward that the dark ocean was lit up brighter than day, with all sorts of bright colors in the sky. A few minutes after each shot, the shockwave would hit the ship with enough force to suck the fires out of the boilers, leaving the ship without power. . .

After the first detonation there was a learning curve because nobody knew what to expect, so there were several things that went wrong and had to be adjusted before future detonations. For example, the weather changed and blew the radioactive clouds over us. In later tests we had to adjust for this by shutting down the ventilation system before the shock wave hit the ship. I recall that fire pumps were manned to pressurize the spray curtain that the ship was fitted with. Enabling the system was supposed to wash off all radiation fallout. . .

Each sailor was checked for radiation with a Geiger Counter. Anyone contaminated would have to proceed to the designated showers and shower off and then be rechecked. If we were still contaminated, the process was repeated until all the contamination was presumably gone. . .

Some of us had to take several showers. When I was diagnosed with colon and liver cancer in 2005, I immediately remembered the warnings we were issued and the conditions we were subjected to during those 'Redwing' tests. There is no history of cancer in my immediate family and I'd been healthy up until that time. . .

I've had a colon resection at Churchill Banner Hospital in Fallon (NV) and a liver wedge resection & radiofrequency removal of an internal cancer from my liver at Stanford University Hospital. I was treated with chemotherapy and am currently under observation for return of cancer. This leaves and me and my family in a very unstable atmosphere, as I'm sure other cancer victims understand. If any of my shipmates happen to read this and would like to contact me, I would be happy to hear from them. They can reach me at impatient-4@hotmail.com

George Lindell – Atomic Veteran

A NEW BORDER PATROL CONCERN ?

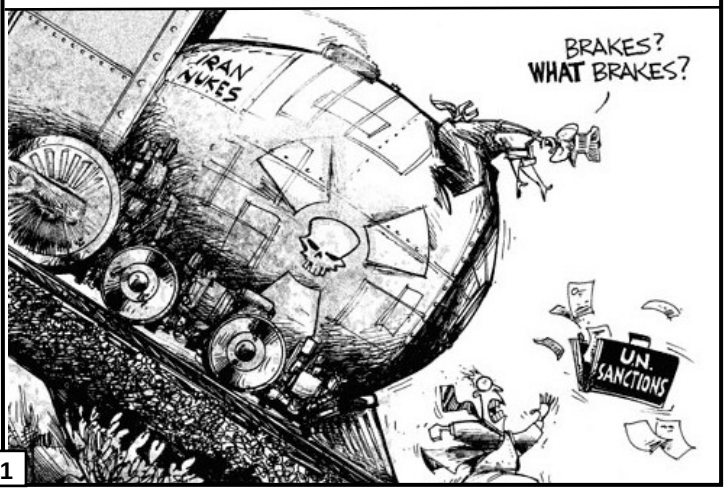
OTTAWA, Ontario - Plans are in the works to (clandestinely) ship both highly radioactive liquid wastes and used reactor fuel rods from the Chalk River laboratory, two hours north of Ottawa, to the Savannah River Site (***SRS***) in South Carolina. Canada uses Chalk River, with one operating reactor and one shutdown unit, to produce medical isotopes. If permitted, it will be the very first time that liquid radioactive waste will be allowed on the highways. Concerned citizens have demanded an Environmental Impact Statement to assess the risks, but no such ***EIS*** is forthcoming . . .

The U.S. Nuclear Regulatory Commission (***NRC***) must amend it's regulations before the transport of any such liquid waste, particularly cross border. An application for amendment was filed on Dec. 28 (2012) by NAC International, a Georgia transport contractor that wants the job. An estimated 40 to 76 tractor trailer shipments could each carry four containers holding 17 gallons of volatile radioactive liquid and sludge. A report by the *Ottawa Citizen* noted that, *"the relatively small quantity per container is thought to preclude the solution from achieving criticality."* That is, they hope it won't explode ! !

The ***NRC*** is set to make a quick decision. Heavily armed guards would reportedly accompany each truck during transport. Another Department of Energy plan involves shipping some of Chalk River's highly radioactive waste fuel to SRS, is expected to begin soon . . .

The Province (Vancouver, B.C.) – Feb. 20, 2013

If you enjoy the NAAV newsletter subject matter, and the first hand stories from America's (secret) Wounded Warriors, you (your friends & neighbors, VFW lodge or American Legion Post) could assist us in continuing both our "outreach" and newsletter research & publication efforts by sending us an (affordable) tax exempt contribution for such purposes, and to continue to honor the sacrifices made by our Atomic-Veteran brothers & sisters . . .

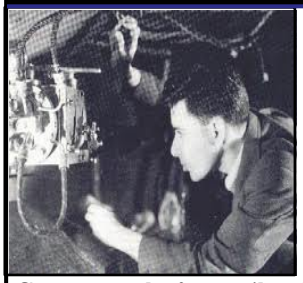


THE BITE OF A NUCLEAR DRAGON !

The following article was posted on the website of (***NAAV*** member) ***Charles "Bud" Norris***. It was originally published on November 19, 1989, by ***Clifford T. Honicker***, manager of a (Knoxville, TN.) ***Independent Radiation Research Policy Project***. In keeping with our commitment to include mile-stone radiation exposure events in our periodic newsletters, we thought it would be proper to turn back the clock, and include the following story in this issue . . . .

THE BLUE GLOW SHROUDED THE ROOM

THEN IN AN INSTANT, IT WAS GONE !



In that moment, ***Louis Slotin*** (left) knew he had received a lethal dose of radiation from the Plutonium (Pu-239) core of the nuclear bomb he was going to test, before the final assembly. Eight scientists had been working in the top-secret laboratory that day. It was code named ***"Omega Site,"*** nestled in *Pajarito* Canyon, only four miles from the main compound of the ***Los Alamos Scientific Laboratory (LASL)*** in New Mexico. . . .

Slotin and his associates were was preparing *Alvin C. Graves* to take over his duties at the *Omega Site*. The two stood together at a table with the core of the bomb in front of them, as shown below). A third man, a 26 year old junior-level physicist named *S. Allan Kline*, who was a graduate of the University of Chicago, had been called over only a moment before the experiment began. Five others stood behind them as *Slotin* gently brought together the two halves of the Beryllium sphere that would convert the Plutonium "pit" to a critical state. That fateful day was May 21, 1946 . . .

Although it was a potentially deadly experiment, *Slotin* had previously performed this core "crit-test" more than two dozen times. The physicists involved that afternoon had been part of the team that designed the atomic bombs that annihilated *Hiroshima* and *Nagasaki*, the first of which was a linear "shot-gun" type with a Uranium (***U-235***) core & plug, and the second of which was the "spherical-implosion" (***Pu-239***) core design that *Slotin* was now working with. This test was being done in anticipation of the Operation "Crossroads" test, which would take place at Bikini Atoll, in the Marshall Islands, only a month later. . . .

Slotin slowly lowered the upper hemisphere onto the larger lower one, his thumb lodged in a hole in the top. In his other hand was a screwdriver, which he then gently wedged between the two halves to keep them from touching as he attempted to bring the Plutonium to a controlled critical state. The other men held their breath - and then, somehow; the screwdriver slipped. The two core halves met, and the ***Pu-239*** pit assembly instantly went super-critical. . .

ALVIN C. GRAVES

Slotin immediately stopped the chain reaction by knocking the sphere halves apart. But, in less than a millisecond, deadly gamma and neutron radiation had burst from the core assembly, causing an instantanous blue glow to illuminated the room, as the air became momentarily ionized . . .

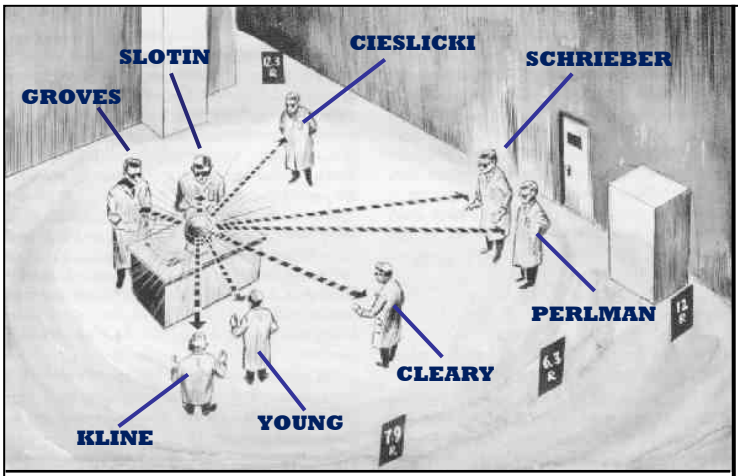
The eight men rushed out of the laboratory and reported the incident to the authorities back in Los Alamos. Then they sat down in the afternoon sun, and as calmly as they could, began to assess the levels of their individual exposure circumstances. They then made a diagram of the room, noting where each had been standing. . .

None of them had been wearing radiation badges, which would have helped register the extent of the exposure. *Slotin* then asked the scientist who had been farthest from the accident to go back and retrieve the film badges out of the lead box where they were stored, and throw them onto the core assembly. . .

Those who had been standing at the table fared the worst. *Kline*, who had been three or four feet away from *Slotin*, received, what he calculated to be, between 90 and 110 rads of neutron radiation. *Graves*, standing a foot closer, received an estimated 166 rads. For *Slotin*, the exposure was nearly 1,000 rads, a lethal dose - twice over. . .

The men then drove themselves to Los Alamos Hospital, where they were surrounded by teams of specialists who had been preparing for their arrival. There was not much they could do for the injured men. The doctors closely monitored their bodily functions. They took radiation counts on their blood and bones. They then took readings from the gold fillings in their teeth, and from their silver belt buckles, and from a gold Shafer pen that *Slotin* had been carrying, and from a coin *Kline* had in his pocket. The doctors knew the next two weeks would provide them a unique opportunity. From a *Civil-Defense* standpoint, the knowledge gleaned from these cases could prove invaluable in the event of a nuclear war. . .

For the first time, doctors and scientists would have a chance to view the effect of measurable levels of neutron radiation on humans without the complicating factor of other damages from a bomb. Before the week was over, experts from all over the country had been flown in. For *Kline*, the next days were hard. According to notes made by nurses on the hospital records, he suffered nausea and vomiting on the first day, fainting spells and complete loss of appetite for the next five days, and rapid weight loss. The men knew *Slotin* was dying, but despite their anxiety they tried to keep their spirits up. *Kline* told the nurses his vomiting was due to nervousness and eating hot dogs rather than to radiation. The men's bodily fluids and excretions were gathered day and night and was tested for radiation contamination levels. . .

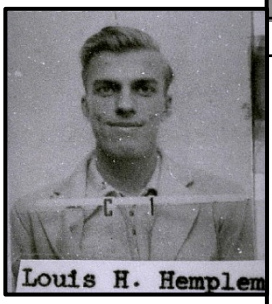


The relative positions of Louis Slotin, Raemer Schreiber, Alvin Graves, Allan Kline, Edward Cieslicki, Dwight Young, Theodore Perlman and Pvt. Patrick Cleary, as the citical mass accident occurred, are shown above . . . .

Doctors watched the steady concurrent rise and fall of the victims' blood counts, blood pressure and temperature as the radiation ran its course through their bodies. Fearing that the gold inlays in *Kline's* teeth were emitting damaging rays into his jawbone, constituting a threat of future cancer, the scientists decided to shield them with a mouthpiece made of gold foil. They soon discovered that the foil was not thick enough to absorb the radiation, so they fabricated a second mouthpiece made of heavy solid gold. *Kline* wore it for five days, until the radiation in his inlays subsided. Then, on the ninth day, *Louis Slotin* died from his radiation overdose. . .

Allan Kline, though still weak, was released from the hospital two weeks after the May, 1946 accident. Then he was abruptly fired, as the dose of radiation that he had received precluded him from working around or being exposed to any additional radiation for at least ***25*** years. *Kline* knew he faced the prospect of cancer. After the initial recovery from acute radiation sickness, a person may lead a healthy life, with the real damage manifesting itself only years or even decades later. Leukemia, testicular cancer or other radiogenic health issues or maladies would likely appear. . .

The director of the Los Alamos Laboratory wrote a letter to *Kline's* mother informing her that her son was *"not seriously affected,"* and that he had *"only minimal radiation symptoms."* Yet the final note on *Kline's* hospital chart stated, *"The depression of the lymphocytes and leukopenia which developed makes it obvious that this man's exposure was significant. Our final diagnosis is that he will experience additional radiation sickness'. . .*



And so, *Allan Kline* left his office at Los Alamos and returned to his hometown of Chicago. At the time of his discharge from the hospital, one of his physicians, *Louis R. Hempelmann*, (*LANL* badge photo on right) advised him to stay out of the sun for at least two years and to wear a sombrero, long underwear and women's long kid gloves whenever he *went outdoors. Kline* took these pre-cautions during the summer of 1946, and by that time, the hair on the front of his head was falling out, and he rarely had the energy to leave his apartment. After he did venture outdoors, he wrote a letter to one of his doctors, saying *"I surely do look quite the spectacle when walking down the street in my protective outfit". . .*

The Los Alamos Hospital had referred *Kline* to the University of Chicago Metallurgical Laboratory, which took 22 blood samples between June 10 and November 22. Then on December 8, *Kline* went into Billings Hospital in Chicago, for what was to be an extended battery of additional tests. He soon realized that he was being "studied" – not treated. Then, on December 10, angry that he was being used as a "***guinea pig***," he left, cutting short his pre-planned hospital stay. . .

Two months later, *Kline* began a campaign to gather his medical files, which he would need to receive compensation for the accident. Then, on Feb. 24, 1947, a law firm he had retained wrote to the administrator (in charge) of the Los Alamos Scientific Laboratory (***LASL***) operations to say that *Allan Kline* intended to seek compensation. The letter announcing *Kline's* intentions was probably not unexpected by the ***LASL*** management . . .

As early as Dec. 3, 1946, *Norris E. Bradbury*, who had succeeded *J. Robert Oppenheimer* as director of ***LASL***, issued a directive that no Los Alamos personnel were to make any statements or commitments involving *Allan Kline*, because of the possibility that *Kline* might file a lawsuit. A week later, on Dec. 10, the same day *Kline* walked out of Billings Hospital, *Louis Hempelmann*, the Los Alamos physician, wrote to *Kline's* Chicago physician, *James J. Nickson* (Medical Director of Argonne Medical Laboratory) that the prospect of a lawsuit from *Kline* was giving everyone *"a most remarkable case of the jitters."* The letter also said, *"This case is being handled in a most unusual manner. We have been instructed not to contact Kline directly nor to commit the project in any way" . . .*

Los Alamos Scientific Laboratories - 1946

That same month, *Stafford L. Warren* became involved. As Chief of the medical section for the ($2 billion) ***Manhattan Project***, *Warren* had headed the American team assessing the damage at ***Hiroshima*** and was Chief of the Radiological Safety Section for ***Operation "Crossroads."*** He advised that a situation existed that *"required a clarification of policy in order to save possible embarrassment of the Government by medical legal suits."* The case of *Allan Kline*, he wrote, had been handled in such a way as to leave the Government in a bad light. *Kline* had been treated as a *"research case,"* and things were not handled in a *"business-like arrangement."* He recommended the development of a policy for medical investigations of people claiming injuries from sanctioned radiation exposure events. . .

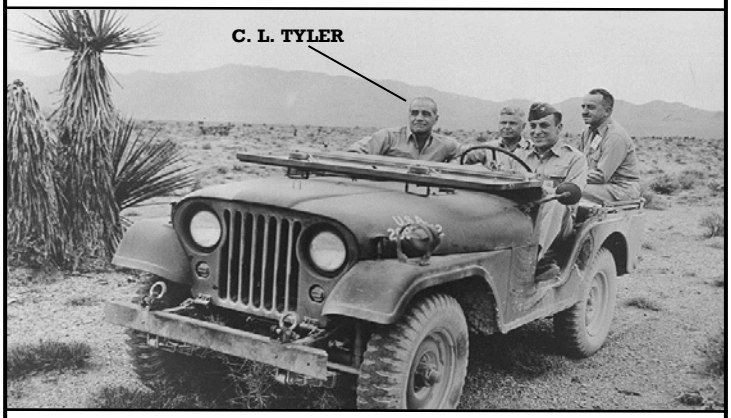
In April 1947, *Warren* wrote a similar letter to the general manager of the newly formed Atomic Energy Commission (***AEC***), which that year officially replaced the *Manhattan Project*, calling for a procedure to deal with former employees who claimed they were injured in the course of their assigned work duties. For most people, he wrote, a simple letter from a leading medical representative from the commission would suffice, assuring them that they had not been subjected to anything that would affect their health. For others, more detailed investigations needed to be made. In both letters, the handling of the *Kline* case was singled out as the example of the need for such a policy. . .

That June, *Allan Kline* entered Yale Law School. All that year, letters went back and forth between *Kline* and the ***AEC***, culminating, on Aug. 16, 1948, with an offer from the commission of a cash settlement of ***$3,333***, in exchange for an agreement that *Kline* would drop all claims. The evidence indicates that *Kline* flatly refused the offer . . .

Then, in July 1949, almost a year after following *Warren's* suggestion, the ***AEC*** issued guidelines on investigating radiation and chemical injury cases that fell under the *"special hazards"* category. As *Warren* had recommended, when the commission heard that a former employee was claiming injury from exposure to radiation (or other toxins) used in the production of nuclear weapons, it was to initiate an investigation to determine the validity of the claim. The directive clearly spelled out what information was to be gathered and who in the ***AEC*** was to receive that information. There was no indication that the claimant was to be given any of the information gathered . . .

While all of this was in progress, *Allan Kline* persisted in his attempts to get his medical records. Then, on Aug. 15, 1949, his attorney, *Paul Stickler*, wrote to Senator *Brien McMahon*, (D) Connecticut, who had sponsored a Senate bill establishing the *Atomic Energy Commission* in 1946, and was chairman of the *Joint Committee on Atomic Energy*, describing the *"shabby"* treatment *Kline* had received and requesting that *McMahon* consider legislation to rectify the case. He included a six-page, detailed assessment written by *Kline* of the injuries he had sustained, while assembling one of the ***"Crossroads"*** atomic-bombs (shown below). . .

Three months later, on Nov. 14, a top official of the ***AEC*** denied that *Kline's* medical records had been withheld from him by either the commission or the University of California, which operated ***LASL*** for the Government. In a letter to *McMahon's* committee, the deputy general manager of the ***AEC*** said *Kline* had not even requested the information: *"Neither the files of the Commission nor the University disclose any request by Mr. Kline for such information nor any indication of any refusal by the University or the Commission to furnish such information to him."* Furthermore, the letter stated, *"With respect to the extent of the injuries sustained by Mr. Kline, the statements contained in Mr. Stickler's letter and attachment appear inconsistent with all available medical reports". . .*



Carroll Tyler & his (LASL) team inspect the Nevada Test Site prior to the (1953) Upshot-Knothole nuclear weapon's test series. . .

On March 17 (1950) , another top official commented on the *Kline* case, this time linking the ***AEC*** response to it to future similar claims. *Carroll L. Tyler*, manager of the commission's Santa Fe operations (where the administrative work for the Los Alamos projects was done), wrote to a colleague instructing him on how to respond to Senator *McMahon's* continuing inquiries about the *Kline* case. *Tyler's* advice was to stress that *Kline "was a rather difficult man to deal with". . .*

"It should be pointed out," Tyler wrote, *"that Kline had broken medical appointments and turned down settlements offered him." Tyler* further advised that *"McMahon should consider the fact that there may be many other individuals, not now known, who have been exposed to radioactive emissions at this or other installations and the preparation of such specific legislation might lead to a deluge of requests for individual legislative acts" . . .*

Then on March 21, 1951, *Tyler* sent a memo to *Kline* stating that *"there are certain data which you requested such as calculations of radiation emitted from objects on your person which are apparently nonexistent and we can only presume that if any count was taken on these objects it was primarily as a matter of curiosity and no record was made."* That statement was an outright lie. In 1984, quite by chance, *Clifford T. Honicker* (while researching nuclear radiation exposure events) discovered a 270 page dossier, most of it legal and medical evidence pertaining to *Allan Kline's* exposure and his subsequent medical problems. It had been compiled by the ***AEC*** and stored in cardboard boxes in the radiological archives at the University of Tennessee . . .

The files were those of *Stafford Warren*, who had died in 1981. They contained the records of more than two dozen people who had formally (or informally) claimed injury from exposure to radiation. In nearly every instance, *Warren* had been asked, by the ***AEC***, how to handle the case. Of the two dozen, mostly servicemen and workers at nuclear-weapons plants, none had been treated or compensated for radiation injury, despite the fact that some of the records revealed well-documented over-exposures. . .

In none of the cases did the ***AEC*** acknowledge (to any such claimants) a diagnosis of ***"radiation injury."*** Most of the files were very brief, indicating a quick settlement of the case (and never to the claimant's advantage). Of the two dozen claimants, only one, *Allan Kline*, had apparently persisted through years of **fully documented stonewalling**.

Allan Kline's file included medical & radiological exposure records, telex's, letters and conference reports. All were related to the May 21, 1946 Los Alamos accident at the *Omega Site*. . .

Those hidden ***AEC*** files revealed that in the summer following the accident, *Allan Kline* had suffered from severe lassitude, sleeping ***16*** hours a day. He couldn't walk up a flight of steps without resting; he couldn't swim more than few strokes; nor could he read a newspaper for more than a few minutes, and he was also sterile. The level of exposure had been so high, and he had experienced such immediate debilitating effects, that it was almost certain that by then (38 years later) it would have been assumed that he had died from the effects of acute radiation exposure. . . .

A book was then published titled ***"Case-Five"*** that included a follow-up of the survivors of the 1946 accident, that clearly referred to the *Kline* event – and that he had refused to co-operate with the study, but a note indicated that in 1978, when the article was researched, he was still alive. While reading the Case-Five book, researcher *Cliff Honicker* discovered that *Kline* had studied at Yale Law School, and after calling the alumni office was told that the man whose files he was referring to was mow living in California, and was kind enough to furnish *Honicker* with his phone number. . .

The first phone call was met with a brusque rebuff. After *Honicker* tried again, he was told *"no comment."* Finally, trying once again, he was able to tell *Kline* that he wanted to talk about the criticality accident, and again was told *"no comment"* and *Kline* hung up one more time. . . .

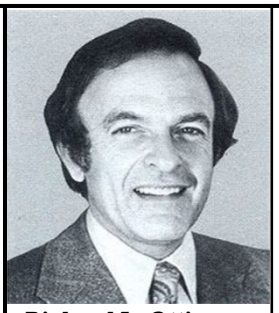
Not giving up, *Honicker* called on more time, and quickly stated *"please listen to what I have to say, then you can hang up, if you wish."* As *Kline* listened, *Honicker* started reciting facts: telling him what he knew about the accident, and about his treatments, and was also quoted statements from his own letters.

Then, he told *Kline* about the three law firms he had hired along the way in an effort to get his records, only to be told by the Los Alamos laboratory that the files simply no longer existed, and may have not been collected in the first place. Finally *Honicker* told him *"I want you to know that I have, in my hands, the files that are not supposed to exist."* There was complete silence on the line, for a minute or more, but this time, *Kline* did not hang up. . .

Three weeks later, *Allan Kline* agreed to meet with *Honicker*, at his San Francisco home, and from 9 p.m. to midnight, the two carefully examined the (newly discovered) letters, reports, telegrams and medical records. When they were done, *Kline* wiped a tear from his eyes and said *"what they did and said to me was calculated lies, all lies."*

Klein (the former physicist) was now a successful businessman, and the founder of a number of companies including ***Xicor Inc***., which manufactured computer chips that had potential national defense applications, and he did not want his story to affect, in any way, the U.S. nuclear-weapons testing and development programs. . . .

Even though the accident had left him with debilitating and life-threatening conditions - and he detailed the entire list of long term effects for *Honicker*, he refused to allow any publication or release of his past radiation exposure experience, or the resulting health effects, and wanted to keep his story and any applicable details of that event a secret. He blamed the stonewalling on the work of a few misguided, overzealous officials within the Atomic Energy Commission. .



Richard L. Ottinger

Two months after his interview with Kline, *Honicker* met with the staff members of the House Energy Conservation & Power Subcommittee, chaired by Rep. *Richard L. Ottinger* (D-NY), which had oversight and investigative mandates over the ***DOE*** the ***AEC*** in the 1970's. After briefing the Subcommittee members on what he had found in the *Warren Files*, Ottinger signed off on a letter drafted to Energy Secretary *Donald P. Hodel*, initiating a Congressional investigation into the medical and radiological record keeping practices of those two agencies over the past 40 years. They had hopes of finding duplicates of the 270-page (Allan Kline) file and the two dozen other files that *Honicker* had also seen while he was searching the archives at Knoxville. . .

It was also suspected that a repository existed that would show that hundreds of other people had been treated in the very same way. The letter of inquiry also requested all the files of the Commission's Division of *Biology & Medicine* from 1946 through 1962. This was the division that (40 years earlier) had blocked *Kline's* request for his own files. After being told that the request would take time to process, *Honicker* decided to look into the ***AEC*** policy directives. Among the stack of directives delivered was Chapter 0521, from the ***AEC*** Manual, entitled *"Medical Investigation of Alleged Disabilities From Special Hazards."* Issued in 1954, it dealt with *"radiation exposure or exposures to toxic materials peculiar in kind or degree to atomic energy."*

The *"medical investigation"* referred to in the title was not, the policy stated, one that would be made after a routine claim of injuries. It was, rather, a policy to collect information, *"to the extent permitted by law, and to the extent consistent with the best interests of the Atomic Energy Commission,"* whenever it heard about any allegation made by a former commission employee of injury from *"special hazards"* - radiation or any toxins used in the production of nuclear weapons. The policy spelled out in detail which commission officials would be informed of an investigation.

Conspicuously absent was any mention of whether the radiation survivor himself would be informed. Chapter 0521 was very similar to the directive issued, at *Stafford Warren's* suggestion, by the ***AEC*** in 1949. The title was identical. The similarities seemed to go beyond the possibility of coincidence. The 1949 directive, which came out in the heat of dealing with *Kline*, seemed a direct forerunner of Chapter 0521. . .

Two weeks later, *Cliff Honicker* was allowed to see the division of biology and medicine files. From the first, he suspected they were incomplete. Brand new legal-brief fasteners were in place on 30-year-old file folders. Folders labeled *"Case Histories - 1953,"* and *"Claims - 1954"* consisted of only a single piece of paper, each. . .

Chapter 0521 spelled out what material should be in each person's file. Little of it was there. Over the next three weeks, other boxes of files arrived, in similar condition. Toward the end of that time, a ***DOE*** employee supplied the researched with an index listing of additional departmental files, stored separately. The list referred to more than a hundred other special cases. Ten days after he asked for those records, they were delivered. A subcommittee staffer, with a top-secret security clearance, went through the classified documents

and made notes, which the ***DOE*** cleared for the researched to view. A formal request to declassify these files, which dealt only with scientific and medical issues, was not only refused but in some cases resulted in the files being reclassified from *"secret"* to *"top secret."* The researched, however; was allowed to study two boxes of files that were unclassified. . .

Dr. Stafford Warren (with microphone) briefs his staff prior to the (1946) "Crossroads" tests. . .

These included the *Allan Kline* file and ***50*** others. *Kline's* file was identical to the legal-medical file kept on him by *Stafford Warren* - except that 90 percent of it was missing. It contained only 27 of the 270 pages that I had seen while in Tennessee. According to the ***DOE's*** official version of the *Kline* case, the Government had acted rapidly to provide Kline with all the records he wanted. In this case, it was very clear, that revealing material had also been removed from the other 50 cases, as well. As the files came in, Honicker had gone back several times to the ***DOE*** Congressional liaison, with whom he'd been working, to ask if the material was complete. . .

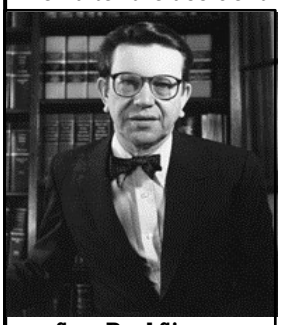
After receiving the last batch, including *Kline's* file, he asked once again. In all cases, the liaison replied that the files had not been tampered with in any manner. Subcommittee staff members were not hopeful about their ability to investigate further. *"There's no way to prove it unless you can find a whistleblower in* ***DOE*** *who will admit that the files have been tampered with or destroyed,"* said one staff member. *Honicker* told him, *"Hang in there: document what you think is missing, and find us a whistleblower, if you can."* He then left and went back to Tennessee. . .

Over the next three years *Cliff Honicker* tried to persuade *Allan Kline* to go public with his story. He was repeatedly denied permission to use any information he had divulged during their first meeting. Finally, it became clear that if it were up to him, *Kline* would take those events and details with him, to his grave. This would not be unique, as several thousand Atomic-Veterans, denied access to their records, would also take their radiation exposure knowledge with them to their graves. . .

Cliff Honicker then engaged in investigations into other cases of radiation exposure events, focusing on similar instances of suppression of information by the ***DOD***, specifically related to atomic veterans & down-winders, but somehow, he just couldn't let the *Kline* case go. In April (1989) he went to Los Alamos, determined to review the documents connected with the accident. In particular, he was interested in a report he had seen referred to in the 1978 follow-up study. . .

It had been labeled simply *"Los Alamos document LA-687"* that turned out to be a formerly secret report called *"Radiation Doses in the Pajarito Accident of May 21, 1946."* Drawing on the medical and radiation exposure files kept on *Kline* and the others, the report gave a dry detailed account of the scientists' efforts to determine precisely each man's radiation exposure dosage following the accident. . .

The report also indicated that the experts (many of whom had also examined the men at the hospital following the accident) had gone as far as to make hollow life-size models, called *"phantoms,"* filled with simulated blood. The accident was then recreated time and again using the same core & "pit" guts of the atom bomb, only now by remote control. Comparisons were made with the phantoms' exposures and those recorded from the radioactive blood samples taken from the men after the accident. Armed with this new information, *Honicker* went back to Washington. His first visit was with Senator *Paul Simon* (D-IL.) who had worked for seven years to pass a compensation bill for Atomic-Veterans who have developed commonly accepted radiation related cancers. The bill was enacted in 1988. It took about 30 minutes for *Honicker* to brief *Simon* on his findings. When he was finished, *Simon* stood up and began pacing the floor in visible agitation. *"This is an incredible story,"* he said. *"What can I do to help you?"* Having already interviewed *Louis Hempelmann,* without success, *Honicker* and seeing an opportunity to do so again, with a powerful Senator making such request, he asked Simon if he could help him set up an interview with *Hempelmann*. . .



Sen. Paul Simon

Senator *Simon* then picked up his phone and called *Hempelmann,* as *Honicker* stood by in his office. *Simon* urged *Hemplemann* to set up a meeting with *Honicker "for the good of the country."* After hanging up, *Simon* told *Honicker* that *Hempelmann* sounded cautiously startled, but he agreed to the meeting. Then *Simon* said, *"to my knowledge, this kind of withholding of files in a case of nuclear radiation exposure had never been documented before". . .*

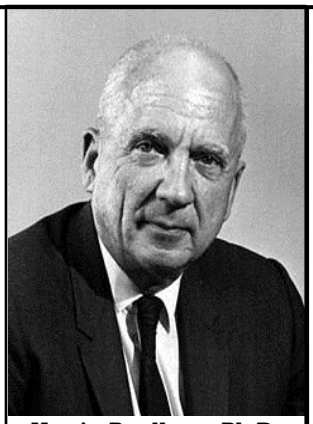
He and *Honicker* agreed that *Kline's* case set the stage for a policy of secrecy that has been applied in hundreds (or even thousands) of other similar cases. *"There have been many things to cover up, however; I don't know of any cover up that is this extensive, that could adversely impact the lives of so many people."* said *Simon. . .*

Two weeks lager *Honicker* met *Hempelmann* at Strong Memorial Hospital in Rochester, where he had been the head of radiology for more than a decade. Among his first words were, *"The records have all been destroyed since I retired from this place in 1979."* Noting *Honicker's* surprise, he explained that he had seen no reason to keep his notes after his report was published. *"As far as I was concerned, I was finished with it" . . .*

After these opening remarks, *Honicker* outlined what he knew about *Allan Kline's* experiences. He mentioned *Hempelmann's* own letter, dated Dec. 10, 1946, which said *"everyone' was getting a 'most remarkable case of the jitters' over the possibility of a lawsuit from Kline." Hempelmann* also said he knew of the difficulty that *Kline* had had getting his records, but that *Kline* had never come to him with such a request. Additionally, he said that *Kline's* request would have had to go through the proper channels, and additionally, would have needed approval from *Norris Bradbury*, then director of the ***LASL*** . . .

It was *Bradbury* who issued the (Dec. 3, 1946) directive that Los Alamos personnel were to make no commitments or statements involving *Allen Kline*. *Honicker* then reminded *Hempelmann* that *Kline* had gone through all the proper channels, and those proper authorities were the very people denying him access to the records. *"That was not my responsibility,"* replied *Hempelmann*, after which *Honicker* then pointed out that he had been the principal 'doctor-of-record' for the patients

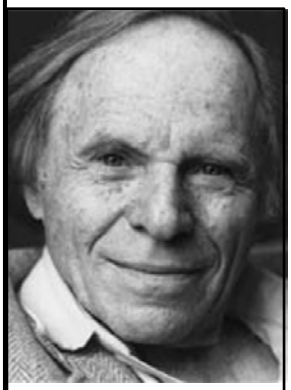
after the accident, as well as a participant in the "phantom" study, and further, his correspondence makes it clear that he was aware that Kline was being stonewalled in his attempts to retrieve his records, even unclassified documents. . .



Norris Bradbury, Ph.D.

Hempelmann listened as *Honicker* recited all this. He then turned his head away and said nothing. Finally, he softly repeated, *"Those issues were not my responsibility." Phillip Morrison,* an ***MIT*** Professor Emeritus, had been a close personal friend of *Louis Slotin*, and had worked with him, as well as a friend to *Allan Kline*, at the Pajarito site. . .

Slotin had called *Morrison* after the accident, and he was the first to arrive on the scene. It was *Morrison* who insisted that an announcement be made that the accident had occurred. The military director of the *Maj. Gen. Leslie R. Groves* (military director of the Manhattan Project) was known for his strict passion for secrecy, and officials wanted to keep a lid on this accident. . .



Phillip Morrison, Ph.D.

Following the criticality accident, it was *Morrison* who coordinated a team of physicists to monitor the radiation emanating from the men and the objects they'd been carrying. A memo, written by him in the week after the accident, detailing the radiation levels found in *Kline's* body, was among the documents that *Honicker* had found in *Stafford Warren's* file. After *Slotin's* death, *Morrison* filed a detailed secret report with Los Alamos. . .

When *Honicker* showed *Morrison* the secret study he had found in Los Alamos (LA-687) which listed him on the title page as a contributor to the section on *"Theory,"* he denied having ever seen it before. He said he had been *"furiously concerned"* with the case and had prepared a report, but that this was not it. (At Los Alamos, *Honicker* had requested a 1946 report by *Morrison* and a coauthor, which may have been the one he was now referring to; but was not allowed to see it.) *Honicker* then asked *Morrison* about the 0521 policy, commenting that its recommendations as to how the Government should respond to radiation injury claims seemed very similar to those made in the *Kline* case. Was *Kline's* case part of an orchestrated response ? *"It probably was a policy, I don't think they would deny it, would they ?" Morrison* replied, *"I think the Government was scared about this litigation. The Government,"* he paused, then said, *"I don't know who 'the Government' is, but somebody was, maybe some lawyers*". . .

It would soon be discovered that the policy of tightly restricting the information the U.S. Government is willing to give people who fear they have been exposed to radiation, both as an occupational hazard and while on military maneuvers, goes far beyond the *Kline* case. As an example, according to (2006) **DOD** statistics, the following radiation exposure statistics will apply:

Veterans (from all service branch's) involved in 'Occupational' radiation exposure events = ***1,590,000*** (includes Japanese Occupational forces, Japanese prisoners of War, assignments in nuclear weapons storage & maintenance facilities, nuclear power plants, etc.)

Veterans (from all service branch's) involved in Atmospheric nuclear weapons tests (1946 to 1962) = ***487,000***.

Veterans involved with underground nuclear tests (1960 to 1992) = ***50,000***.

Veterans assigned to Pacific Atoll cleanup operations = ***6,000***.

Civilians assigned to radiation exposure events, including uranium mining, nuclear weapons manufacturing & assembly, down-winders (exposed to radiation from the Nevada Test Stie) = ***total is unknown.***

Of the thousands of atomic veterans who have filed radiation injury claims with the Department of Veterans Affairs (***DVA***), only a few hundred have been compensated for disability, the vast majority of which were in the last couple of years. One who was not compensated was *John Smitherman*, who, like ***42,000*** other servicemen, witnessed the two (1946) ***Crossroads*** tests. Although he became a double amputee and suffered multiple cancers, he died in 1983 without ever having received any compensation for his injuries. . .

The ***VA*** admits that he suffered from six radiation-related cancers, as well as several others, but says that the cancer that killed him was not radiogenic. Hundreds, if not thousands, of people downwind from the (Nevada) nuclear weapons testing grounds were exposed to potentially damaging levels of radiation. *Elma Barnett* witnessed the cloud from the nuclear weapons test code-named ***"Grable"*** (shown below) as she was watering her grazing sheep in Hamblin Valley, Utah, on May 25, 1953. She soon developed nausea and vomiting and rashes broke out all over her body; and her skin began to scale off, her hair fell out, and her weight dropped from 130 to 100 pounds. . .

Doctors, from the ***AEC*** diagnosed hypothyroidism. Eight and half months after the incident, a Geiger counter passed over her body failed to detect any external radiation, and on that basis, doctors working under *Stafford Warren* at the Los Angeles Atomic Project reiterated their diagnosis that radiation was not the cause of her problems. . .

[Note: At that time, there was no consideration of the amount of radiation that may have been inhaled, or ingested into *Elma Barnett's* body, or the slow progress of internal cell damage it may have been causing.]

More than ***600,000*** people have worked in nuclear-weapons facilities across America since 1943. Untold millions of pounds of radioactive and chemical waste have been released into

the environment. Estimates range from ***$50*** billion to ***$200*** billion and more to clean it up. Countless wor-kers have undoubtedly been ex-posed to the wastes. The ***Three Mile Island*** Public Health Fund, established after the accident in 1979 at the ***TMI*** reactor, has spent several years in legal battles trying to get the ***DOE*** to release records it com-piled on ***300,000*** workers at the nation's principal weapons facilities; many of them are believed to have been exposed to radiation. . .

Thomas F. Mancuso

In 1964, the U.S. Government hired *Dr. Thomas F. Mancuso* to study the radiation exposure of ***225,000*** work-ers at nuclear weapons plant. He then set about collecting the data the ***TMI*** fund requested. His **15**-year study concluded that ***"low-level"*** **expo-sures *significantly increased the chance of developing cancers, and that industry standards for (safe levels of) radiation exposure were at least 10 times too high*** . . .

When *Mancuso* published his findings, **the Government fired him and denied him access to his own research data ! ! ! !**

One case that may be in those suppressed files is that of *Harry F. Reece*, who was exposed to radiation while working as a machinist at the Hanford, Wash., nuclear plant from 1946 to 1951. His *"special jobs"* lasted from 15 seconds to 8 hours a day, depending on the radiation levels involved. For years afterward, he suffered a variety of debilitating symp-toms. . .

The special case file on him kept by *Stafford Warren* includes a letter from a consulting physician saying that no thorough workup seemed necessary unless the ***AEC*** wanted to conduct it *"solely on the basis of public relations."* The ***DOE*** has also effectively kept such cases out of the courts. In a collective suit involving ***220*** claims of injury at the Nevada Test Site since the mid-1970's, a Federal judge ruled that the workers, some of whom had been pursuing their suits for ***15*** years, were entitled to bring their case to court. . .

Ben F. Levy worked at the site for more than ***25*** years and was the head of the *Nevada Test Site Radiation Victims Association*. His group has accumulated death certificates on more than ***300*** people who worked at the site, and since 1951 have died from cancers that seem to be radiation related. *Levy* said he and the other workers were never warned of the dangers. *"They never gave us that alternative,"* he said. *"They always said it was nothing to worry about. Come five years later, all this started happening."* Under increasing pressure, the Govern-ment finally acknowledged, for the first time, that radio-active emissions from a nuclear-weapons plant may have harmed large numbers of people living nearby. After a (nonbinding) trial before a Federal jury, the ***DOE*** promised to pay at least ***$73*** million to settle claims made by ***24,000*** neighbors of the plant in Fernald, Ohio, where hundreds of thousands of pounds of uranium dust have been emitted since 1951. . .

The Government did not acknowledge that the dust had made people ill; instead, it said the money was compensation for emotional distress and diminution of property values. Of the survivors of the 1946 (*Slotin*) accident, *Alvin Graves*, who stayed with the atomic program, died of a heart attack in 1966. . .

CASTLE "BRAVO" - 2-28-54 - 15 MEGATONS

Comments: America's (secret) Wounded Warriors owe a debt of thanks to ***Clifford Honicker*** for his dedicated pursuit of the truth related to the U.S. Government's suppression of harmful radiation exposure events. Additionally, they can easily relate to the barriers and roadblocks incurred while searching for records & "proof-of-par-ticipation" in (nuclear weapon tests, or any other) radiation exposure event. The ***DOD*** held them to an oath of secrecy for **51** years, pre-venting them from telling their personal physicians about those events that may have contributed to an assortment of serious health issues. . .

As (now-deceased) **NAAV** Director, ***Lt. Col. Darrell Robertson*** once said, *"many of those secret Wounded Warriors have taken that oath with them, to their graves, without proper thanks, or proper recognition, or any manner of ample compensation for proudly serving their country as Atomic Warfare test **guinea-pigs.'"***

*"The **DOD** had no problem rewarding the owners of the Japanese fishing vessel - **5th. Lucky Dragon (several million dollars)** for being exposed to radiation fallout from the (1954) **Castle** tests. But when Atomic-Vet's requested similar compensation, they were completely, and totally ignored."* He also said, *"I am most proud to have served my Country in the Military, including participating in nuclear weapons tests, but the lack of proper respect and recognition does not make me, or any of my Atomic-Vet buddies, proud of our Government". . .*

Darrell Robertson will be missed by all ***NAAV*** Officers & members. . .

"TWO AMERICAN PATRIOTS"

"BOTH KICK ASS"

National Association of Atomic Veterans, Inc.

11214 Sageland - Houston, Texas 77089 - Ph: 281-481-1357

MEMBER APPLICATION

Revised: 02-6-10

First Name	Initial	Last Name	Spouse	Phone	Date of Birth

Address	City	St.	Zip 5	Zip 4	E-mail address

Branch of Service	Ship (or) Unit (or) Squadron	Name of Operation or Test	Year	Location

Health Issue Comments:

I am a family member of _____ **a (deceased) Atomic-Veteran**

Notes:

1. **Please include, on the back of this application, any other radiation exposure events you may have experienced while in the military, or any illnesses suffered by you, your children, or your grandchildren, if any, and the correct name and address of anyone who might be filling this application for an Atomic Veteran.**
2. **Spouses & children of Atomic Veterans, or Veterans who may have been exposed to radiation from Depleted Uranium munitions or armor plate during the Gulf War or any middle east conflict are qualified to be a member of NAAV, Inc.**

Date:	Signature	NAAV has my (our) permission to publish this information:	Yes	No

ANNUAL dues = $ 25.00 -------- or -------- LIFE dues = $ 250.00

Please send money orders or personal checks (only) to:

NAAV ..... 11214 Sageland ..... Houston, Tx. 77089

NAAV (Atomic-Veteran) ITEMS FOR SALE

ATOMIC VETERAN CAP
$ 15.00

JACKET PATCH
$ 10.00

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REAR AUTO DECAL
$ 10.00

NAAV "Atomic Veteran" Certificate * (8 x 11 – 4 color) ---------- $10.00

**** Furnish your full name, branch of service, ship, or unit, or squad. Info, and test (or Operation) name & date (or year) for Certificate accuracy***

NAAV "Nuclear Veteran" Certificate * * (8 x 11 – 4 color) ---------- $10.00

***** Furnish same as above + type of radiation event (nuclear power plant, nuke weapon tech., depleted uranium exposure, X-ray tech., etc.***

NAAV "Atomic Bomb Test" Photo ** (8 x 11 color) ---------- $10.00

***** Furnish you Operation, or test name so we can furnish the proper photo***

"Atomic Veterans – The Real Story" ***(2.5 hr. CD presentation) ---------- $35.00***

A 5 part pictorial presentation that includes radiation effects on the human body, nuclear weapon effects, a complete history of U.S. nuclear weapons development, including military participation, tests on animals, the inner workings of nuclear weapons, NAAV newsletters (in full color) and more.

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