

The A and C Structures

The A structures on Stony Brook stored nuclear components (capsules) in pressurized M-102 "bird cages." The 'bird cage' structure was designed to prevent the nuclear materials from coming in close proximity to each other which might have initiated a chain reaction. These A structures were considered hardened structures, some additionally shielded by bermed earth. For the windowless above ground A structure, a second story actually provided more protection through its 17 feet of solid reinforced concrete.



M-102 Bird Cage
(National Atomic Museum)

For the newer A structure at Stony Brook, the storage space for the capsules is entirely bermed or below ground, with a false single story above ground (solid reinforced concrete). The older A structure gave the appearance of an office building when viewed from a distance through the addition of bands of paired false windows and a projecting entrance offset. The bermed A structure was less convincing in this regard from a near perspective, due to the mounded earth and the resultant tunnel-like extension of the offset on one facade.

In the newer A Structure on Stony Brook, the storage bins were 30 inches wide, as compared to 36 inches in the older structure. This reduction in bin size was a result of a change in the composition of the nuclear capsules which allowed them to be stored closer together without the danger of initiating a chain reaction.

The A structures on Stony Brook were Buildings 908 and 941. One or more small guard houses ("pill boxes") were built in close proximity for security purposes. These "pill boxes" were common wherever nuclear capsules were stored.



Pill-box at Manzano Base, NM. Identical to those on Stony Brook near capsule storage.



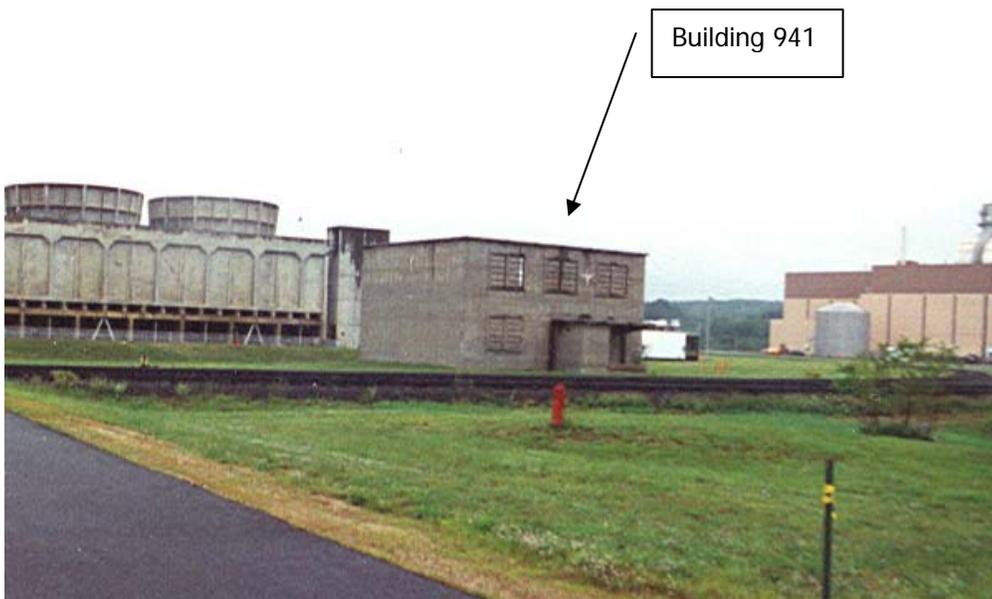
Pill-boxes manned during alerts, etc. There were 2 of these, one was on the opposite side of the road, see photo on next page.

(Photo by William Lindstrom, copyright 2004)

CAPSULE STORAGE BUILDINGS - 908 and 941



The newer Building 908 where nuclear capsules were stored. The upper structure was a fake building made of solid concrete. The lower entrance led to a vault door that accessed a corridor with 2 doors on either side. These were bank-type vault doors, not blast doors.
(Photo by Clarke Ketter, copyright 2004)



INTERIOR OF CAPSULE STORAGE BUILDING 908



Corridor in building leading to first vault door (right).



First vault door leading to interior rooms of storage area.



Interior rooms, each with their own vault door, with 30 inch bins.

Sandia Site Summary,
Harold Rarrick, 1994

INTERIOR OF CAPSULE STORAGE BUILDING 941

Building 941 was the older structure on Stony Brook and was a massive concrete structure containing only 4 rooms, each about 10 feet wide, 13 feet deep and 9 feet high. It was located in close proximity to the Plant area on Stony Brook.

Each room had the capacity to store approximately 30 capsules in their storage bins. These areas are accessed through bank vault-type doors with dual combination locks. Each room contains 30 large cubicles, each about 36 inches across, to ensure "critical safe" separation of the capsules in their "bird cages".



Interior vault doors in Building 941 on Stony Brook. (Sandia Site Summary, Harold Rarrick, 1994)



Capsule storage bins in Building 941 on Stony Brook. Note similarity to bins at Manzano Base, below. (Sandia Site Summary, Harold Rarrick, 1994)



Capsule storage bins at Manzano Base, NM.

NUCLEAR CAPSULE MAINTENANCE

(The following section is based upon the 45+ year-old memories of 332X0s, and therefore may not be accurate in the details, but the overall concepts and procedures should be correct.)

The 332X0 career field was established to provide personnel for the important activities related to the maintenance of nuclear capsules in the field. The duties of the 332X0 specialist were to inspect and maintain the nuclear components of the capsule and the "pit" of the weapons. The training of 332s was conducted at Lowry AFB in Denver, Colorado and consisted of about four months of basic electricity and electronics theory and 2 months of "SET" school. The technical training involved studies in nuclear theory and instruction on the inspection, maintenance, disassembly and assembly of the initiator and nuclear capsule.

At most of the Atomic Energy Commission storage sites, the nuclear capsules were stored in bank type vaults with two combination locks. These vaults were located either in separate parts of the Plant or in special buildings in the Plant area. In order to enter these storage areas, two persons had to be present at all times. Personnel would remove the "bird cages" from their storage compartments in the "A" Structures and deliver them under tight security to the "C" Structure. The "C" Structure on Stony Brook provided equipment and space to perform all required maintenance operations on the nuclear capsules used in the earlier nuclear weapons, such as the MK6, MK15, MK17, MK21 and MK36. These early weapons also used polonium-beryllium initiators to generate neutrons during the implosion sequence. Polonium-210 has a half-life of approximately 138 days, so the initiators had to be replaced periodically. These devices were maintained according to precise quality control methods. Between 1954 and 1957 the initiators were replaced with a newer type which were sealed and did not require routine replacement.



"C" Structure at Stony Brook
(Sandia Site Summary, Harold Rarrick, 1994)

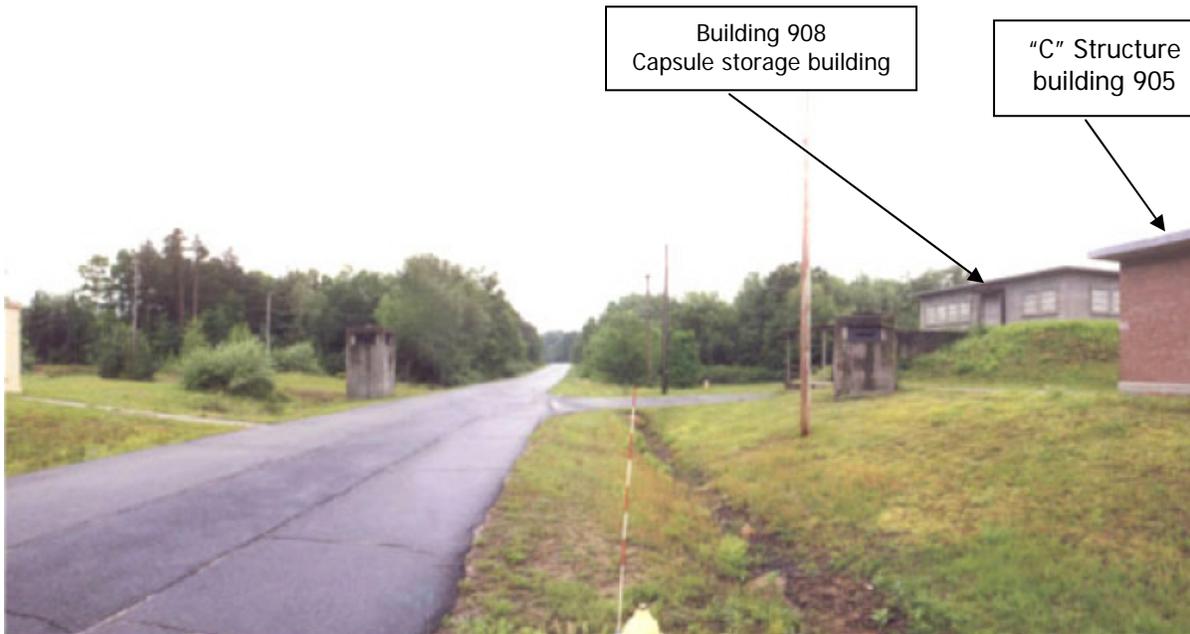
The nuclear capsule maintenance activities were then conducted in the "C" Structures on Stony Brook. Before opening the bird cage, the specialists put on protective gear - a rubberized apron, respirator and latex gloves. The inspection and maintenance steps followed were:

1. The bird cage would be depressurized and the top removed.
2. A handling tool was then screwed into the base of the capsule support.
3. Capsule was removed from the bird cage and placed on a support ring.
4. The capsule and support were visually inspected and cleaned using Kimwipes and trichlor.
5. After the inspection and cleaning, the capsule was returned to the bird cage.
6. A bag of dessicant was placed on top of the support, and the top was replaced.
7. The bird cage was then pressurized, and re-sealed.

After the maintenance, cleaning and testing of the capsules was completed, the capsules would then be transported back to the "A" Structure. All personnel were checked for traces of radiation after this process had been completed.

Another aspect of the 332X0's duties and responsibilities involved dealing with "spalling". As the nuclear capsules aged and went through temperature cycles, they would begin to "spall". Spalling was a physical reaction that resulted in small particles popping off the surface of the capsule, sometimes as far

as two feet. If the capsule was spalling, a transparent plastic covering with two hand holds was placed over it. Even with this precaution, radioactive particles would end up on the table or floor. The cleanup of these particles was accomplished by wiping the area, or sometimes even painting the affected area.



Building 905, right, the C Structure at Stony Brook. Building 908, the A Structure is shown just to the left of 905. Notice security "pill boxes" in center and on the left of road. Access road is to Plant area.
(Copyright, William Lindstrom, 2002)

By the late 1950s, most of the capsules were enclosed in a cadmium "can", and therefore did not require a complete inspection, just verification of the pressurization within the bird cage.

By about 1960, the nuclear capsules had been phased out of the stockpile and the requirement for maintenance activities at Building 905 was terminated. This phase-out was occasioned by the increased stockpiling of the sealed-pit thermonuclear weapons, such as the MK28, the MK15 Mod 2, and others.

Inspection and cleaning of the "pit" areas of the weapons were done in the Mechanical Bay (M-Bay) using latex gloves, a flashlight, a mirror, Kimwipes and trichlor. A visual inspection was conducted first with the flashlight and mirror by looking through the IFI (In-flight Insertion) tube. The pit was then wiped down with Kimwipes and trichlor. The most difficult part of this procedure was trying to reach the back part of the pit. With the MK6, the entire arm of the specialist was inside the pit, and the specialist's head was pressed against the High Explosive (HE) sphere and a detonator. In the MK15, MK17, MK21 and MK36, it was necessary to reach through the IFI tube and clean the back of the pit using a toilet brush wrapped with a Kimwipe.