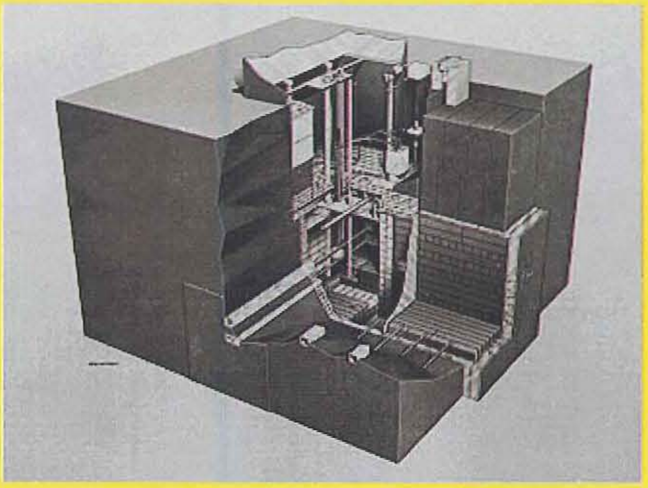
LA-UR-04-6681

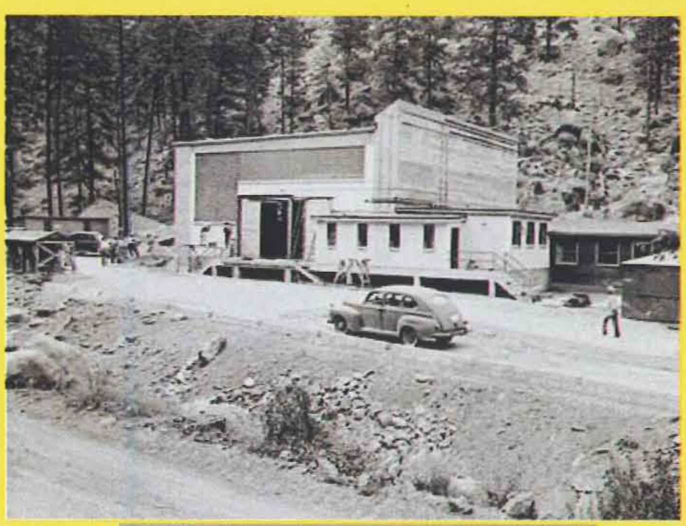
Historical Context of the Omega Reactor Facility, Technical Area 2

Volume 1



"Water Boiler" Reactor (SUPO) Schematic

Omega West Reactor



Clementine Reactor Building

RRES-ECO Heritage Resources and Environmental Policy Compliance Team
Risk Reduction and Environmental Stewardship Division
LOS ALAMOS NATIONAL LABORATORY

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Historical Context of the Omega Reactor Facility, Technical Area 2

Historic Building Report No. 234

Los Alamos National Laboratory

September 17, 2004
Survey Nos. 647 and 814

Prepared for the
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Los Alamos Site Office

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Risk Reduction and Environmental Stewardship Division
LOS ALAMOS NATIONAL LABORATORY

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ACRONYMS

AEC – Atomic Energy Commission

HYPO – High-Power

INEEL – Idaho National Engineering and Environmental Laboratory

kW – Kilowatt

LANL – Los Alamos National Laboratory

LASO – Department of Energy, National Nuclear Security Administration, Los Alamos Site Office

LMFBR – Liquid Metal Fast Breeder Reactor

LOPO – Low-Power

MOA – Memorandum of Agreement

MTR – Materials Testing Reactor

MW – Megawatt

NAA – North American Aviation

NRTS – National Reactor Testing Station

NTS – Nevada Test Site

OWR – Omega West Reactor

SHPO – State Historic Preservation Officer

SUPO – Super-Power

TA – Technical Area

TNT – Trinitrotolulene

WAC – Women's Army Corps

INTRODUCTION

The following documentation fulfills the terms set forth in a memorandum of agreement (MOA) between the Department of Energy, National Nuclear Security Administration, Los Alamos Site Office (LASO) and the New Mexico Historic Preservation Division regarding the demolition of the Omega Reactor Facility (building TA-2-1) at Technical Area (TA) 2, Los Alamos National Laboratory (LANL). As per the terms of the MOA, finalized on April 10, 2002, this report includes a history and description of TA-2. Appendices to Volume 1 include a historic building inventory form with representative photographs and building drawings (Appendix A), maps showing TA-2's construction history and the location of eligible and non-eligible properties (Appendix B), oral interview information (Appendix C), and a complete listing of TA-2-1 drawings on file at LANL (Appendix D). A set of indexed archival photographs is included in Volume 2.

TA-2-1 housed five nuclear reactors between 1944 and 1994. The first "Water Boiler" reactors at TA-2-1 provided critical mass data in support of Manhattan Project nuclear weapons development. All three Water Boiler reactors and the Clementine Reactor were prototype nuclear reactors and represent important stages in the development of modern reactor technology. In 1990, the American Nuclear Society declared the Los Alamos Water Boiler Reactor (1944–1974) a Nuclear Historic Landmark.

The Omega Reactor Facility (TA-2-1) was determined eligible for the National Register of Historic Places under Criterion A in correspondence between the New Mexico State Historic Preservation Officer (SHPO) and LASO on October 13, 2000. The initial recommendations for eligibility are contained in a report written by LANL heritage resource managers (*The Omega West Reactor and Water Boiler Building, TA-2-1; A Preliminary Report*, Report No. 186, LA-UR-00-3854).

Literature and archival research pertaining to the historical development of the Omega Reactor Facility was conducted at several repositories, including the LANL Archives, Los Alamos Historical Society, and the files of LANL's Ecology Group (RRES-ECO).

Material reviewed included journals, books, published and unpublished manuscripts, photographs, and construction drawings and site plans.

This study documents the three different reactor designs that were housed at Omega Site from 1943–2002: the Water Boiler Reactors, Los Alamos Fast Reactor (Clementine), and the Omega West Reactor. A comparison of Omega Facility reactors with similar reactors at other Department of Energy sites and other locations in the United States is also included. Pertinent photographs and construction drawings of the Omega Reactor Facility and the individual reactors are included as well.

HISTORICAL OVERVIEW

Manhattan Project (1942–1946)

In 1939, Albert Einstein wrote a letter to President Franklin Roosevelt warning him of a possible German atomic bomb threat (Rothman 1992). President Roosevelt, acting on Einstein's concerns, gave approval to develop the world's first atomic bomb and appointed Brigadier General Leslie Groves to head the "Manhattan Project." Groves, in turn, chose Robert Oppenheimer to coordinate the design of the bomb.

A single isolated and secret research facility was proposed. General Groves had several criteria: security, isolation, a good water supply, an adequate transportation network, a suitable climate, an available labor force, and a locale west of the Mississippi located "at least 200 miles from any international border or the West Coast" (Rothman 1992). In 1942, Oppenheimer, who had visited the Pajarito Plateau on a horseback trip, suggested the Los Alamos Ranch School.

Oppenheimer and his staff moved to Los Alamos in early 1943 to begin work. The recruitment of the country's "best scientific talent" and the construction of technical buildings were top priorities (LANL 1995:8). The University of California agreed to operate the site, code name "Project Y," under contract with the government (an arrangement that has continued to this day). Although the fission bomb was conceptually attainable, many difficulties stood in the way of producing a usable weapon. Technical problems included timing the release of energy from fissionable material and overcoming engineering challenges related to producing a deliverable weapon. Nuclear material and high explosive studies were of immediate importance (LANL 1995).

Two bomb designs appeared to be the most promising: a uranium "gun" device and a plutonium "implosion" device. The gun device involved shooting one subcritical mass of uranium-235 into another at sufficient speed to avoid pre-detonation. Together, the two subcritical masses would form a supercritical mass, which would release a tremendous amount of nuclear energy (Hoddeson *et al.* 1998). This method led to the development of the "Little Boy" device. Because it was conceptually simple, "Little Boy" was never tested before its use at Hiroshima. Scientists were less confident about the implosion design, which used shaped high explosives to compress a subcritical mass of plutonium-239. The symmetrical compression would increase the density of the fissionable material and cause a critical reaction.

In 1944, the uncertainties surrounding the plutonium device necessitated a search for an appropriate test site for the implosion design, later used in the "Fat Man" device. Manhattan Project personnel chose the Alamogordo Bombing Range in south-central New Mexico for the location of the test. A trial run involving 100 tons of trinitrotolulene (TNT) was conducted at the test site ("Trinity Site") on May 7, 1945. This dress rehearsal provided measurement data and simulated the dispersal of radioactive products (LANL 1995). The Trinity test was planned for July and its objectives were "to characterize the nature of the implosion, measure the release of nuclear energy, and assess the damage" (LANL 1995:11). The world's first atomic device was successfully detonated in the early morning of July 16, 1945. Little Boy, the untested uranium gun device, was exploded over the Japanese city of Hiroshima on August 6, 1945. On August 9, 1945, Fat Man was exploded over Nagasaki, essentially ending the war with Japan.

Early Cold War Era (1946–1956)

The future of the early Laboratory was in question after the end of WWII. Many scientists and site workers left Los Alamos and went back to their pre-war existences. Norris Bradbury had been appointed director of the Laboratory following Oppenheimer's return to his pre-WWII duties (LANL 1993). Bradbury felt that the nation needed "a laboratory for research into military applications of nuclear energy" (LANL 1993:62). In late 1945, General Groves directed Los Alamos to begin stockpiling and developing additional atomic weapons (Gosling 2001). Post-war weapon assembly work was now tasked to Los Alamos's Z Division, which had been relocated to an airbase (now Sandia) in nearby Albuquerque, New Mexico (Gosling 2001).

In 1946, Los Alamos became involved in the atmospheric testing program in the Pacific, dubbed "Operation Crossroads." Later, also in 1946, the U.S. Atomic Energy Commission (AEC) was established to act as a civilian steward for the new atomic technology born of WWII. The AEC formally took over the Laboratory in 1947, making a commitment to retain Los Alamos as a permanent weapons facility.

With the beginning of the Cold War—the term "Cold War" was first coined in 1947—weapons research once again became a national priority. Weapons research at Los Alamos, spearheaded by Edward Teller and Stanislaw Ulam, focused on the development of the hydrogen bomb, the feasibility of which had been discussed seriously at Los Alamos as early as 1946. The simmering Cold War came to a full boil in late 1949 with the successful test of "Joe I," the Soviet Union's first atomic bomb. In January of 1950, President Truman approved the development of the hydrogen bomb; Truman's decision led to the remobilization of the country's weapons laboratories and production plants. The year 1950 also marked the first meeting of Los Alamos's "Family Committee"—a committee tasked with developing the first two thermonuclear devices (LANL 2001). In 1951, the Nevada Proving Ground (now the Nevada Test Site [NTS]) was established and the first Nevada atmospheric test, "Able," was conducted. In the same year, Los Alamos directed "Operation Greenhouse" in the Pacific and successfully conducted both the first thermonuclear test, "George," and the first thermonuclear "boosted" test, "Item." In

1952, the first thermonuclear bomb, known as "Mike," was detonated at Enewetak[1] Atoll in the Pacific (LANL 1993). In short order, the Soviet Union responded with a successful demonstration of the use of fusion in August 1953, followed by a test of a hydrogen bomb in 1955. The arms race was on. By 1956, Los Alamos had successfully tested a new generation of high explosives (plastic-bonded explosives) and had begun to make improvements to the primary stage of a nuclear weapon (LANL 2001).

Although weapons research and development has always played a major role in the history of LANL, other key themes for the years 1942–1956 include supercomputing advancements, fundamental biomedical and health physics research, high explosives research and development, reactor research and development, pioneering physics research, and the development of the field of high-speed photography (McGehee and Garcia 1999). The Early Cold War era at Los Alamos ended in 1956, a date that marks the completion of all basic nuclear weapons design at LANL; later research at Los Alamos focused on the engineering of nuclear weapons to fit specific delivery systems. The year 1956 was also the last year that Los Alamos was a closed facility—the gates into the Los Alamos townsite came down in 1957.

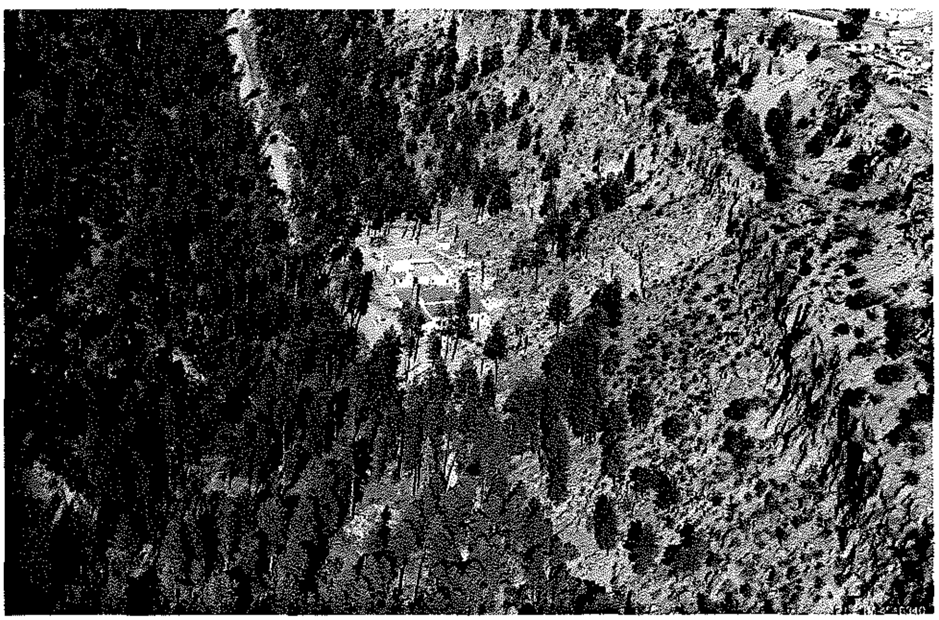
Late Cold War Era (1956–1990)

The Late Cold War era saw Los Alamos's continued support of the atmospheric testing programs in the Pacific and at NTS. In 1957, the first of many underground tests at NTS was conducted. Other defense mission undertakings during this time included treaty and test ban verification programs (such as using satellite sensors to detect nuclear explosions), research and development of space-based weapons, and continued involvement with stockpile stewardship issues. Non-weapons undertakings supported nuclear medicine, genetic studies, NASA collaborations, superconducting research, contained fusion reaction research, and other types of energy research (McGehee and Garcia 1999).

[1] A better understanding of the Marshall Islands language has permitted a more accurate transliteration of Marshall Island names into English. Enewetak is now the preferred spelling (formerly Eniwetok).

TA-2, Omega Site (1944–2003)

TA-2, located in the bottom of Los Alamos Canyon, was the site of the world's first enriched uranium reactor, the "Water Boiler" Reactor (Figures 1a and 1b) (Maps 1 and 2). On May 9, 1944, the Water Boiler produced its first "divergent chain reaction." An adjacent facility, built in 1946, housed one of the earliest plutonium-fuel reactors (the Clementine Reactor). The main reactor building housed the low-power or "LOPO" Water Boiler Reactor, associated laboratories, and, later, critical assemblies. Perhaps the most important contribution of this early reactor was its role in providing a "general check of theory" during the Manhattan Project—the first Water Boiler was used to investigate a chain-reacting system and to test basic theories of WWII bomb design (Olinger 1986, LANL 1983).



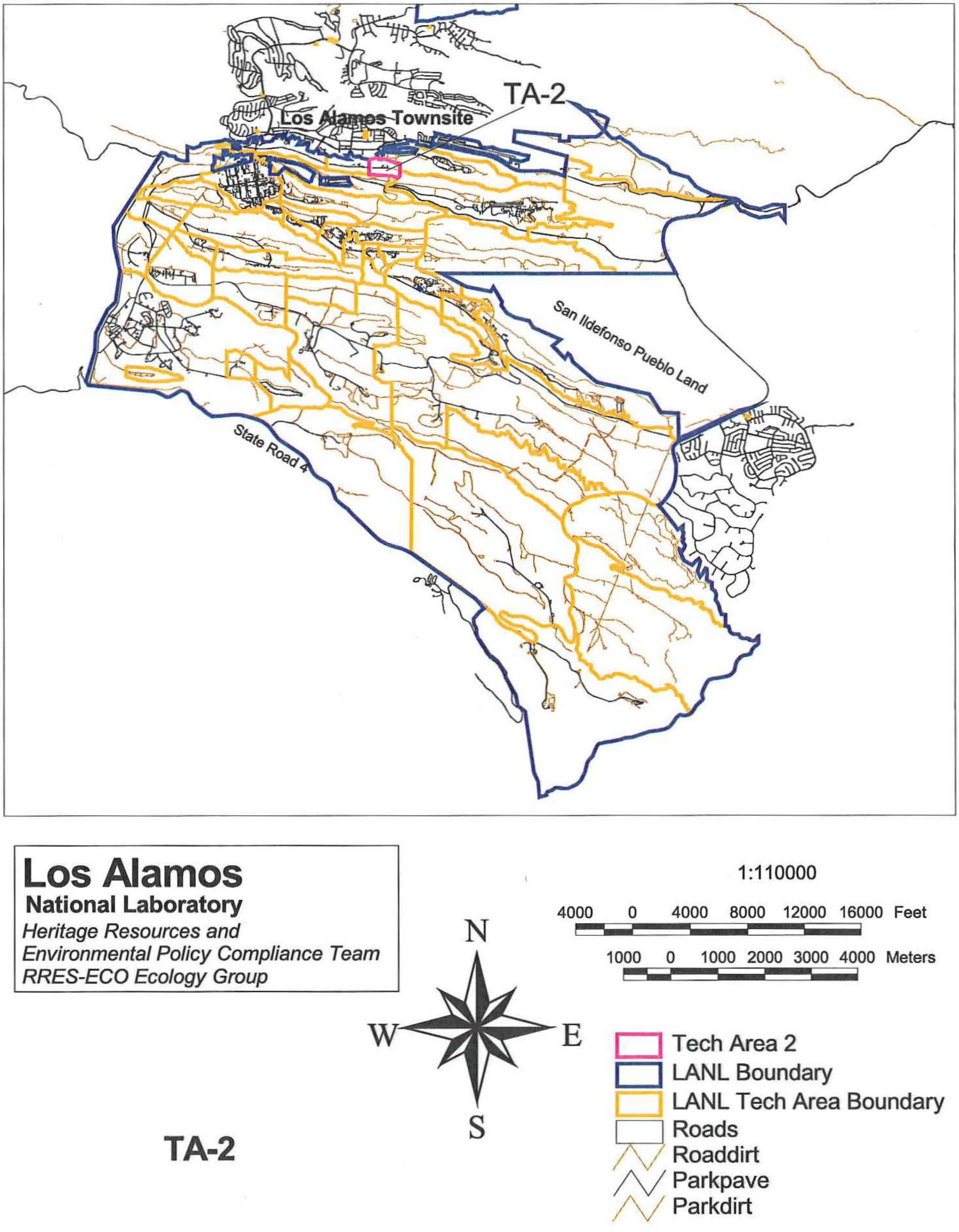
(LANL, IM-9 Photography, #16340)

Figure 1a. TA-2, Omega Site, 1950

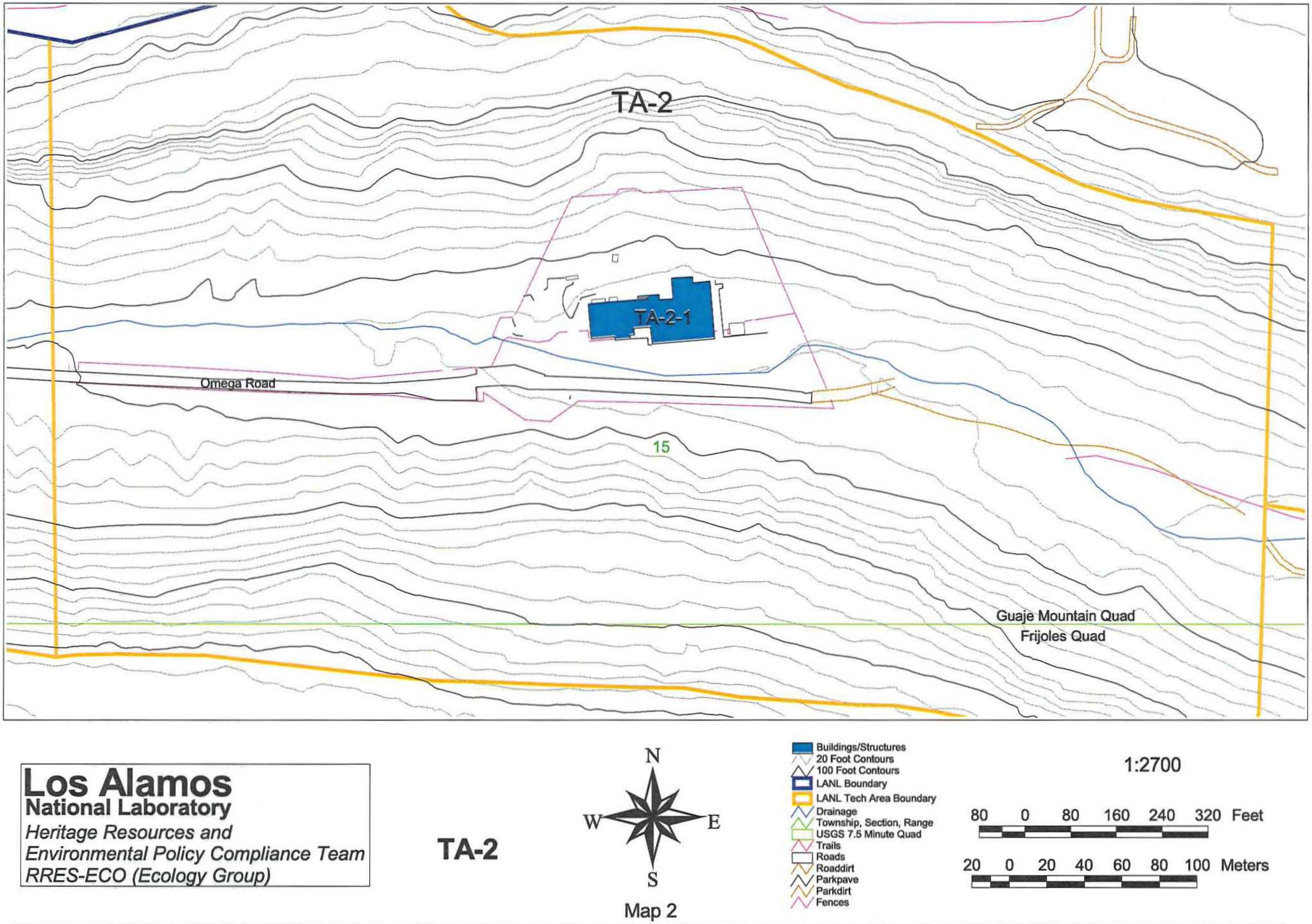
TA-2 was isolated from other laboratory and housing areas for safety reasons. Safety concerns centered on the risk to unprotected people from the possibility of radioactive dispersion into the atmosphere—accident scenarios ranged from a mild explosion to an uncontrolled chain reaction.

(LANL, IM-9 Photography, #RN91-220-031)

Figure 1b. TA-2, Omega Site, 1991


TA-2
Los Alamos Townsite
San Ildefonso Pueblo Land
State Road 4
Los Alamos
National Laboratory
Heritage Resources and
Environmental Policy Compliance Team
RRES-ECO Ecology Group
1:110000
4000 0 4000 8000 12000 16000 Feet
1000 0 1000 2000 3000 4000 Meters
N
W
E
S
Tech Area 2
LANL Boundary
LANL Tech Area Boundary
Roads
Roaddirt
Parkpave
Parkdirt
TA-2

Map 1


TA-2
TA-2-1
Omega Road
15
Guaje Mountain Quad
Frijoles Quad
Los Alamos
National Laboratory
Heritage Resources and
Environmental Policy Compliance Team
RRES-ECO (Ecology Group)
TA-2
N
W
E
S
Map 2
Buildings/Structures
20 Foot Contours
100 Foot Contours
LANL Boundary
LANL Tech Area Boundary
Drainage
Township, Section, Range
USGS 7.5 Minute Quad
Trails
Roads
Roaddirt
Parkpave
Parkdirt
Fences
1:2700
80 0 80 160 240 320 Feet
20 0 20 40 60 80 100 Meters

The Critical Assemblies Group joined the Water Boiler Group at Omega Site in mid-1944, and experiments with critical amounts of active materials were conducted at the TA-2 facility. These experiments explored the design of the implosion device's "pit assembly" (Hawkins *et al.* 1983:198). Preliminary investigations also led to the development of safe handling and fabricating procedures so that uncontrolled nuclear chain reactions could be prevented. An important experiment conducted at TA-2 was known as "tickling the dragon's tail"; the "dragon" experiment created a controlled supercritical reaction using prompt neutrons alone (Hawkins *et al.* 1983:198). Critical assembly research continued at TA-2 until August 21, 1945, when staff member Harry Daghlian accidentally received a lethal radiation dose from a brief supercritical arrangement of his critical assembly experiment. Daghlian was creating a critical assembly by hand stacking tungsten-carbide bricks around a plutonium core. When he moved the final brick over the assembly, Daghlian noticed that the addition of this last brick would make the assembly supercritical. The brick slipped and fell onto the assembly and the system became super-prompt critical. Daghlian removed the brick and unstacked the assembly. The power excursion gave him an exposure of approximately 510 rem and he died 28 days later (Stratton rev. Smith 1989). As a result of this accident, critical assembly work was transferred to Pajarito Site (TA-18) (Hawkins *et al.* 1983).

In later years, reactor research continued at Omega Site and a fifth reactor, the Omega West Reactor, was built in the mid 1950s. The Omega West Reactor was designed primarily to facilitate experimentation in nuclear physics and other sciences. This reactor was shut down in 1992 when a leak was discovered. The Omega Reactor Facility (TA-2-1) was eventually demolished in 2003.

OMEGA REACTOR FACILITY, TA-2-1

Development of the Water Boiler Reactor

In early 1943, scientists, engineers, and researchers from all over the country came to Los Alamos to begin the task of designing a nuclear weapon. One of the primary goals of the

Manhattan Project was to produce the fissile material—uranium-235 and plutonium—needed for the weapons designed in Los Alamos.[2] While most of this fissile material was intended for atomic bombs, small amounts could be used in experiments relating to the design of the first atomic weapons. To this end, Enrico Fermi and other scientists advocated construction of the Los Alamos Water Boiler Reactor. This reactor, essentially a critical assembly experiment, was the world's third reactor and the first reactor to produce a nuclear chain reaction using uranium-235 (the first two reactors were Fermi's "pile" at Chicago's Stagg Field and the X-10 graphite reactor at Oak Ridge). The Los Alamos Water Boiler was also the first reactor to deviate from the original design of Fermi *et al.* at Chicago and at Oak Ridge; these first two designs used natural uranium and graphite reacting systems as opposed to the Water Boiler's use of enriched uranium.

A direct continuation of Fermi's fission research at the Metallurgical Laboratory in Chicago, the wartime reactor experiments were of great importance to Project Y physicists. One of the first goals of the Los Alamos reactor program was to identify the exact amount of uranium-235 needed to make a bomb (its critical mass). The new Los Alamos reactor was an integral experiment to test atomic theory because a water boiler-type reactor provided the best means to calculate the critical mass of homogeneous solutions of uranium-235. The project at Los Alamos used enriched uranium sulfate in a water solution as the fuel for a simple critical assembly. Essentially, the Water Boiler consisted of a container filled with an enriched uranium and water solution that was surrounded by a neutron reflector. This early reactor design included a set of control rods to adjust the critical reaction. Code named "Water Boiler" for security purposes, the fuel solution in the Water Boiler's higher power versions did appear to "boil" as hydrogen and oxygen bubbles were formed through the decomposition of the water solvent by energetic fission products.

[2] Fissile or fissionable material, such as uranium-235 and plutonium, is heavy radioactive material that can be split or fissioned by fast neutrons. The fission of heavy elements is accompanied by a relatively large amount of energy; this fission process is fundamental to the design of the atom bomb.

In addition to its important role in the investigation of critical reactions, the Water Boiler Reactor also provided neutron sources for experiments and served as a trial run in the art of designing, building, and operating similar reactors.

> Aptly named the 'Water Boiler' to disguise its true purpose, it was an experimental test of theoretical calculations of uranium critical assemblies; however, subsequent higher-power versions of the Water Boiler were true research reactors. The Water Boiler was the first critical assembly to be built using enriched uranium....It worked well from the start, and its three versions...provided valuable scientific information for 30 years ("The Water Boiler Reactor 1944-1974" n.d.:1).

In the early summer of 1943, Donald Kerst, a University of Illinois physicist, was appointed head of the Water Boiler Reactor project. He was the first scientist at Los Alamos to sketch out a design for the world's first chain-reacting system using enriched material. But Kerst and other scientists at Los Alamos had no direct experience in building a chain-reacting pile, and received little assistance from the University of Chicago group. They were basically on their own.

> Fermi was able to give advice only intermediately...the only people with experience in critical assemblies were at Oak Ridge and the University of Chicago and they were not available to Los Alamos on a full time basis in 1943. Los Alamos had to grow its own critical assembly experts, and the Water Boiler provided the experience and training ("The Water Boiler - The Beginning of Critical Mass Studies" n.d.:246).

Groves, in a letter to Oppenheimer, expressed support for the development of the Water Boiler program if the effort would make a significant contribution to the development of an atomic bomb (Groves 1944). Oppenheimer, in response, agreed, but with caution:

> It is obvious that the operation of the boiler as contemplated will not directly contribute to actual construction of our weapon. It is possible that the information on which the operation of the boiler will provide will not turn out to be the decisive point in this successful construction. However, that we shall learn by the operation of the boiler things of which we should otherwise either remain ignorant or learn only at a much greater expenditure of effort and facilities, and that this knowledge will help us to do our job, and has a reasonable chance of being decisive....I regard it as sound to take advantage of any powerful method of investigation which we have available, and which will not interfere with other obviously vital parts of the work (Oppenheimer 1944:1).

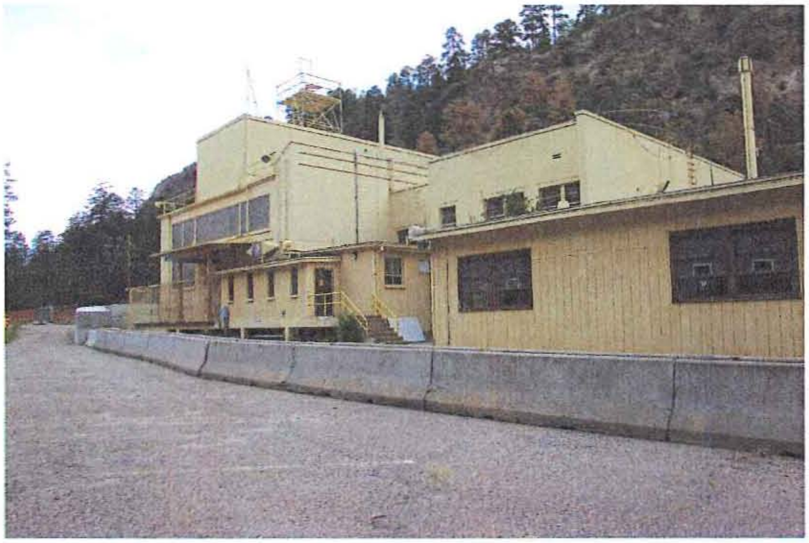
Water Boiler Reactor and Construction of the Omega Reactor Facility

Experiments to develop the Water Boiler Reactor at Los Alamos began in December 1943, and construction of the Omega Facility that housed the Water Boiler Reactor was completed in February 1944 (Figure 2).

(LANL, IM-9 Photography, #3752)

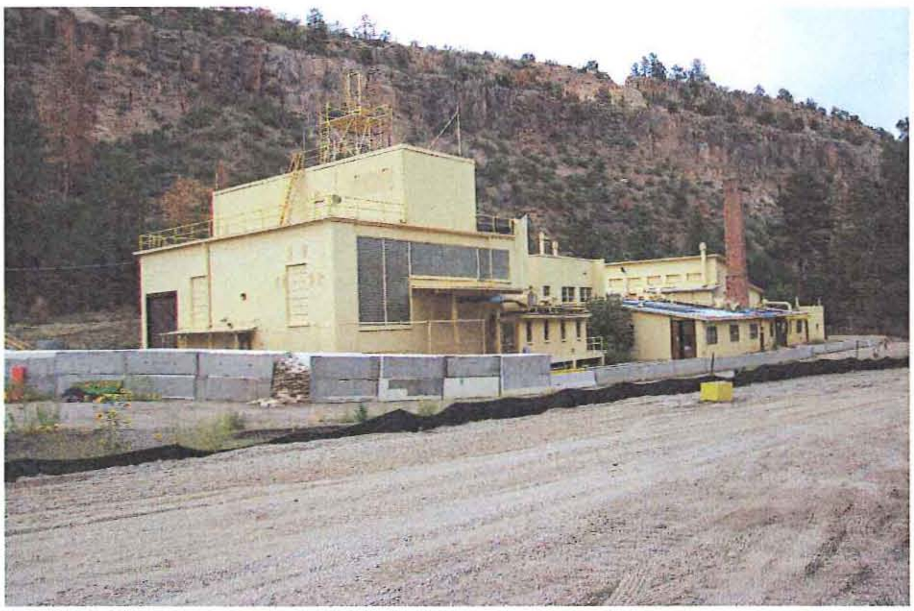
Figure 2. Water Boiler, circa May 1946

Over the years, several additions were constructed at Omega Site (TA-2) to accommodate expansion of the Water Boiler program and construction of the Clementine Fast Reactor and Omega West Reactor (Figures 3 and 4).



(LANL, RRES-ECO/HREPC, #DCP_0086)

Figure 3. TA-2-1, August 2002, Direction Northwest



(LANL, RRES-ECO/HREPC, #DCP_0088)

Figure 4. TA-2-1, August 2002, Direction Northeast

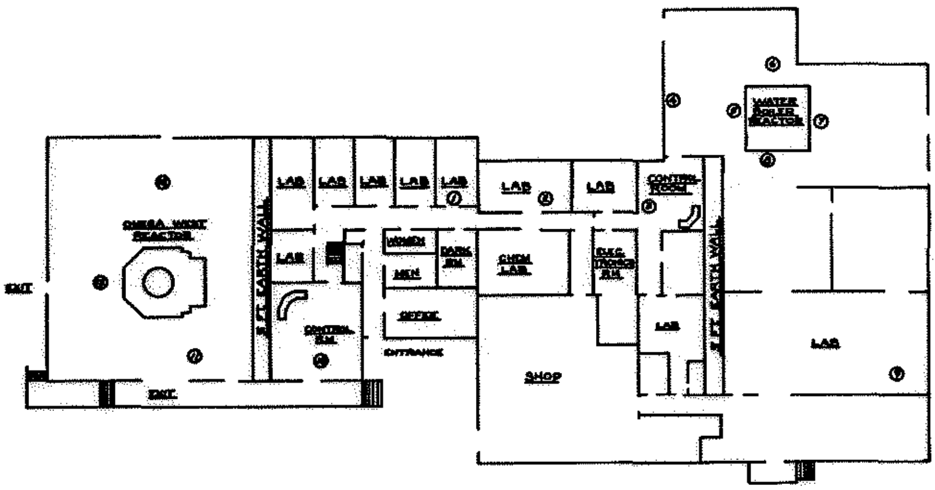
Physical Characteristics of the Water Boiler Building

When initially constructed, the Water Boiler building was a one-story rectangular facility that measured 59 ft by 92 ft by 26 ft high. The building was constructed of wood framing and concrete block with cladding that consisted of a combination of asbestos shingles, horizontal wood, and gypsum siding. On the west end of the building a two-story high bay addition was constructed in 1946-1947 to accommodate the Clementine Reactor (Figure 5).

(LANL, IM-9 Photography, #3926)

Figure 5. Clementine Facility Construction, circa 1946-1947

The high bay (Room 101) had concrete walls, a flat roof, glass block windows, and measured 58 ft by 45 ft by 24 ft high. The walls, except for the east one, were made of 8-in. concrete blocks. The east elevation consisted of a 5-ft thick earth fill, contained in concrete. This fill served to shield occupants of the control room and other parts of the building from sources of radiation inside the reactor room. Other later additions included a two-story, 45 ft by 50 ft concrete and steel office building, and a 54 ft by 72 ft, one-story section, built mainly of wood, that housed small labs, a lunch room (Room 116), an equipment room (Room 116A), and a large machine shop (Room 117). After the Water Boiler Reactor was deactivated and removed, that section of the building (Room 122) was expanded to 48 ft by 105 ft to accommodate additional labs and offices (Otway *et al.* 1970) (Figure 6).



(LANL, IM-9 Photography, #56326)

Figure 6. Building TA-2-1, Floor Plan, circa 1956

LOPO and HYPO

The first Water Boiler nuclear reactor was a low-power model; thus, the acronym LOPO. A critical assembly experiment, LOPO was designed to use the minimum amount of enriched uranium. LOPO consisted of a 1-ft diameter, hollow stainless steel sphere filled with an active uranium (uranyl sulfate) solution in water. The sphere was surrounded by a graphite neutron reflector and moderator and a set of five neutron-absorbing control rods. (Concrete, lead, paraffin, and steel were used to construct the reactor shielding for the HYPO and SUPO Reactors; shielding that was designed to protect personnel from radiation caused by the nuclear fission.) LOPO first went critical on May 9, 1944.

> The reactor is brought up to power by slowly removing the control rods from the vicinity of the sphere. When the rods have been withdrawn sufficiently, they no longer suppress the neutron chain reaction and the pile becomes "critical"....When the desired power level is reached, an electronic automatic control is switched on which holds the power at constant value by continually making tiny adjustments in the position of one of the control rods. To make sure the chain reaction does not get out of control, an intricate system of safety devices and electric interlocks are built into the control system ("Omega Site Research Reactors" n.d.).

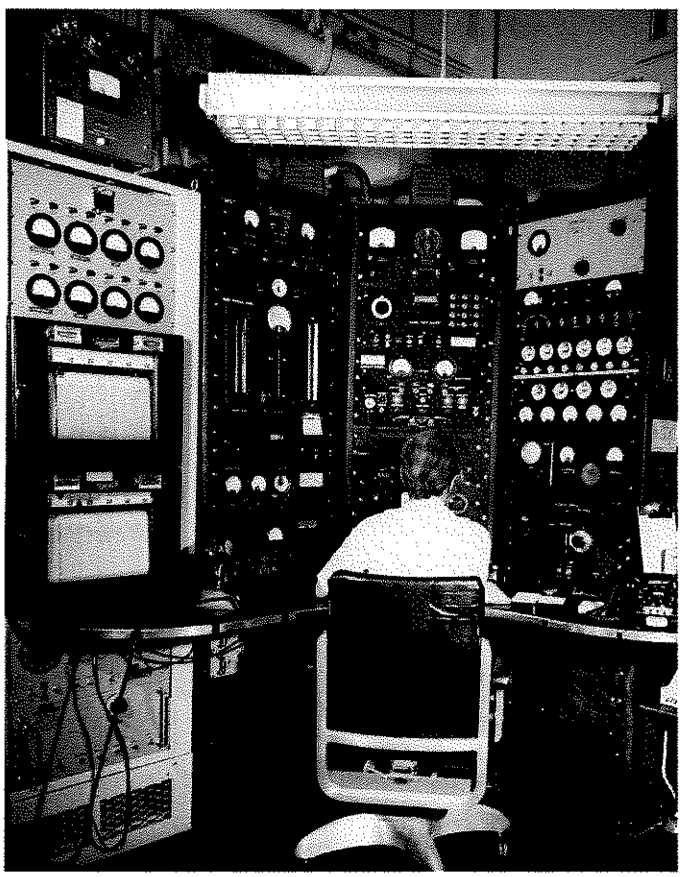
In all, three water boiler versions were built, all using the same basic concept. The LOPO version was low-powered because it operated at virtually zero power. This allowed design and construction simplicity and eliminated the need for shielding. (Because of its lack of shielding and the absence of a heat-removing system, the original assembly was not designed to operate at any appreciable power level.)

> The zero power operating level was chosen after considering a power model in order to eliminate shielding requirements and minimize possible troubles, which might arise in connection with radiation effects on the solution. These potential difficulties were concerned with holding uranium in solution…and the contamination of the solution by fission products themselves (King n.d.:2).

Many notable American scientists were involved in the design, construction, and early operation of LOPO, including Enrico Fermi. On the day LOPO achieved criticality, Fermi was at the reactor controls. Twenty other scientists, including several Nobel Prize winners, were in attendance at Omega Site. Important Manhattan Project scientists working at Omega during the war years included Hebert Anderson, Richard Feynman, Gerhardt Friedlander, David and Jane Hall, Frederic de Hoffman, Marshall Holloway, Joan Engst Hinton, and Bruno Rossi (LANL 1983, McGehee 2004) (Figure 7). Five of the scientists who helped design, build, and operate the first water boiler reactor stayed with the program until its discontinuation in 1974: Donald Kerst, Raemer Schreiber, L. D. P. King, John Starner, and James Bridge. Merle Bunker, who joined the Water Boiler project in 1950, played a major role in directing and developing the Water Boiler program until the reactor was deactivated in 1974. Reactor operators also played an important role at the Omega Facility by supporting the Clementine, Water Boiler, and Omega West reactor operations. Clementine and Water Boiler reactor operators included former Los Alamos WACs Jane Heydorn and Elsie Pierce, and OWR operators included Sarah Mann, Glenn Neely, and Jack Dembs (LASL Community News 1960a) (Figure 8).

(LANL, IM-9 Photography)

Figure 7. Jane and David Hall, Former P-5 Group Leaders



(LANL, IM-9 Photography, #625086)

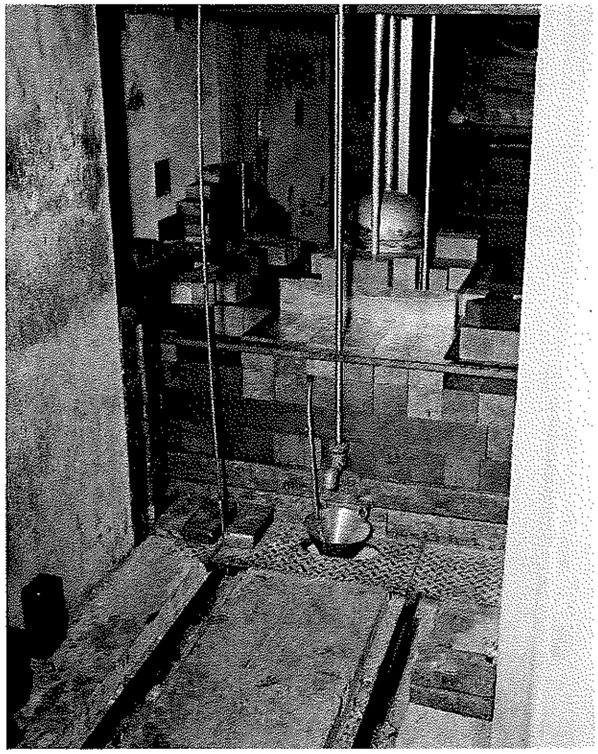
Figure 8. Reactor Operator Jane Heydorn at the Water Boiler Control Panel, circa 1962

LOPO allowed Los Alamos scientists to verify critical mass calculations and gave them practice in constructing a critical assembly. Soon after LOPO went critical, scientists Enrico Fermi and Robert Bacher advocated the construction of a higher power water boiler to operate at one kilowatt. They claimed that the reactor could be built with parts from the original water boiler. In addition, it would provide a new more powerful neutron source for neutron multiplication experiments at moderate power. They also proposed that the reactor could be used to model weapon conditions, a program that would be particularly important if large scale tests later brought to light unexpected problems.

Fermi and Bacher wrote directly to Groves on the need for the construction of a more powerful water boiler reactor. They stated that the reactor

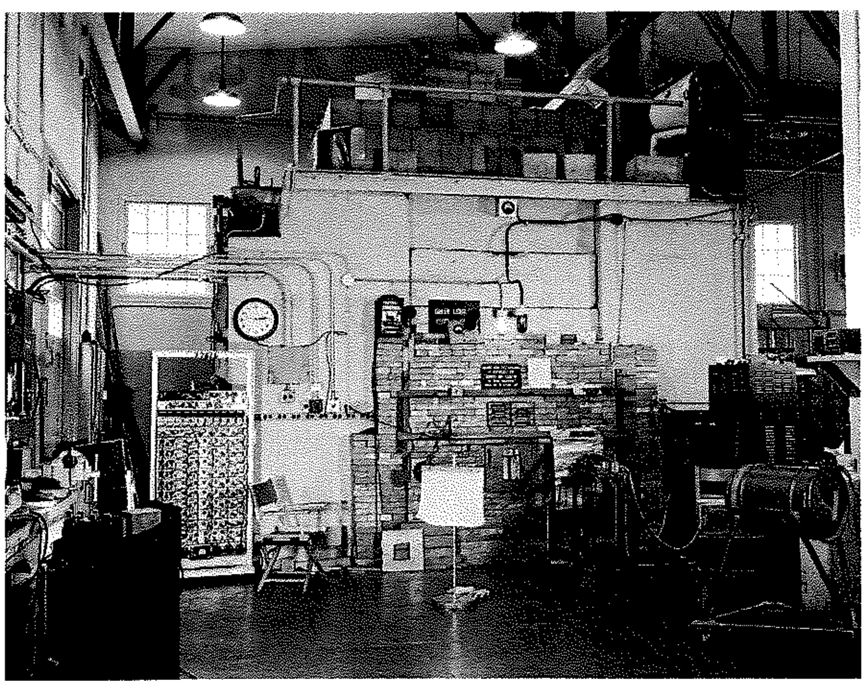
> would provide a neutron source of strength...that would greatly expand the possibilities for obtaining nuclear information and would also save considerable time on experiments that are now performed with weaker sources (Fermi and Bacher 1944a:1).

Fermi and Bacher also claimed that a more powerful water boiler reactor would "widen the scope of nuclear experiments which are necessary to understand and predict gadget [atomic bomb] behavior" (Fermi and Bacher 1944b:1). In 1944, LOPO was dismantled and a heavily shielded version, known as HYPO (high-power), was designed and built (Figures 9 and 10).



(LANL, IM-9 Photography, #1549)

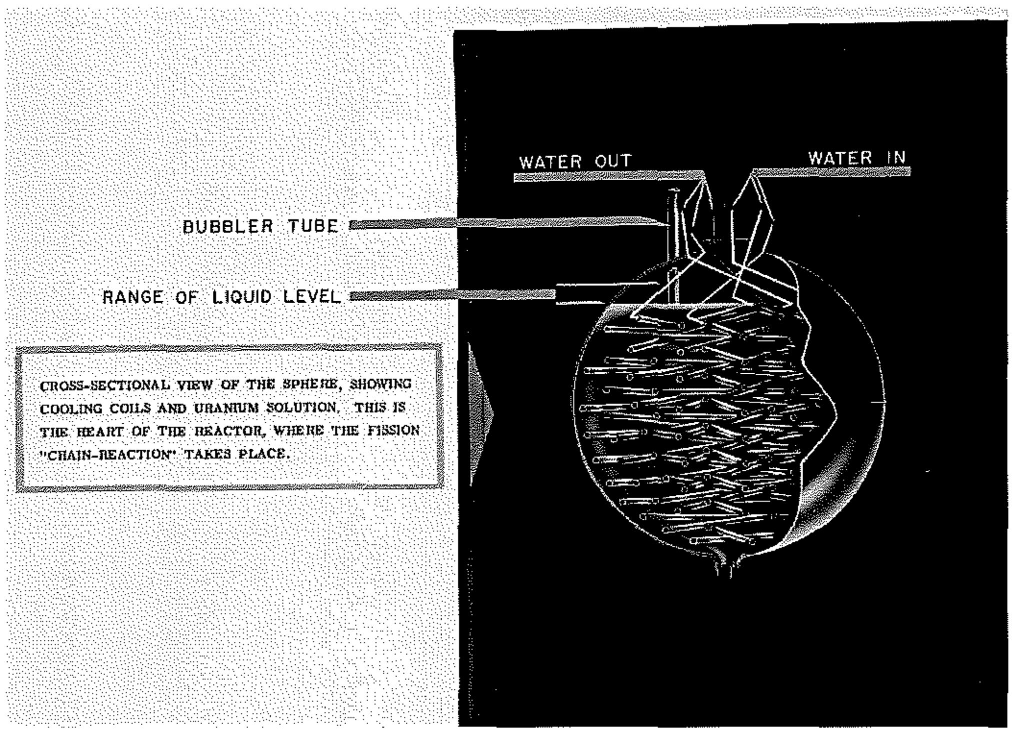
Figure 9. HYPO, pre 1948



(LANL, IM-9 Photography, #10659)

Figure 10. South Face of HYPO, circa 1948

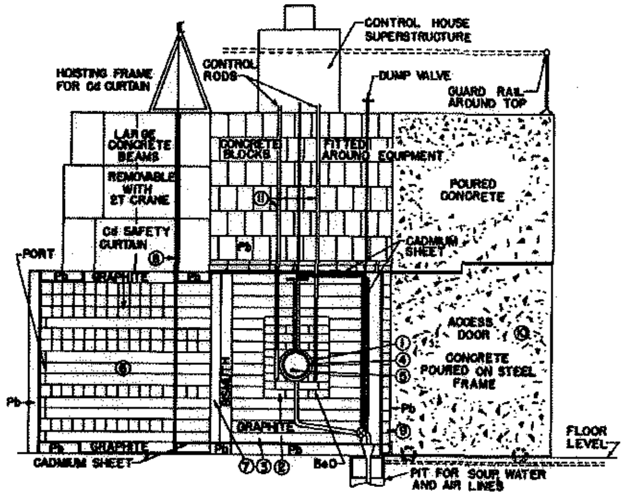
An operating level of one kilowatt was chosen for the new reactor because "the cooling requirements were simple, bubbling or frothing due to gas evolution...was not expected to be serious, and not much additional enriched material was required" (King n.d.:9). The sphere's thickness was doubled, a cooling coil was added inside the sphere, a tube was placed through the sphere to give access to the highest flux region, and the fuel solution was changed from sulfate to nitrate (Figure 11).



(LANL, IM-9 Photography, #33300)

Figure 11. HYPO Schematic, circa 1955

The completed reactor provided a copious source of neutrons, but it did not operate at such a high power that contamination from the fission gasses and cooling was a serious problem. HYPO went critical in early December 1944, and worked well for the duration of the war (LANL 1983) (Figure 12).

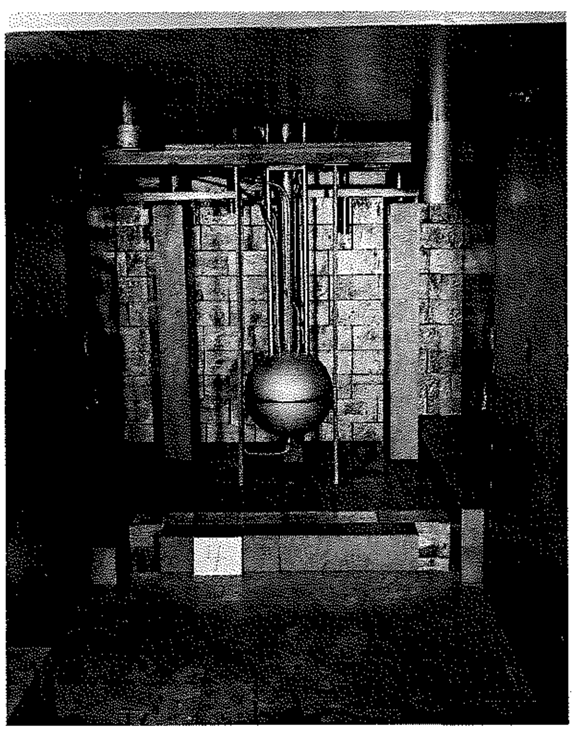


(LANL, IM-9 Photography, #15680)

Figure 12. HYPO Water Boiler Schematic, circa 1950

SUPO

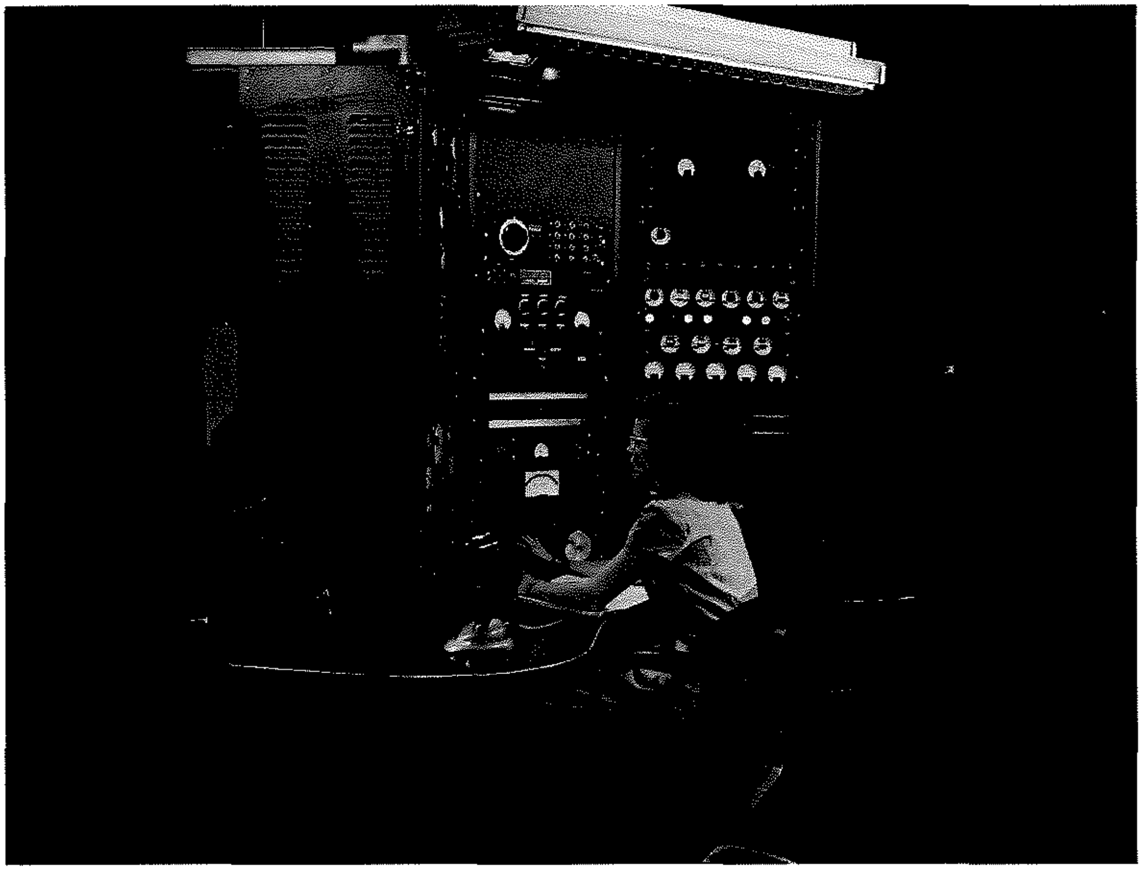
By 1950, the progression to higher operating powers continued with the conversion of the HYPO model to the SUPO (super-power) model (Figure 13).



(LANL, IM-9 Photography, #12785)

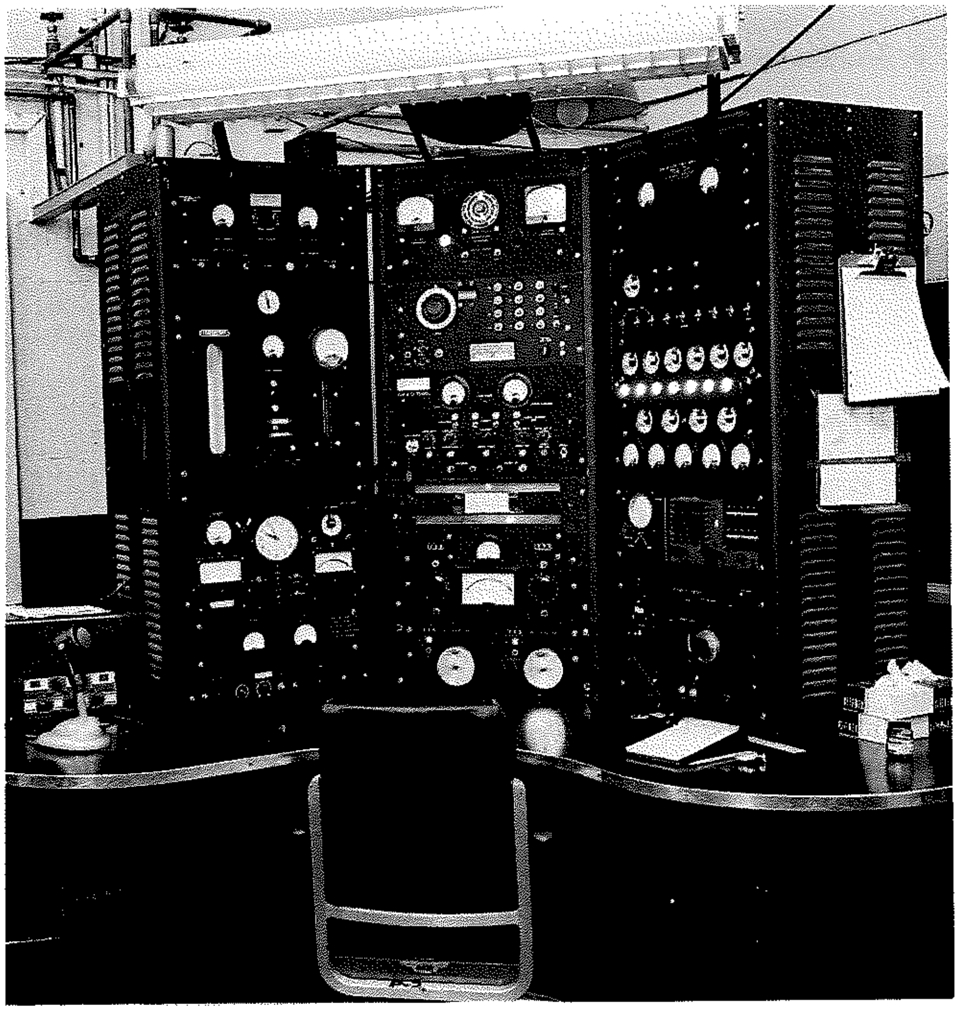
Figure 13. SUPO, circa 1949

The desire for higher neutron fluxes, as well as more research facilities and modifications to the control room panels, prompted the conversion (Figures 14 and 15).



(LANL, IM-9 Photography, #19328)

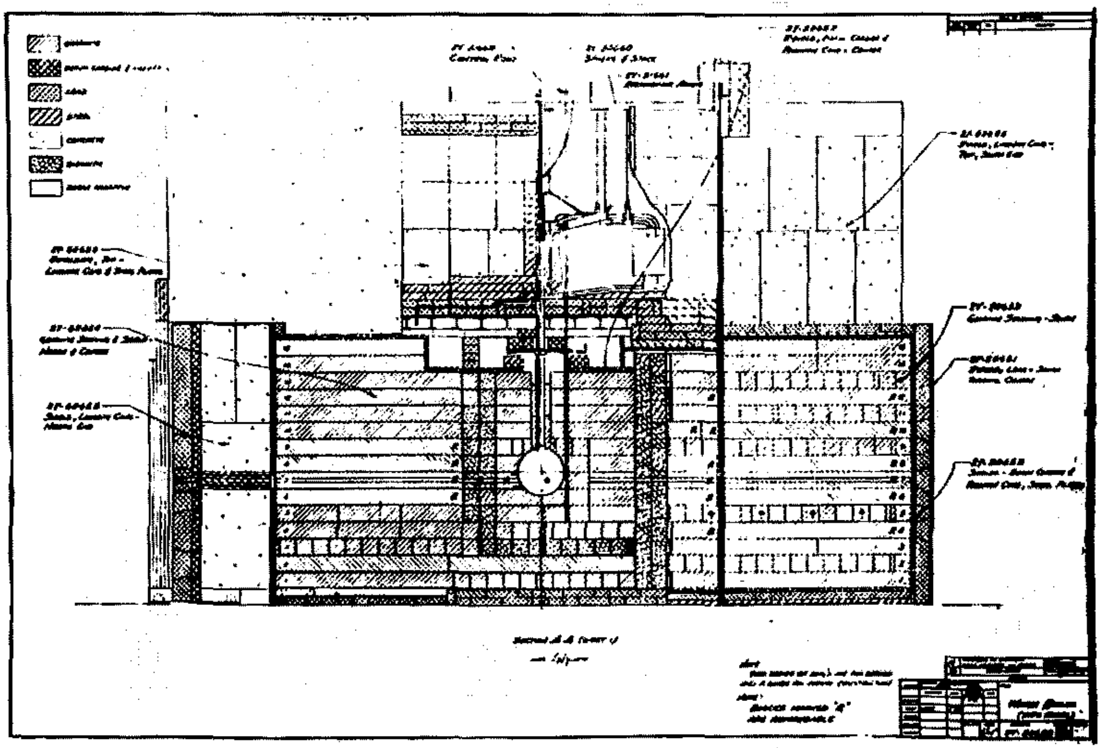
Figure 14. SUPO Control Room, circa 1951



(LANL, IM-9 Photography, #24494)

Figure 15. SUPO Control Panel, circa 1952

While extensive modifications were incurred to enable operation at power levels up to 35 kW, the basic design of the reactor was retained. Completed in March 1951, the conversion included an increase in the enrichment of the uranyl nitrate "soup," from 14 to 88.7 percent uranium-235. Additionally, the beryllium oxide portion of the reflector was replaced with graphite to permit a more rapid and complete shutdown of the reactor (Figure 16).



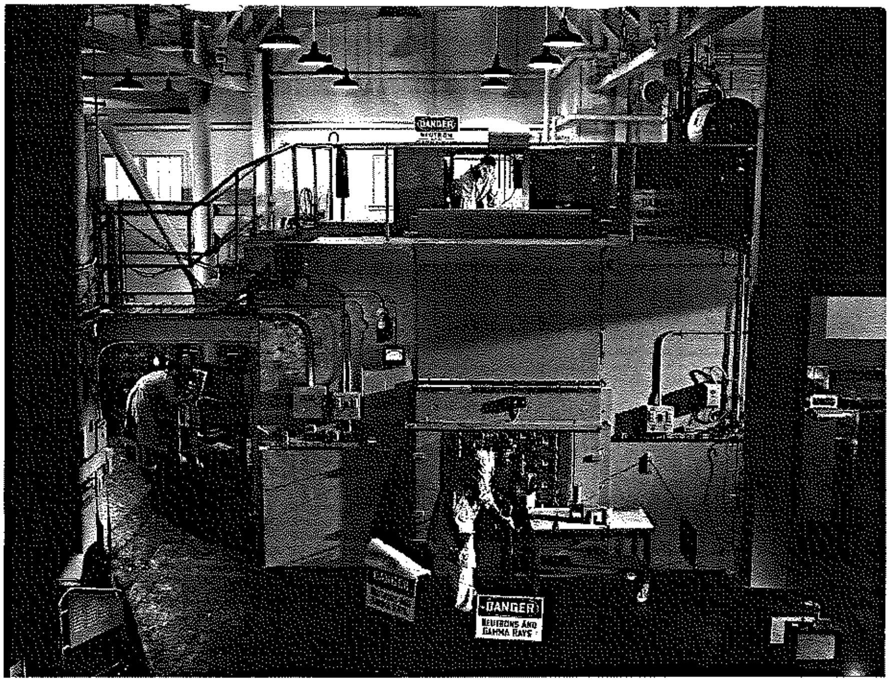
(LANL, IM-9 Photography, #19420)

Figure 16. SUPO, circa 1951

Modifications to the HYPO water boiler were made in two phases:

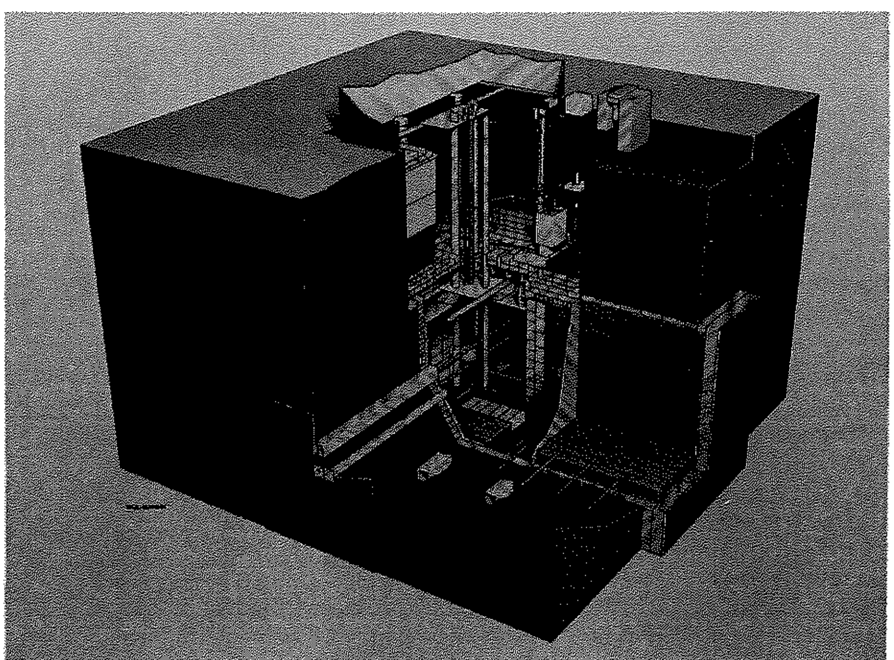
> The first phase ...improved the experimental facilities and increased the neutron flux. The second phase... increased the thermal neutron irradiation facilities, improved the reactor operation, and removed the explosive hazard in the exhaust gases....The space around the reactor was increased by enlarging the building so that experiments could be carried out on all four sides instead of only two (King n.d.:14).

The SUPO version of the Water Boiler had the longest life span, operating almost continuously until 1974 (Figures 17, 18, and 19).



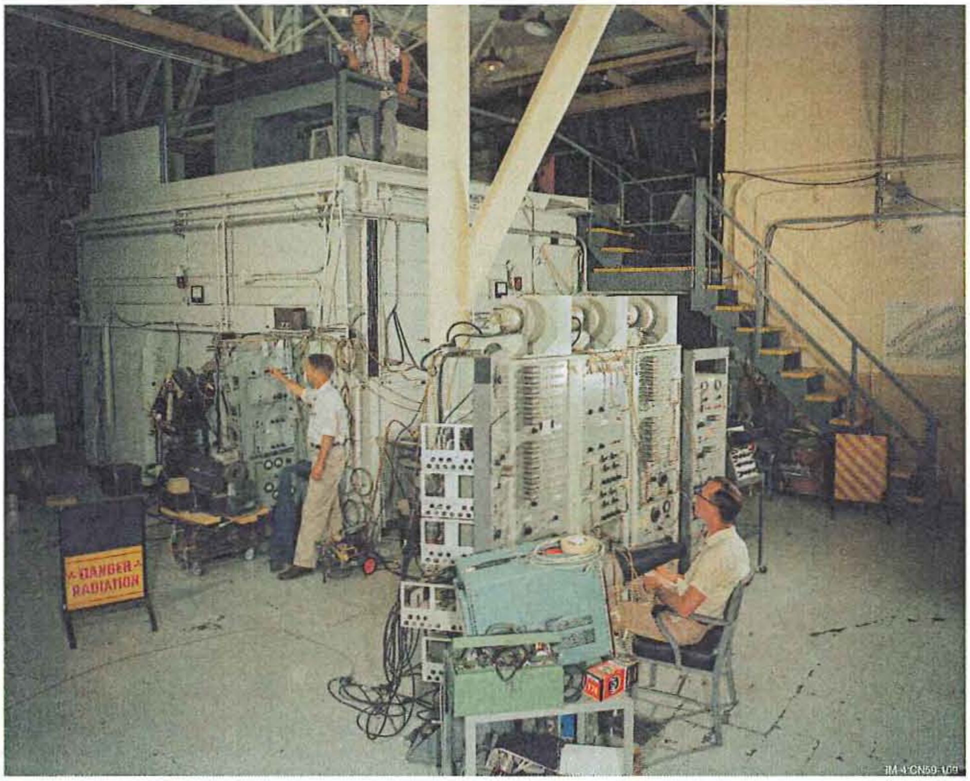
(LANL, IM-9 Photography, #19329)

Figure 17. SUPO, circa 1951



(LANL, IM-9 Photography, #59372)

Figure 18. SUPO Cutaway View, circa 1959



(LANL, IM-9 Photography, #CN59169)

Figure 19. SUPO, circa 1959

The neutrons generated by SUPO were used for many measurements important to the national weapons program. During the 1950s, the Water Boiler Reactor was used by the Laboratory's Health Division in pioneering research on the effects of neutron, beta, and gamma radiation on live animals. Aside from basic scientific value, this data provided major guidance in setting radiation-exposure limits for humans. The SUPO Reactor was dismantled and removed in 1989.

Water Boiler Reactors at Other Locations

The impact of the Water Boiler was not confined to Los Alamos. Spin offs from it included a solution-type reactor constructed by and for North American Aviation (NAA) and a 500-watt reactor, constructed by NAA for Lawrence Livermore Laboratory. The Los Alamos Water Boiler was also the prototype for the first reactor not owned and operated by the federal government: a 10-kW research reactor for North Carolina State

College. By the mid-1950s, other aqueous homogeneous research reactors went into operation. The L-8 Reactor was designed and built for the Armour Research Foundation, Chicago and was operational by 1956. The L-54 Reactor, designed for the Japanese Atomic Energy Research Institute, was operational the following year. A similar water boiler reactor was also completed in Frankfurt, Germany, and two others were sited in Berlin, Germany, and Milan, Italy. Other reactors included the L-55 and the L-6 Reactors—the former located in Santa Susana, California, and operated by Atomics International, the latter located in Denmark and built for the Danish Atomic Energy Commission.

The water boiler research reactors had longer operational lives than other research reactors using enriched fuel. Water boilers were capable of operating at power levels of at least 50 kW, were relatively inexpensive to install, and had minimal staffing requirements for operation. Expensive fuel replenishments were not often needed; the reactor's very low burn-up rate meant that the initial fuel charge usually lasted the life of the reactor.

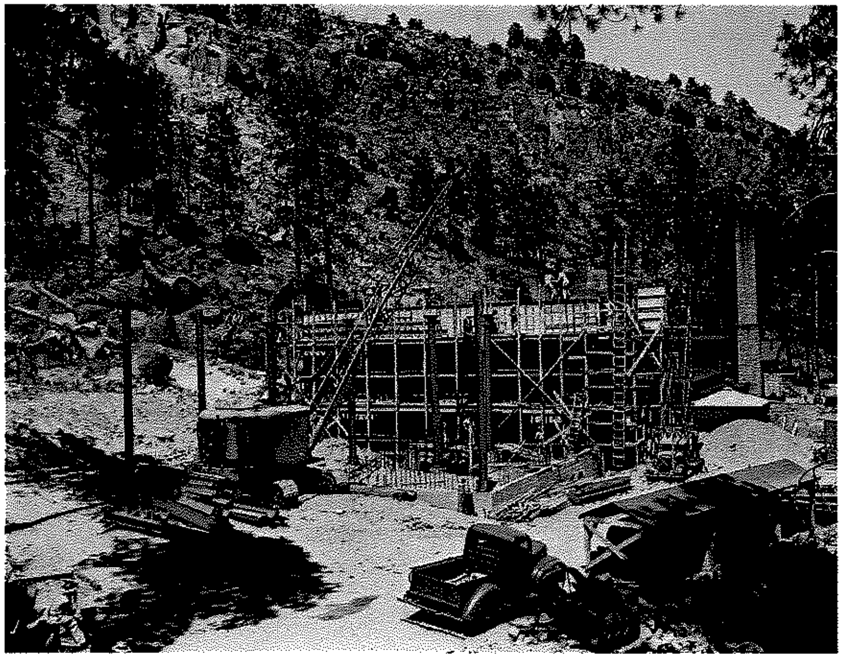
> The homogeneous solution type research reactor has been experimentally demonstrated to be among the safest of all the various types of research reactors now in use. This permits the installation of these...with a minimum of expense at locations in densely populated areas (Wilson *et al.* n.d.:418).

LOS ALAMOS FAST REACTOR (CLEMENTINE)

Concurrent with the development of water boiler reactors at Los Alamos was the development of the fast reactor. The construction of a fast plutonium reactor at Los Alamos was first proposed in 1945.

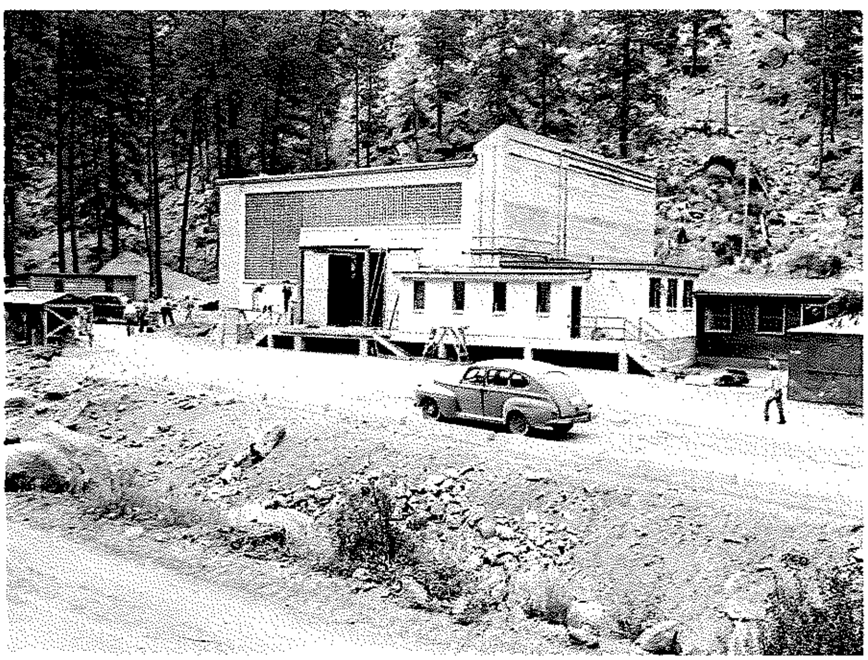
> It was felt...that it would be worthwhile to explore the use of plutonium with respect to adaptability for small reactors, breeding purposes, and future power reactor studies. The fact that sufficient plutonium existed solely at Los Alamos also influenced the original thinking as to the selection of fissionable material (Jurney *et al.* 1954:9).

A two-story, high bay addition was constructed in 1946 to house the Los Alamos Fast Reactor (Figures 20 and 21).



(LANL, IM-9 Photography, #95-215)

Figure 20. Clementine Construction

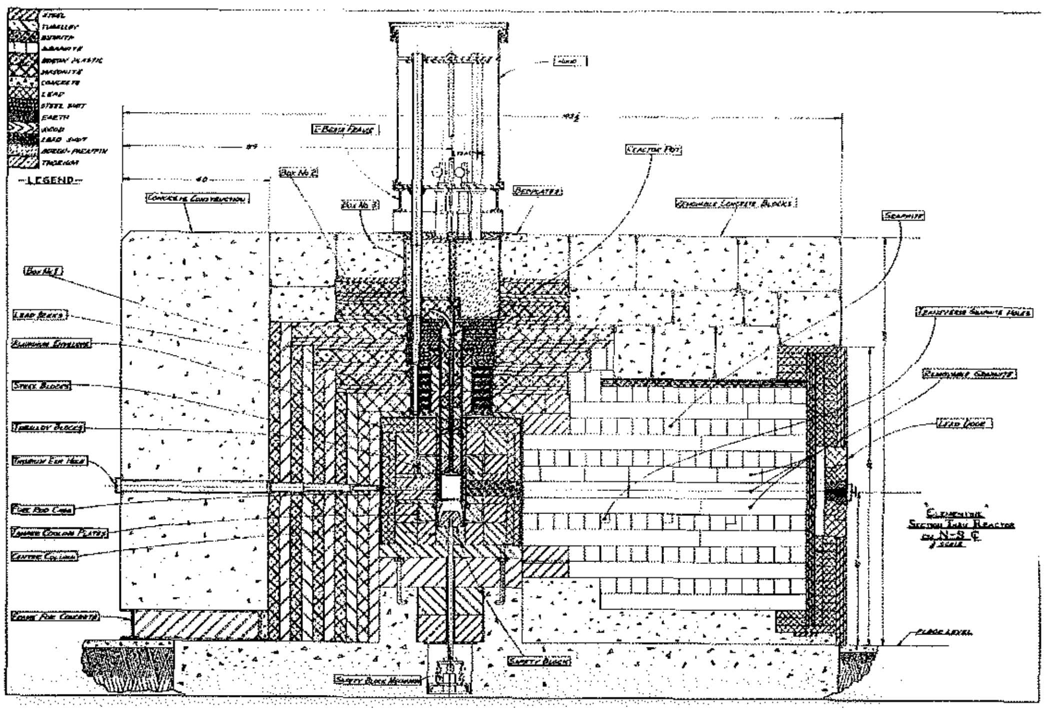


(LANL, IM-9 Photography, #4070)

Figure 21. The Completed Clementine Facility, circa 1949

Also known as "Clementine," the fast reactor was a 25 kW fast neutron research reactor that used plutonium fuel surrounded by a mercury coolant (Figure 22). Los Alamos's Phillip Morrison was responsible for the naming of the reactor:

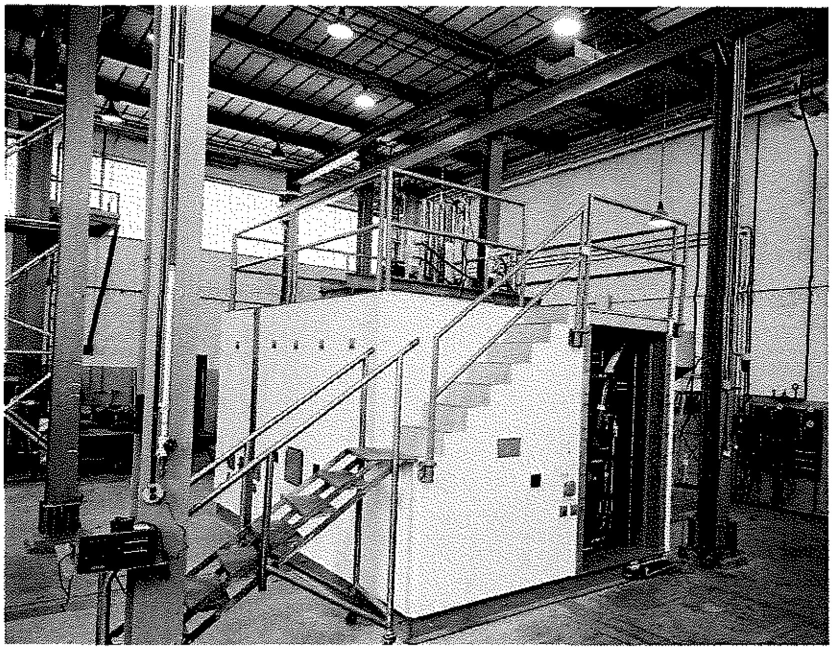
> Morrison dubbed the reactor "Clementine," a name borrowed from the song "My Darling Clementine," which starts out "In a cavern, in a canyon," and is about the legendary forty-niners. Morrison's inspiration was that the reactor personnel were modern-day forty-niners inasmuch as 49 was the code name for plutonium (LANL 1983:127).



(LANL, IM-9 Photography, #600212)

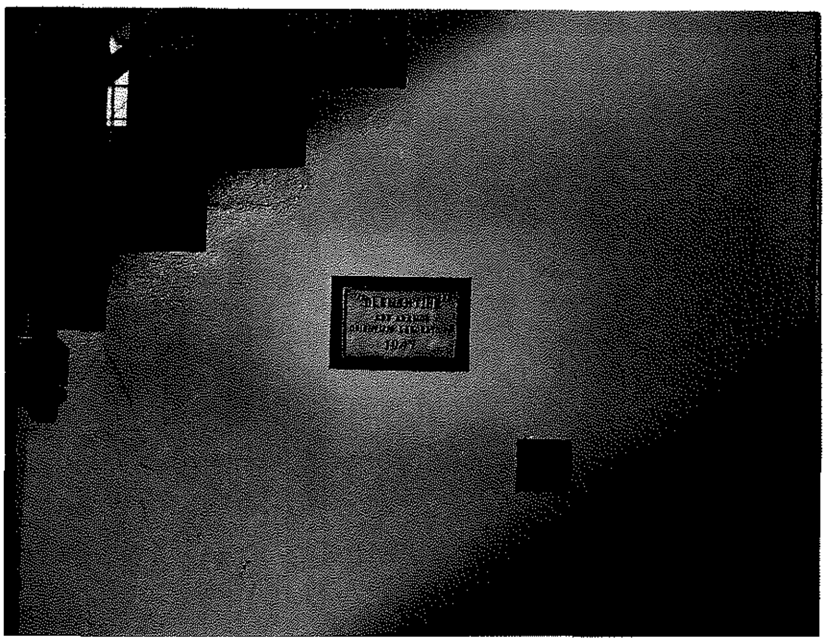
Figure 22. Clementine, circa 1960

The new building was built adjacent to the original Omega Building so that the Water Boiler and fast reactor groups could share facilities. A separate new facility also meant that construction activities would not interfere with Water Boiler work and, when the reactor was completed, both reactors could operate simultaneously. The building was completed in 1946, but the reactor was not completed and brought to full power until March 1949 (Figures 23 and 24).



(LANL, IM-9 Photography, #10561)

Figure 23. Clementine, circa 1949



(LANL, IM-9 Photography, #19327)

Figure 24. Clementine, circa 1951

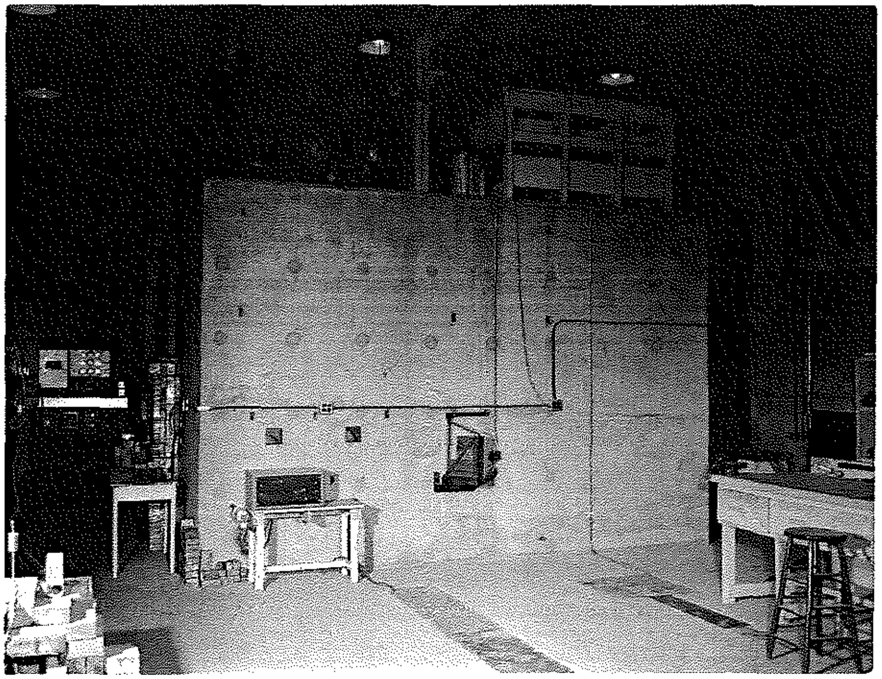
Scientists at Los Alamos wanted the reactor to be "fast," where the controlled fission would occur by high energy or fast neutrons. This meant that the reactor could be small in size since no moderating material would be used. The reactor would also be cooled by circulating mercury because an unmoderating coolant was indicated for fast fission. The benefits of a fast reactor over the water boiler reactor were a

> high intensity source of fast neutrons for nuclear research, high density source of fission spectrum neutrons for examining principles of the bomb, device for studying methods and ease of control of a fast reactor, device for studying principles of breeding for future production of fissionable material, [and] device for studying principles of power production from fast reactors with a view for future large scale power plants (Jurney *et al.* 1954:9).

The establishment of a fast plutonium reactor at Los Alamos contributed to the development of the breeder reactor industry. Work on a breeder reactor for the United States dated back to the early days of the Manhattan Project, when the theory was conceptualized. Active research began in 1945 but varied in intensity over the years due to funding availability and national priorities. Several experimental models were developed, including the mercury-cooled Clementine Reactor, which demonstrated the use of a fast neutron flux, plutonium fuel, and liquid metal for a coolant. The first reactor to prove the feasibility of breeding was Argonne National Laboratory's Experimental Breeder Reactor No. 1 in Idaho, which started up in 1951. The Liquid Metal Fast Breeder Reactor (LMFBR) program became a national priority by the mid-1960s when the AEC recognized the growing scarcity of worldwide uranium supplies due to increasing numbers of nuclear reactors for electrical production. The AEC's LMFBR program eventually led to the development of a breeder reactor prototype, the Fast Flux Test Facility at Hanford.

Clementine Description and Operation

Clementine was a new type of neutron reactor, the world's first reactor that operated on the fission of plutonium by high-energy neutrons (Figure 25). The fact that the fission process was proceeded by use of high-energy neutrons led to the name "fast reactor." In a fast reactor controlled fission was achieved with high-energy neutrons. The reactor was approved for Los Alamos on the basis that it would provide a much-needed high-density, fission-neutron source and would be a means of exploring the adaptability of plutonium as a reactor fuel. Clementine was a prototype in the field of atomic energy development; it was a source of high-energy neutrons for nuclear physics investigations and was a pilot plant to investigate the possibilities of future high power atomic energy installations (Lawson 1947). Clementine also differed from reactors that used uranium as the active material and thermal or slow neutrons for producing fission.



(LANL, IM-9 Photography, #2388)

Figure 25. Clementine

After the design power of 25 kW was reached in 1949, Clementine maintained a full schedule for nearly a year during which several important weapon experiments were conducted. The reactor was shut down (after operating for less than four years) with the discovery that a fuel element failure had led to plutonium contamination of the mercury coolant. The decision was made to dismantle the reactor and researchers operated the Los Alamos Fast Reactor for the final time on December 24, 1952. Removal of the reactor was completed in June of 1953 (Figure 26).

(LANL, IM-9 Photography, # 26446)

Figure 26. Removal of Reactor, circa 1953

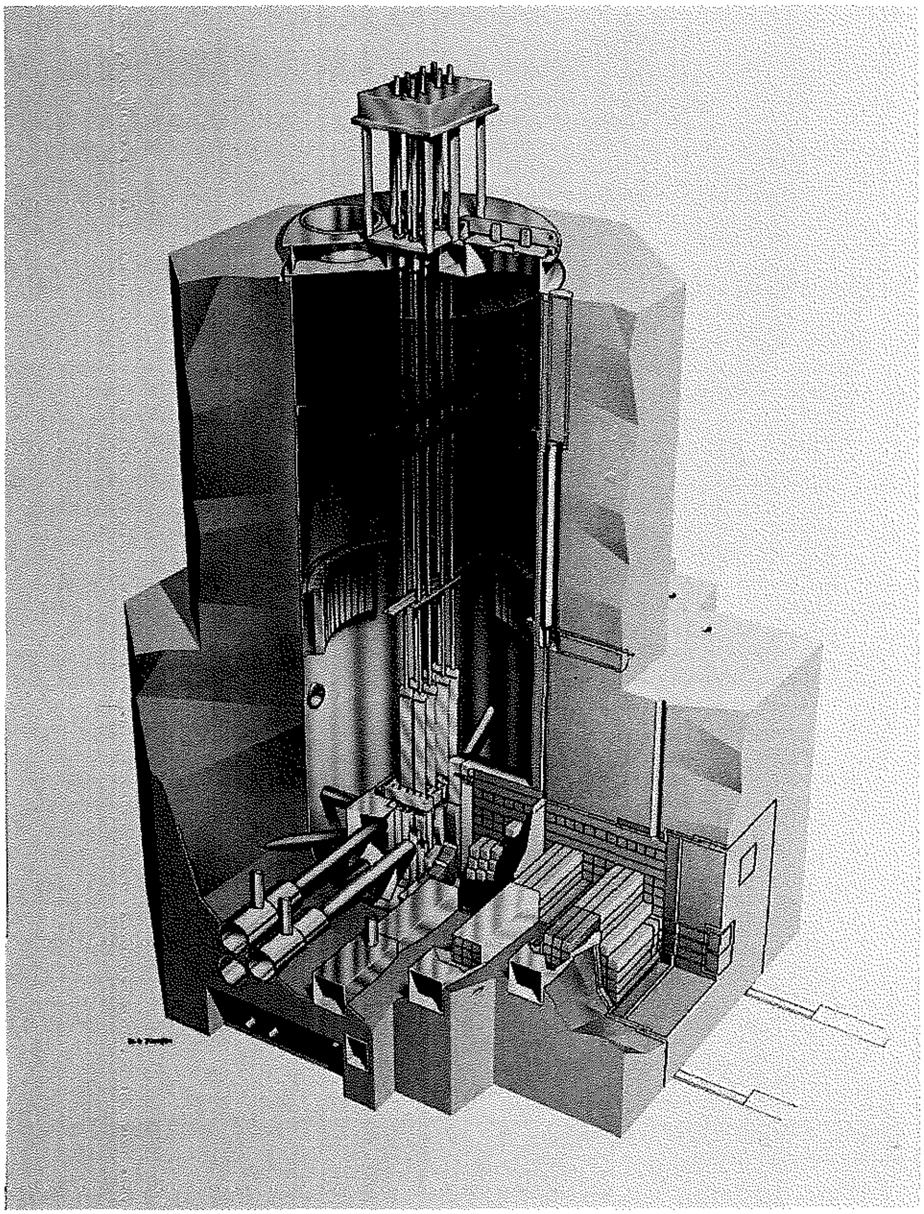
In spite of Clementine's early demise, most of the original objectives of the project were realized. Important weapons data had been acquired, and invaluable experience had been gained in the design and control of fast reactors. Another lesson learned was that mercury was an unacceptable choice of coolant, largely due to its poor heat-transfer properties. Planning for Clementine's replacement began almost immediately. The Water Boiler was still available, but higher neutron fluxes were needed to provide adequate support for the weapons program and to take advantage of new avenues of research that were rapidly developing around the world.

OMEGA WEST REACTOR (OWR)

The Materials Testing Reactor (MTR) – A Prototype

After Clementine was dismantled, Los Alamos scientists proposed to replace the fast reactor with a general-purpose research reactor patterned after the Materials Testing Reactor (MTR) at the National Reactor Testing Station (NRTS) (known today as the

Idaho National Engineering and Environmental Laboratory [INEEL]). This replacement design was favored because the MTR's uranium-aluminum plate-type fuel elements had already undergone extensive testing; thus, little time would be lost in core design. Built on the foundations of Clementine at Los Alamos, the new reactor was named the Omega West Reactor (OWR) (Figures 27 and 28).



(LANL, IM-9 Photography, #584427)

Figure 27. OWR Schematic, circa 1958

(LANL, RRES-ECO.HREPC, #DCP_0092)

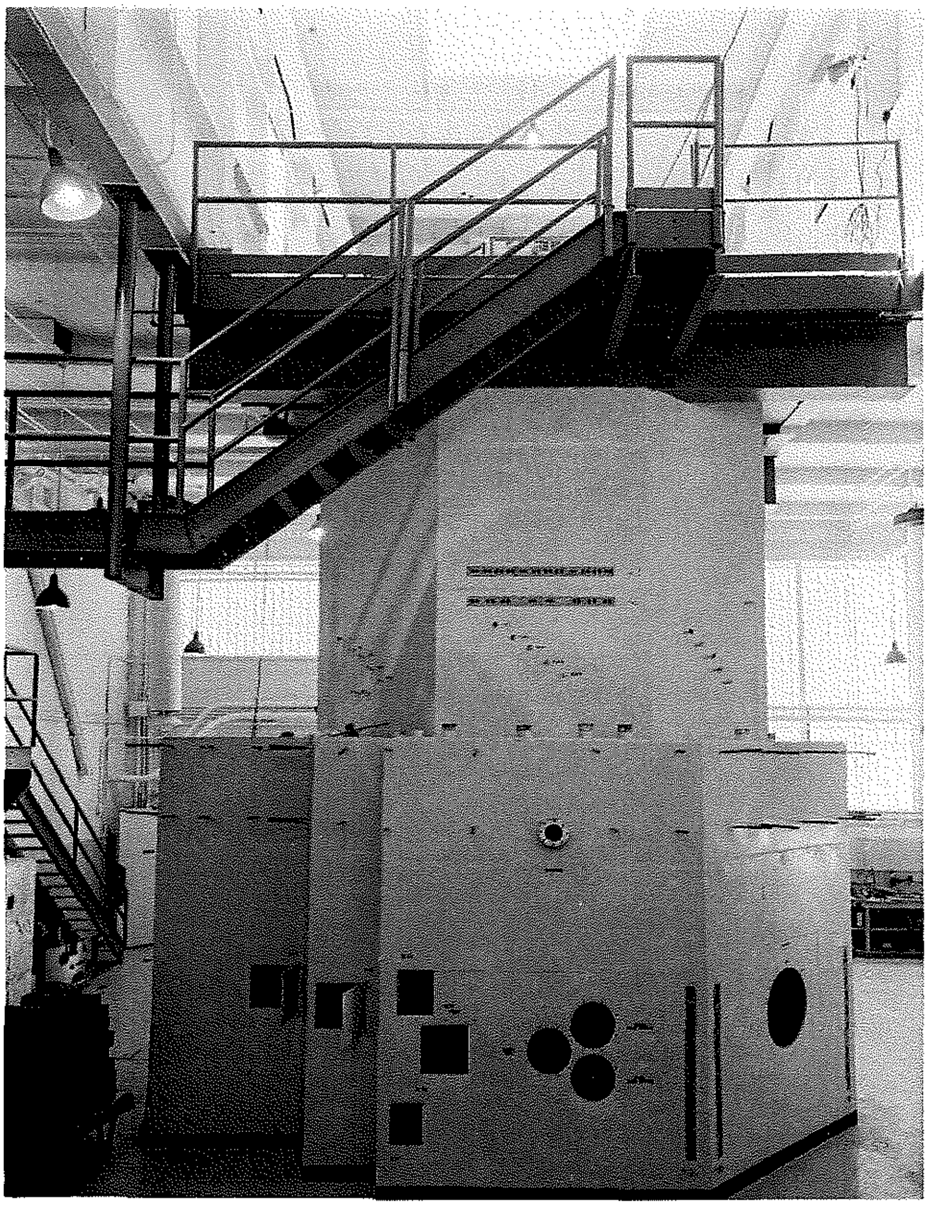
Figure 28. OWR, August 2002

The MTR was the primary prototype for the design of the OWR. The concepts, design, and technology developed in the planning, construction, and operation of the MTR at INEEL provided the foundation on which most of the second generation of test and research reactors in the United States were based. The MTR concept grew out of research in the late 1940s for a reactor facility that could provide high, fast, and thermal neutron fluxes and high gamma ray intensities.

The MTR was one of the first large-scale research reactors. Development of the MTR began in 1945 at the Clinton Laboratories at Oak Ridge and the MTR research program was transferred to Argonne National Laboratory in 1948. The MTR was built and began operating at NRTS in 1952 and provided a much-needed facility for performing tests to aid in the development of reactor designs. Fueled with enriched uranium, the reactor played a key role in the AEC's post-war reactor development program. In support of the AEC's program, the MTR was used by scientists to subject potential reactor fuels and structural materials to irradiation. In 1958, it became the first reactor to operate using plutonium-239 as fuel at power levels up to 30 MW, and demonstrations showed that a plutonium fueled reactor could be controlled satisfactorily. The operation of the fuel elements in the MTR (and the Bulk-Shielding Reactor at the Oak Ridge National Laboratory) was the direct basis for the OWR fuel element design. The MTR continued to operate as a valuable research reactor and contributed to the development of the OWR until it was shut down in 1970.

OWR – Location and Operation

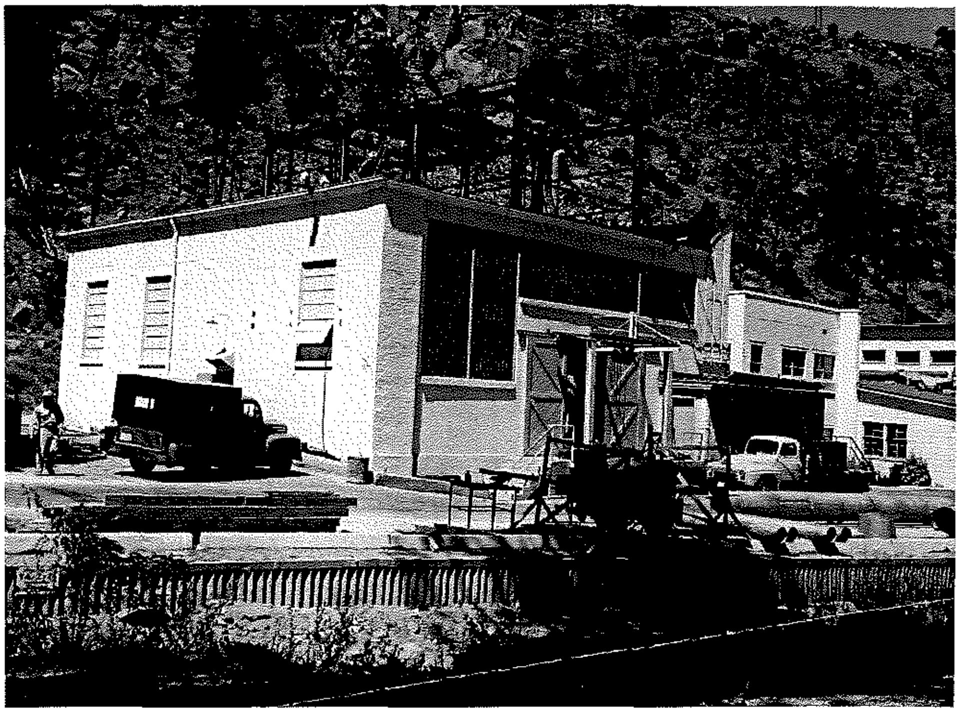
Since the necessary auxiliary facilities existed at the Omega Facility in the form of laboratory rooms, office space, and reactor control room, it was convenient and expeditious to locate the new reactor in the same building and room that had housed Clementine (Figure 29).



(LANL, IM-9 Photography, #36206)

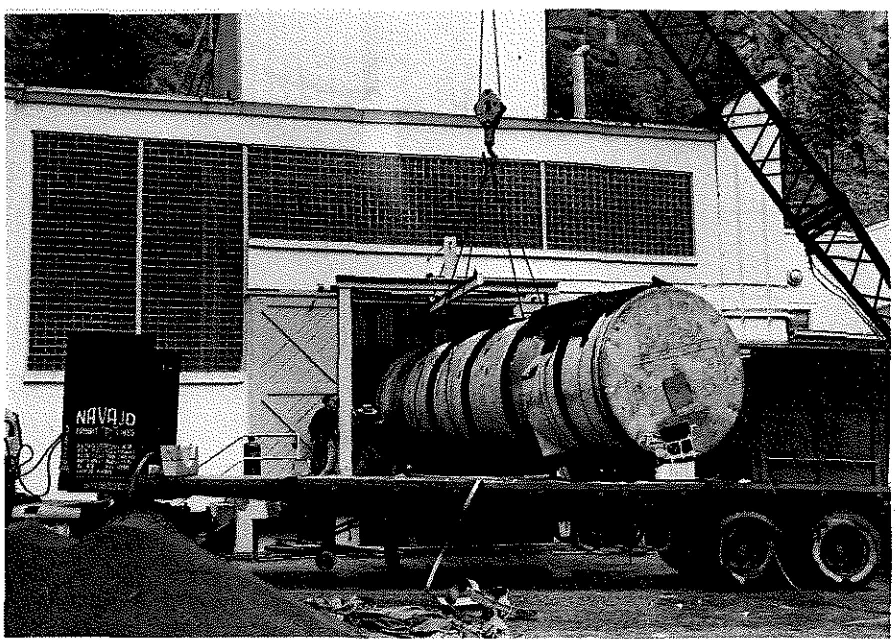
Figure 29. OWR, circa 1956

Located in a two-story high bay that had housed the Clementine Reactor, the OWR, the final reactor at the Omega Facility, was designed by Los Alamos scientist John Yarnell and his staff and built by personnel of Group P-2 with the help of craftsman from the Laboratory's Engineering and Shops Departments and the Zia Company. Los Alamos's Isotope and Nuclear Chemistry Division originally operated the OWR. Construction of the reactor vessel and the entire facility was completed in 1956, and went critical later that year (Figures 30, 31, 32, and 33).



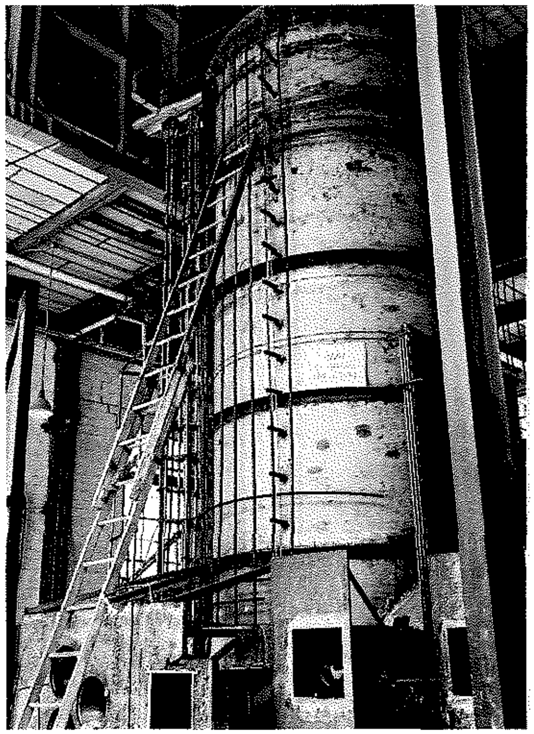
(LANL, IM-9 Photography, OWR Files #33)

Figure 30. OWR Remodel After Clementine Removal, Post 1953



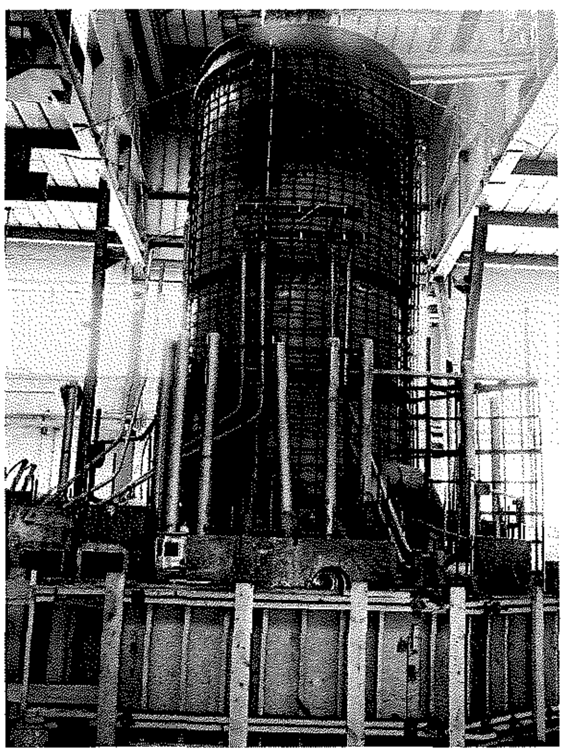
(LANL, IM-9 Photography, #95-243)

Figure 31. OWR Installation



(LANL, IM-9 Photography, OWR Files #192)

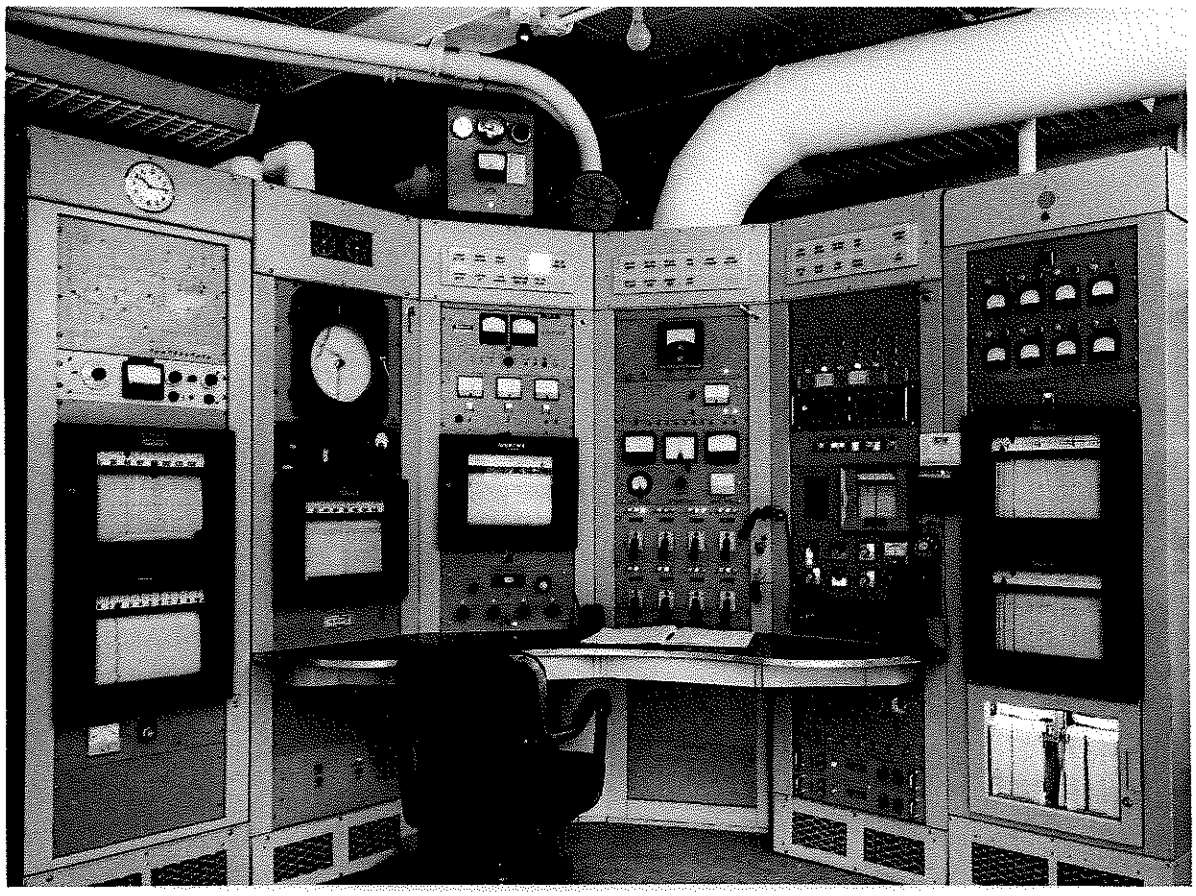
Figure 32. OWR Construction, Post 1953



(LANL, IM-9 Photography, OWR Files #219)

Figure 33. OWR Construction

The full-power operation of the OWR at 5 MW was achieved in January 1959. During its period of operation the OWR was the highest power research reactor in the western United States. Following modifications to increase the cooling system capacity, operation power of the OWR was raised to 8 MW in 1967 (Figures 34 and 35).



(LANL, IM-9 Photography, #644080)

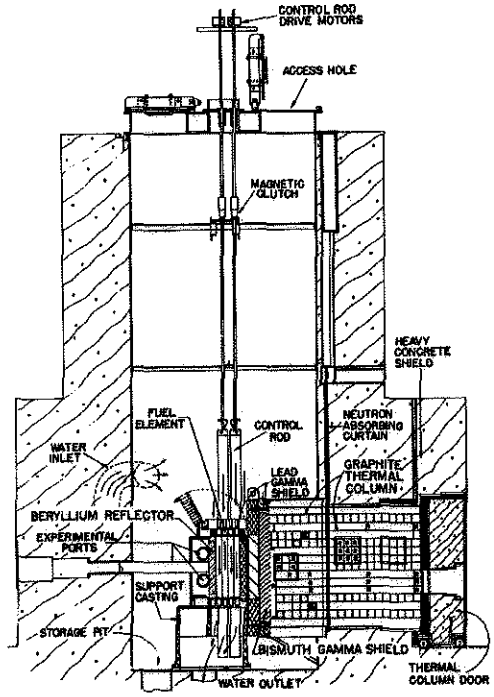
Figure 34. OWR Console as of June 1964

(LANL, RRES-ECO/HREPC, #OWRCON1)

Figure 35. OWR Console, February 1999

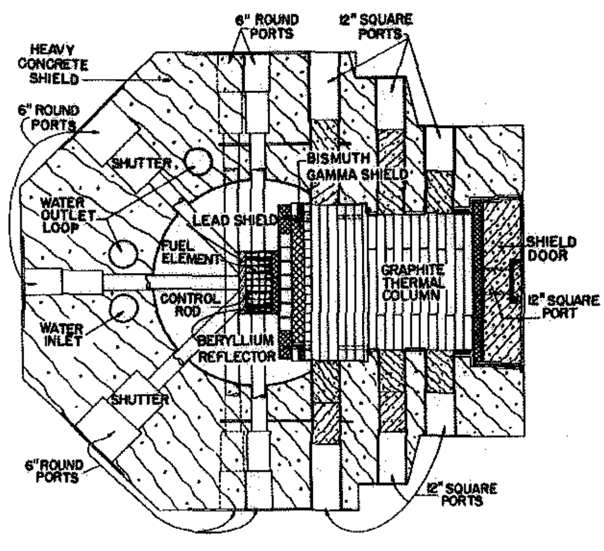
Scientists at Los Alamos felt that the OWR was a preferable research reactor to the water boiler versions because of its versatility and ability to perform a wide array of experiments. The OWR irradiated samples in one-fifteenth of the time required by the Water Boiler. In addition, the OWR produced beams of neutrons about 100 times stronger than the Water Boiler.

The OWR was a thermal, water-cooled, 8-MW nuclear research reactor fueled by highly enriched uranium, contained in an 8-in. diameter closed vessel. The reactor had an array of fuel elements supported vertically in an aluminum grid plate, each of which was made of eighteen curved fuel plates containing uranium-235. The OWR had solid fuel and utilized an assembly of aluminum-clad, MTR-plate-type fuel elements, supported inside a stainless steel cylinder-shape tank that was 24-ft high with 1/4-in. thick walls and a 3/8-in. thick bottom plate. Eight blade type poison rods controlled the reactor. The reactor tank was covered with a stainless steel lid that supported the control-rod drive mechanisms (ICF Kaiser Engineers 1995) (Figures 36 and 37).



(LANL, IM-9 Photography, #56370)

Figure 36. OWR Schematic, September 1956



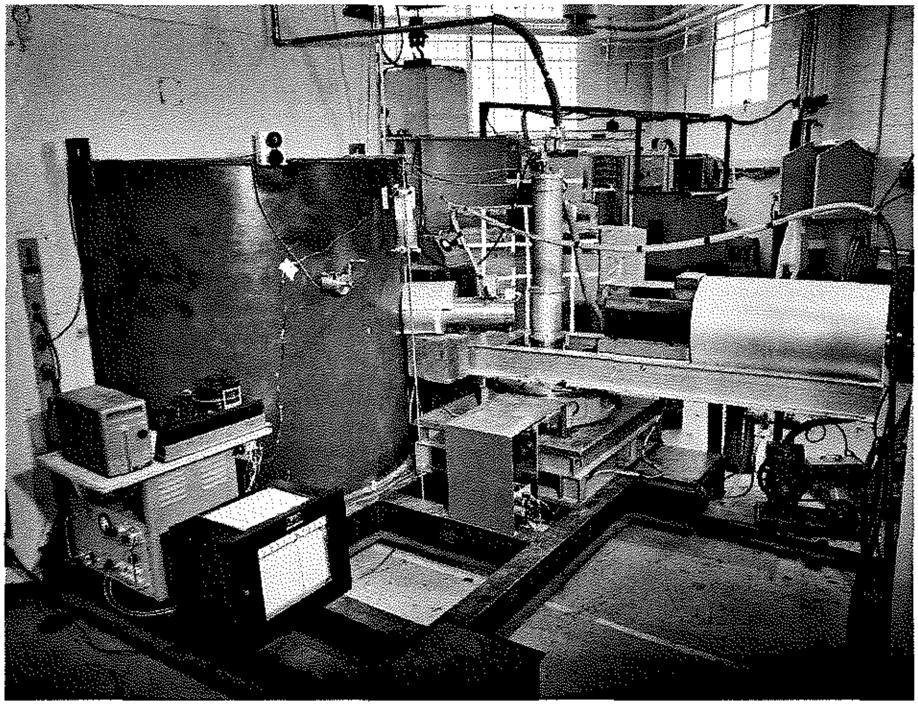
(LANL, IM-9 Photography, #56369)

Figure 37. OWR Schematic, September 1956

A biological shield of heavy concrete in an irregular octagonal shape surrounded the tank and thermal column. The shield was 5-ft thick to a height of 11-ft above the reactor room floor and was at least 3-ft thick above that. The 17 feet of water above the fuel provided biological shielding above the reactor.

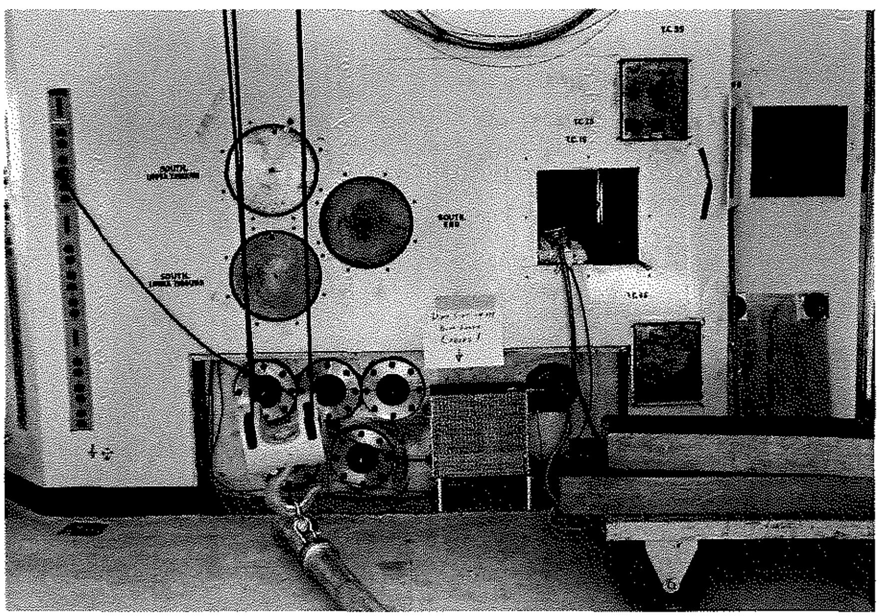
The OWR was cooled by dematerialized light water that circulated downward through the core at 3500 gal/min. After it left the core, the cooling water passed through a delay line, a surge tank, a pump, and a cooling tower before being returned to the reactor tank. Water purity was maintained by bypassing a small stream through a deioner and filter system. Two auxiliary pumps provided emergency flows to prevent freezing in case of loss of the main pump in winter and for cleanup in case of radioactive contamination of the water system (ICF Kaiser Engineers 1995).

The OWR was designed primarily to facilitate research experimentation in nuclear physics and other sciences. The OWR provided Los Alamos scientists with an intense, steady source of neutrons. The reactor provided sample irradiations, a source of external neutron and gamma-ray beam experiments, and facilities for irradiation of instrumented capsules. The reactor was also used for radioisotope production and for external neutron-beam experiments, neutron cross-section measurements, neutron-capture gamma-ray studies, and neutron radiography. The design emphasized facilities for bringing beams of fast and thermal neutrons through the reactor shield, for providing high thermal fluxes, and for having the capability of accepting flexible experimental arrangements (Williams *et al.* 1969) (Figures 38 and 39).



(LANL, IM-9 Photography, #611506)

Figure 38. OWR Experiments (Two Axis Spectrometer – Direction North), circa 1961



(LANL, IM-9 Photography)

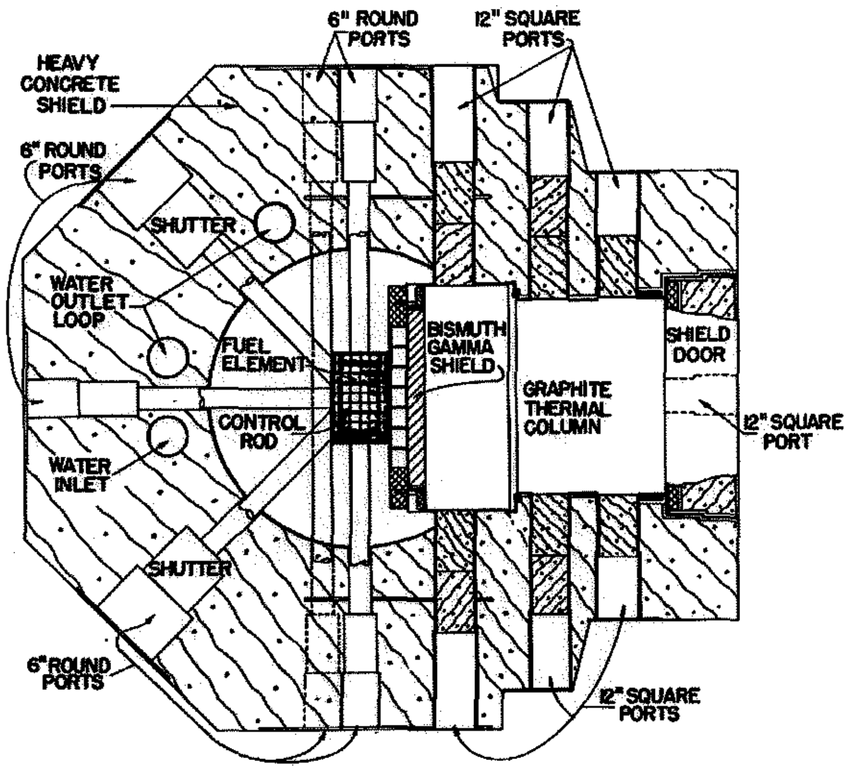
Figure 39. OWR Sample Ports

The OWR was also designed to produce fast and thermal neutrons for fundamental research in nuclear physics, solid-state physics, and related fields. The addition of a versatile arrangement of in-core irradiation positions in 1960 allowed the reactor to be used as a test facility in support of Laboratory efforts such as the direct energy conversion studies (Fig. 40) and fast reactor development (LASL Community News 1960b).

(LANL, IM-9 Photography)

Figure 40. Laboratory Director Bradbury (L) and Energy Conversion Demonstration, circa 1960

The air-filled vertical ports were used extensively for radiation damage studies, investigations of the effects of radiation on solid-state devices and the testing of instrumentation for use in radiation environments (Williams *et al.* 1969) (Figure 41).



(LANL, IM-9 Photography, #34543)

Figure 41. OWR Schematic, November 1955

The largest single use of the reactor was neutron activation analysis. The automated neutron activation analysis system at OWR performed the analysis of up to 400 samples per day. On average, 12,000 to 15,000 samples per year were irradiated and numerous experiments were conducted by various groups, including other laboratories that did not have a research reactor (Figure 42) (ICF Kaisers Engineers 1995).

As noted, the primary function of the reactor was to create large amounts of neutrons for research purposes. The neutrons, which are produced by the fission of uranium-235, were used for radiography. The OWR was also used as a research tool to study soil and sediment samples from one-third of the U.S. to find uranium deposits. The fuel itself was enriched uranium-235 and the core contained about 13 pounds of the material.

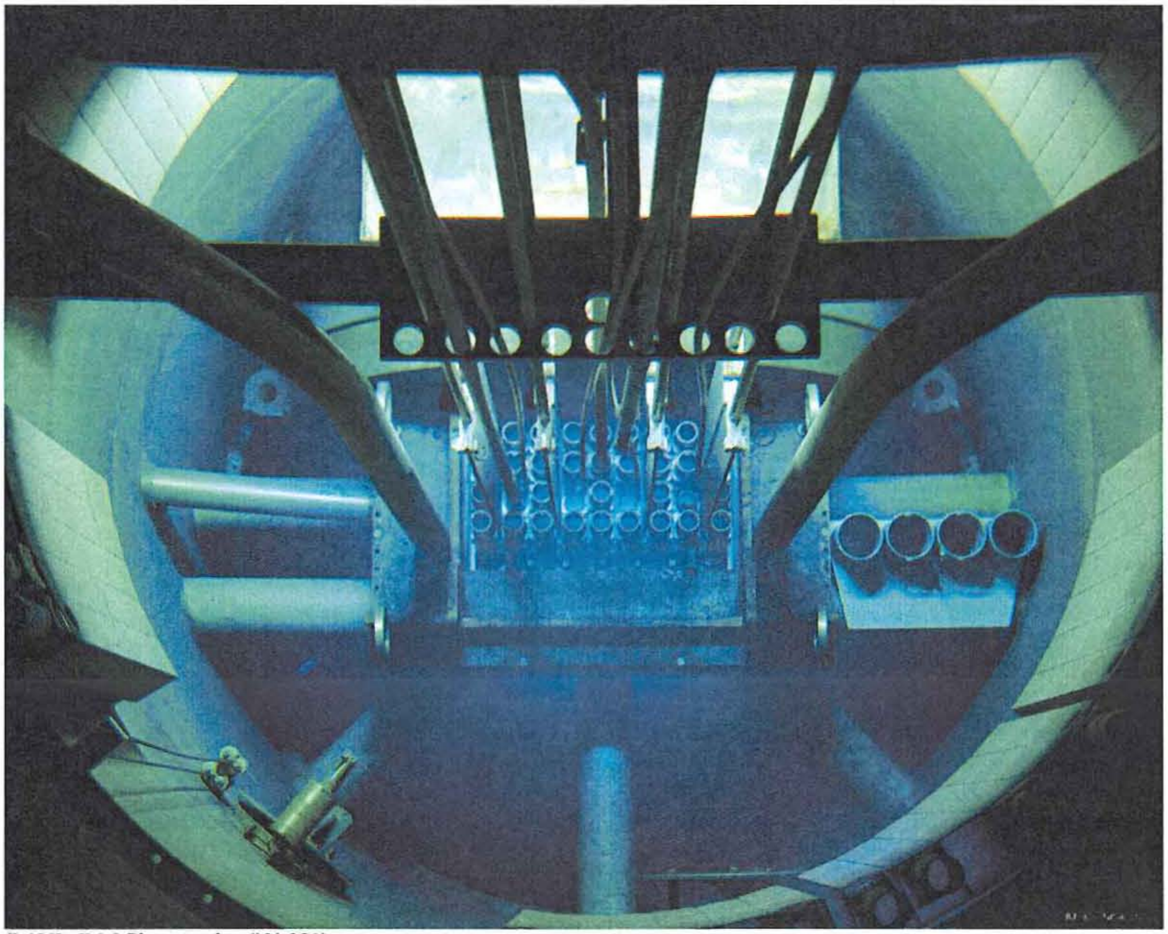
(LANL, IM-9 Photography, #CN59170)

Figure 42. OWR, circa 1959

In summary, the reactive assembly or "core" of the OWR

> was immersed in water contained in a stainless steel tank 8 feet in diameter and 25 feet high. The tank, in turn, is surrounded by concrete five feet thick....The concrete is made from magnetite...during operation, the solid fuel elements containing uranium 235 are cooled by water which also serves as a reflector and moderator...Control of this heterogeneous reactor is achieved by means of moveable poison rods situated in the fuel

> assembly…[and] particles move through the water at speeds greater than the speed of light in water. As a result, a glow is produced (Otway *et al.* 1970:15) (Figure 43).



(LANL, IM-9 Photography, #64-291)

Figure 43. OWR's "Blue Glow" or "Cherenkov Radiation," circa 1964

Facility Shutdown

The discovery in November 1992 of a coolant leak in a 30-in. pipe between building TA-2-44 and the reactor building permanently shutdown the reactor. During 1994 the reactor was de-fueled and all control blades were removed, placing the reactor in a safe shutdown mode. Soon thereafter the reactor vessel was drained of all of its coolant. Demolition of the Omega Facility began in 2002.

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Appendix A: Historic Building Inventory Form with Representative Photographs and Building Drawings

LANL TA- Building # 02-0001

Camera 949791, 984242, and 984243

Frame #s P0000807 through P0000854, DCP_1126 through DCP_1147,and DCP_0083 through DCP_0096 respectively

Surveyor(s) K.Towery/J.Ronquillo

Date 03/05/2002

Los Alamos National Laboratory
HREPCT Historic Building Survey Form

Building Name: Omega West Reactor | UTMs easting: 383515 | northing: 3970816 | zone: 13

Legal Description: Map: Guaje Mountain 1984 | tnsp: 19N | range: 6E | sec: 15

Current Use/ Function: Building has been demolished | Original Use/ Function: Reactor Building

Date (estimated): 1944 | Date (actual): 1944 | Property Type: Laboratory/Processing

Type of Construction

Pre-Fabricated Metal ☑ Steel Frame ☑ Wood Frame ☐ CMU ☑ Reinforced Concrete ☑

Other Type of Construction: | # of Stories: 3

Foundation Reinforced Concrete

Exterior CMU-Exterior ☑ Reinforced Concrete-Exterior ☐ Steel (galvanized) ☐ Steel (corrugated) ☐

Wood Siding ☑ Asbestos Shingles-Exterior ☑ In-Fill Panels ☐ Other-Exterior:

Exterior Treatment (painted, stuccoed, etc): It varies and includes painted concrete, CMU, asbestos containing material, and glass block.

Exterior Features (docks, speakers, lights, signs, etc): A few concrete docks at west, south, and east elevations; speakers, lighting and security signage around building.

Addition CMU-Addition ☐ Reinforced Concrete-Addition ☑ Steel (galvanized)- Addition ☑ Wood ☐

Steel (corrugated)-Addition ☑ Asbestos Shingles-Addition ☐ Other- Addition:

Exterior Treatment-Addition: Painted concrete, CMU and corrugated steel siding, and asbestos containing material - 1946 addition. Circa 1949 the western portion of the original building was removed and rebuilt (circa 1949 addition/rebuild). The exterior façade is painted CMUs.

Exterior Features-Addition: Some concrete docks and glass block design elements.

Roof Form Slanted/Shed ☑ Gable ☐ Other Roof Type:

Degree of Pitch/ Slope: Moderate

Roof Materials Corrugated Metal ☑ Rolled Asphalt ☐ Asbestos Shingles ☐ 4-Ply Built Up ☑

Other Roof Materials:

Window Type Casement ☐ Single Hung Sash ☐ Double Hung Sash ☑ Fixed Window ☑

Other Window Type: Glass block

# of Each Window Type/ Comments: There are a number of various window types around the building ranging from glass block, fixed, operable hopper, to double hung.

Glass Type Clear ☑ Wire Glass ☑ Opaque ☐ Painted Glass ☑ Glass Block ☑

Light Pattern: Varies

Door Type

Personnel Door Types

Exterior: Fire Door ☐ Single ☑ Double ☑ Roll-up ☑ Sliding ☐ Hollow Metal ☑ Solid Wood ☐ 1/2 Glazed ☐ Paneled ☐ Louvered ☑ Painted ☑

Interior: Fire Door ☐ Single ☑ Double ☑ Roll-up ☐ Sliding ☐ Hollow Metal ☑ Solid Wood ☑ 1/2 Glazed ☑ Paneled ☑ Louvered ☐ Painted ☑

Equipment Door Types

Exterior: Fire Door ☑ Single ☐ Double ☑ Roll-up ☐ Sliding ☐ Hollow Metal ☑ Solid Wood ☑ 1/2 Glazed ☑ Paneled ☐ Louvered ☐ Painted ☑

Interior: Fire Door ☐ Single ☑ Double ☐ Roll-up ☐ Sliding ☐ Hollow Metal ☑ Solid Metal ☑ 1/2 Glazed ☐ Paneled ☐ Louvered ☐ Painted ☐

# of Each Door Type/Comments: There is one vault door inside building.

Interior Wall Gypsum Board ☐ Reinforced Concrete- Interior ☑

CMU- Interior ☐ Plywood ☐ Other- Interior: CMU

In-Wall Electrical Wiring ☐ On-Wall Electrical Wiring ☑

Ceiling Drop Ceiling ☑

Interior Comments (Equipment, etc): Overhead cranes of various sizes (a 10,000 lb and a 3,000 lb) and a large supporting structure of (steel and concrete) for the reactor. There is a freight elevator and a vault storage room within the building. Several areas have old fume hoods, laboratory work benches, exposed utility piping including steam, metal dropped ceilings, acoustical lay-in ceilings, acoustical tile on the walls and suspended fluorescent light fixtures, and space heaters. There is a steel stair and railing structure around the reactor. Floor materials consist of exposed concrete, vinyl asbestos tile, and carpet. A large control panel/station was in place at time of evaluation which originally supported reactor diagnosis.

Degree of Remodeling: Moderate

Condition Excellent ☐ Good ☑ Fair ☑ Deteriorating ☑ Contaminated ☐ Burned ☐

Associated Building ☑

If yes, list building names and #s: TA-2-90, (Storage Bldg.) TA-2-89, (Storage Bldg.) TA-2-21, (Waterline valve house) TA-2-63 (Boiler House).

Integrity: Excellent

Significance: Eligible

Eligible Under Criterion A ☑ B ☐ C ☐ D ☐ Not Eligible ☐

DOE Themes

Nuclear Weapon Components and Assembly ☐ Nuclear Weapon Design and Testing ☑ Nuclear Propulsion ☐

Peaceful Uses: Plowshare, Nuclear Medicine, Nuclear Energy, Nuclear Science ☐ Energy and Environment: Research Design Projects ☐

LANL Themes

Weapons Research and Design, Testing, and Stockpile Support ☑ Super Computing ☐

Reactor Technology ☐ Biomedical/Health Physics ☐ Strategic and Supporting Research ☐

Environment/Waste Management ☐ Administration and Social History ☐ Architectural History ☐

Recommendations/ Additional Comments

Architectural Features (elevations)

South elevation: Consists of wood siding on a portion, painted concrete, CMU with glass block window openings, operable window openings, metal siding, a brick stack, asbestos containing material, overhead canopy loading dock with equipment doors and personnel doors, and safety railing at reactor roof/platform. West elevation: Consists of wood siding, painted concrete and CMU, corrugated metal siding, covered bottle storage area, painted over windows, an overhead door, and a hollow metal double door. North elevation: Consists of wood siding, painted concrete and CMU, corrugated metal siding, asbestos containing material, some window openings and glass block. East elevation: Consists of asbestos containing material, wooden and metal operable windows, and hollow metal doors.

The room that the Omega West Reactor was housed in (Room 101) is a 2-story highbay.

Total sq ft 21,337 Gross

Architect/ Builder Original structure was built in 1944 by the Post Engineers. The structure was later modified in 1946 and circa 1949 by R.E. McKee.

Alterations The original structure (built 1944) was expanded (1946 addition) and modified (1949 removal and rebuild) throughout its history and the exterior building materials consisted of a combination of concrete, wood, CMU, asbestos containing material, and metal. There are various level changes and various wall finishes in each elevation, yet no one material that unifies the visual facade of the facility.

List of Drawings (Cntrl + Enter for para break)

The following drawings depict the major modifications made to the building.

ENG-C 1670
TA-2-1
Bldg. Omega -1-TA-2
Elevations
October 18, 1943

ENG-C 1675
TA-2-1
Bldg. Omega-1-TA-2
First Floor Plan
Room Window & Door Schedules
November 1, 1943

ENG-C 1687
Sheet 1
TA-2-1
Omega Building Annex
Plan & Foundation Details
September 20, 1944

ENG-C 1688
Sheet 2
TA-2-1
Omega Building Annex
Elevations & Details
September 20, 1944

Drawing list is continued on next page.

ENG-C 1700
Sheet 2 of 16
TA-2-1
Omega Site Building #1
Fast Reactor Building
Floor Plan & Details
May 20, 1946

ENG-C 1701
Sheet 3 of 16
TA-2-1
Omega Site
Fast Reactor Building
Elevations & Details
May 20, 1946

ENG-C 401
TA-2-1
Alterations & Additions to Omega #1
Floor Plans and Elevations
August 5, 1949

ENG-C 1723
Sheet 2 of 34
TA-2-1
Alterations & Additions to Bldg. No. 1
Architectural Plan of Existing Building
October 11, 1949

ENG-C 1724
Sheet 3 of 34
TA-2-1
Alterations & Additions to Bldg. No. 1
Architectural First Floor Plan
October 11, 1949

ENG-C 1725
Sheet 4 of 34
TA-2-1
Alterations & Additions to Bldg. No. 1
Architectural Second Floor Plan
October 11, 1949

ENG-C 1728
Sheet 7 or 34
TA-2-1
Alterations & Additions to Bldg. No. 1
Architectural Elevations
October 11, 1949

ENG-AB 119
Sheet 1 of 3
TA-2-1
As-Built Record Floor Plan
Arch: Basement Floor Plan
October 27, 1993

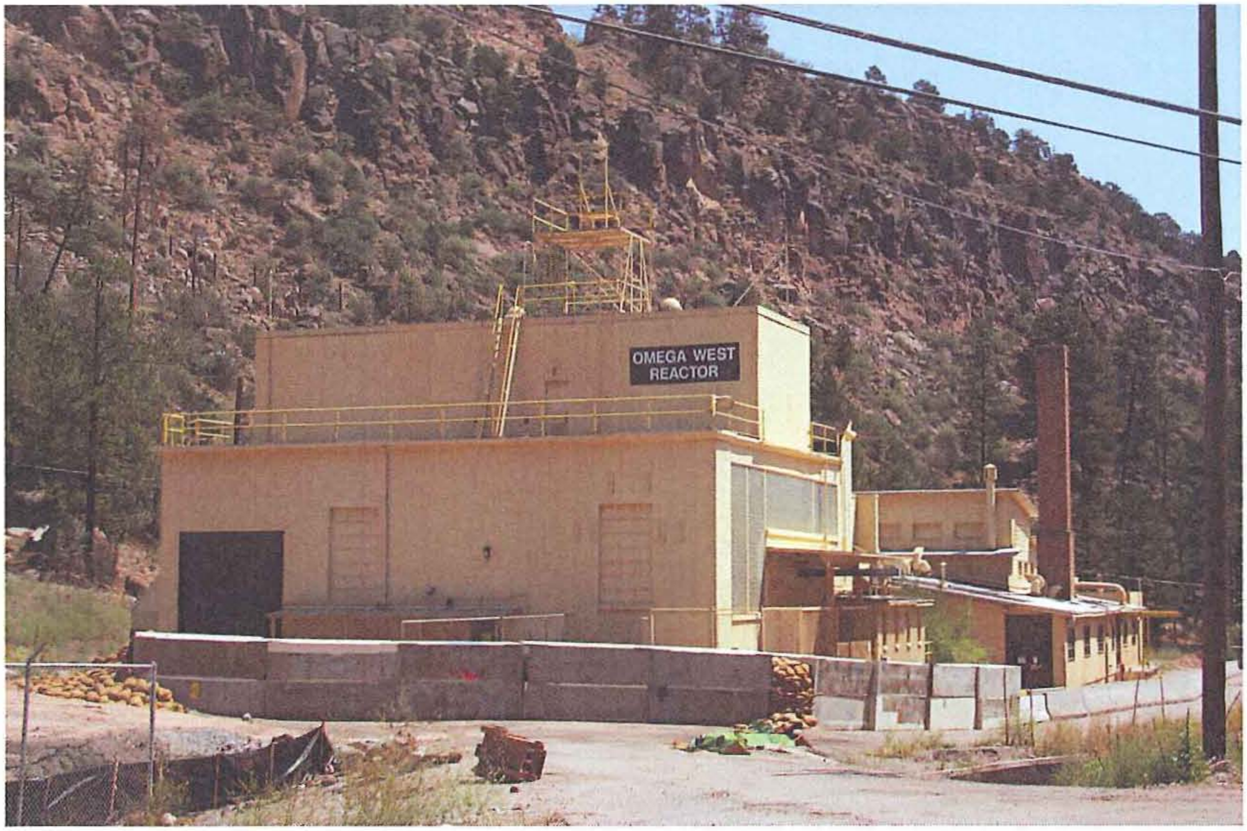
ENG-AB 119
Sheet 2 of 3
TA-2-1
As-Built Record Floor Plan
Arch: First Floor Plan
October 27, 1993

ENG-AB 119
Sheet 3 of 3
TA-2-1 As-Built Record Floor Plan
Arch: Second and Mezzanine Floor Plan
October 27, 1993

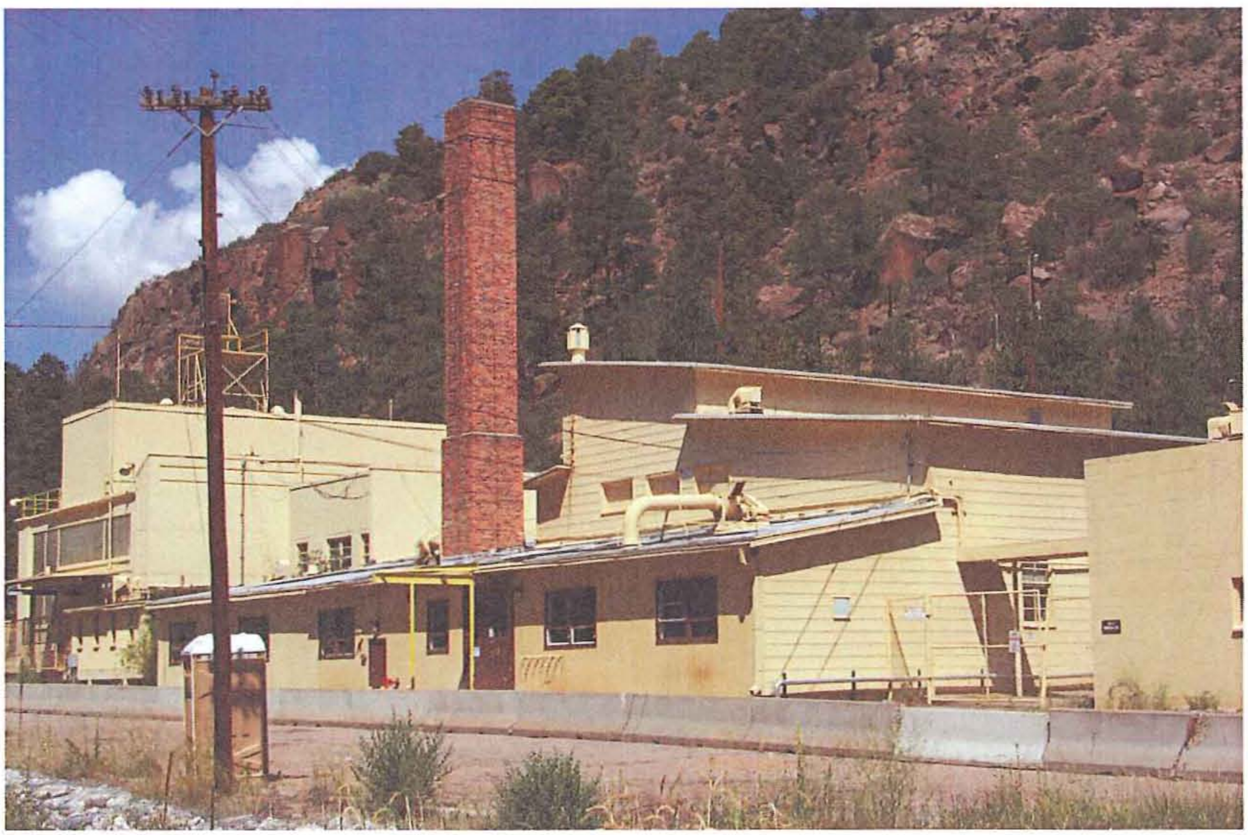
Drawing list is continued from previous page

LA-UR-03-0200
A-1, Sheet 1 of 2
TA-2-1
Omega West Reactor
Historic Context
January 2003

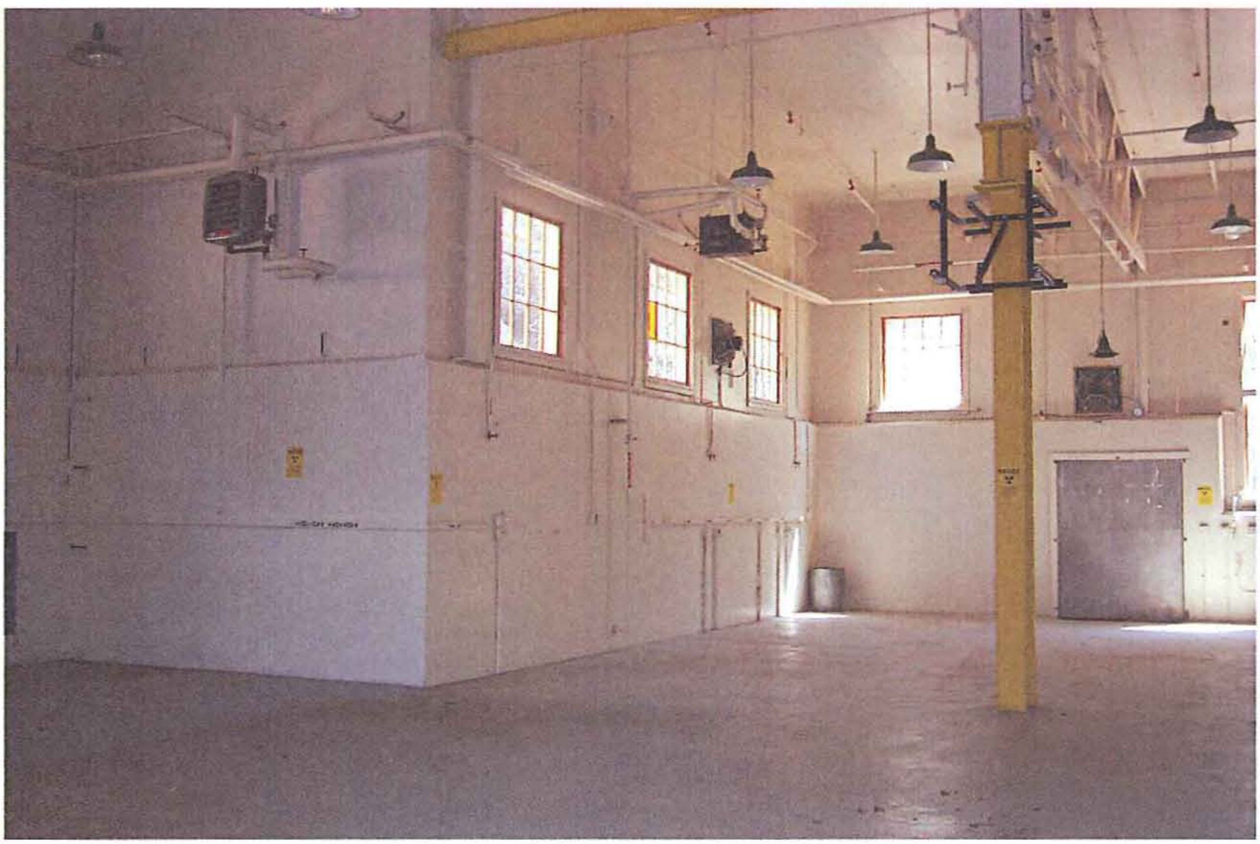
LA-UR-03-0200
A-2, Sheet 2 of 2
TA-2-1
Omega West Reactor
Historic Context
January 2003



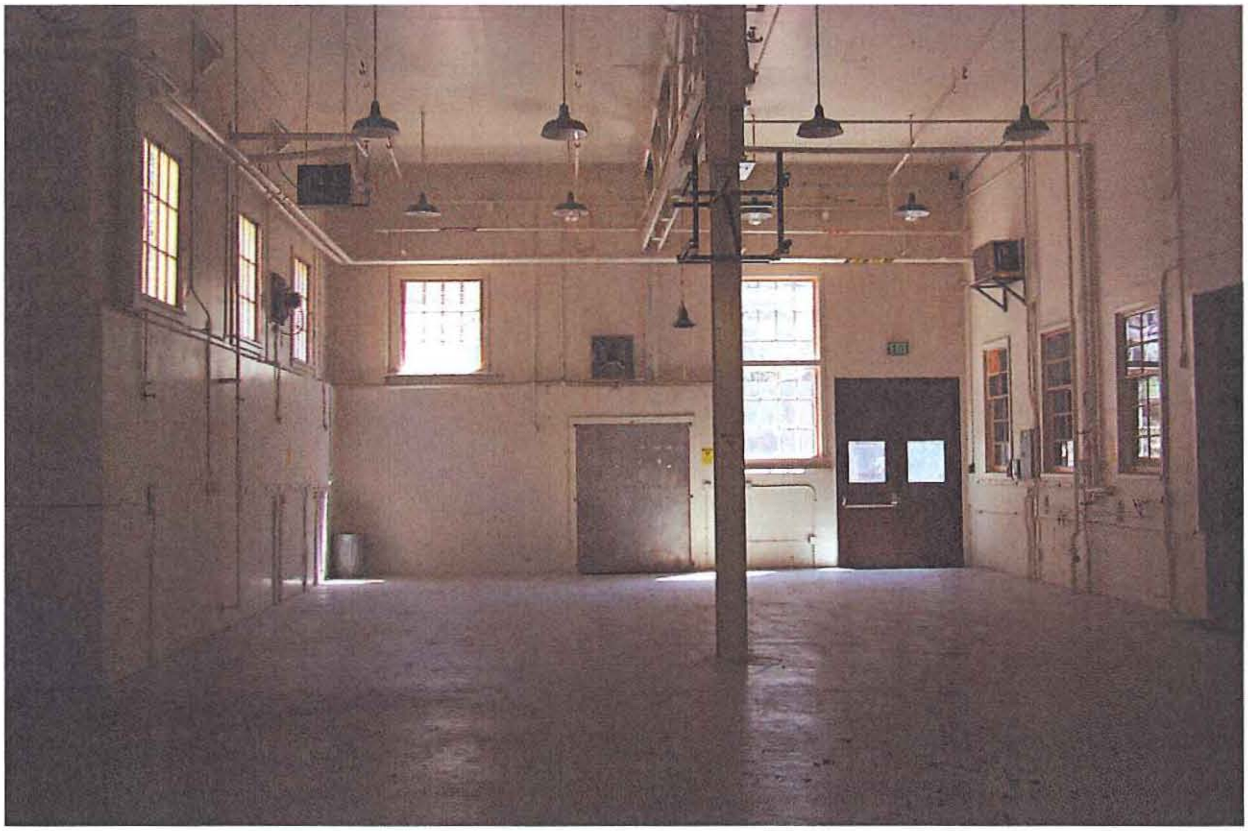
Omega Site TA-2-1, direction northeast


Omega Site TA-2-1, direction northwest

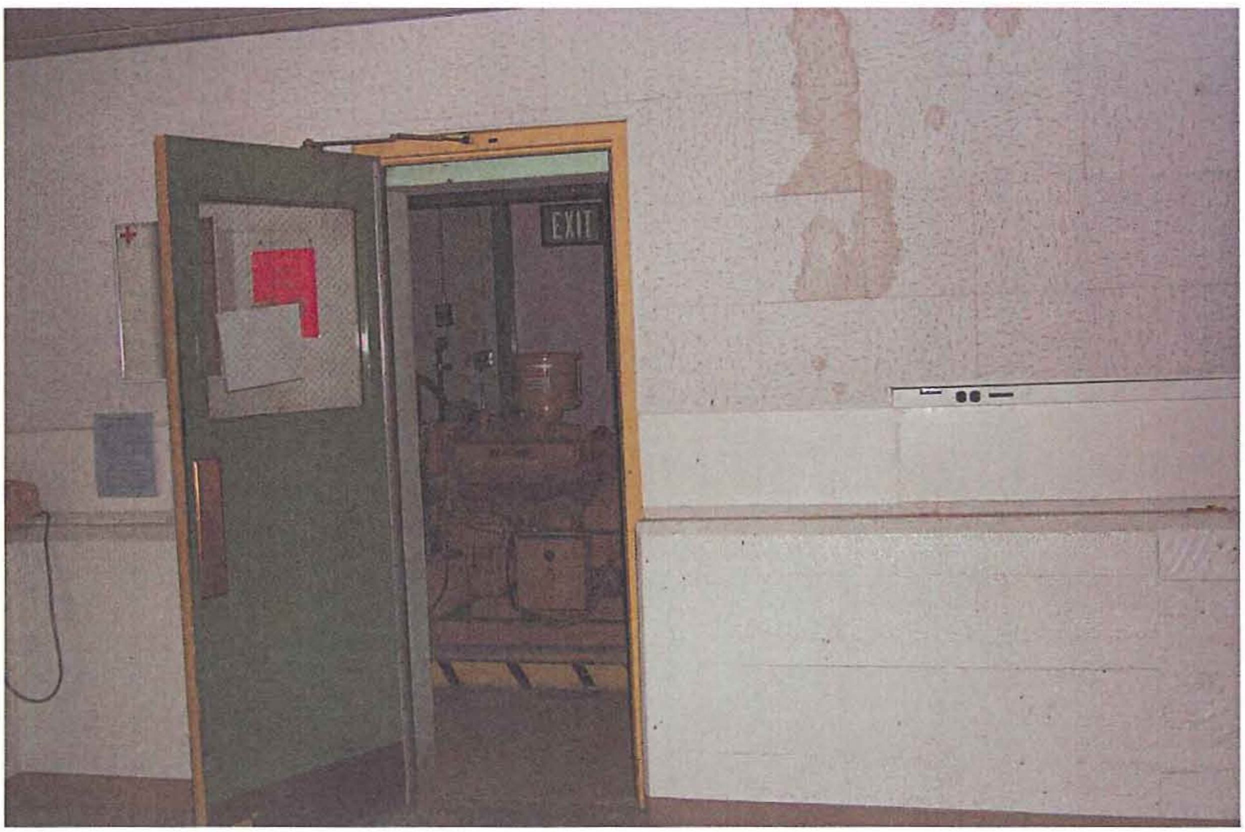
TA-2-1, Room 122



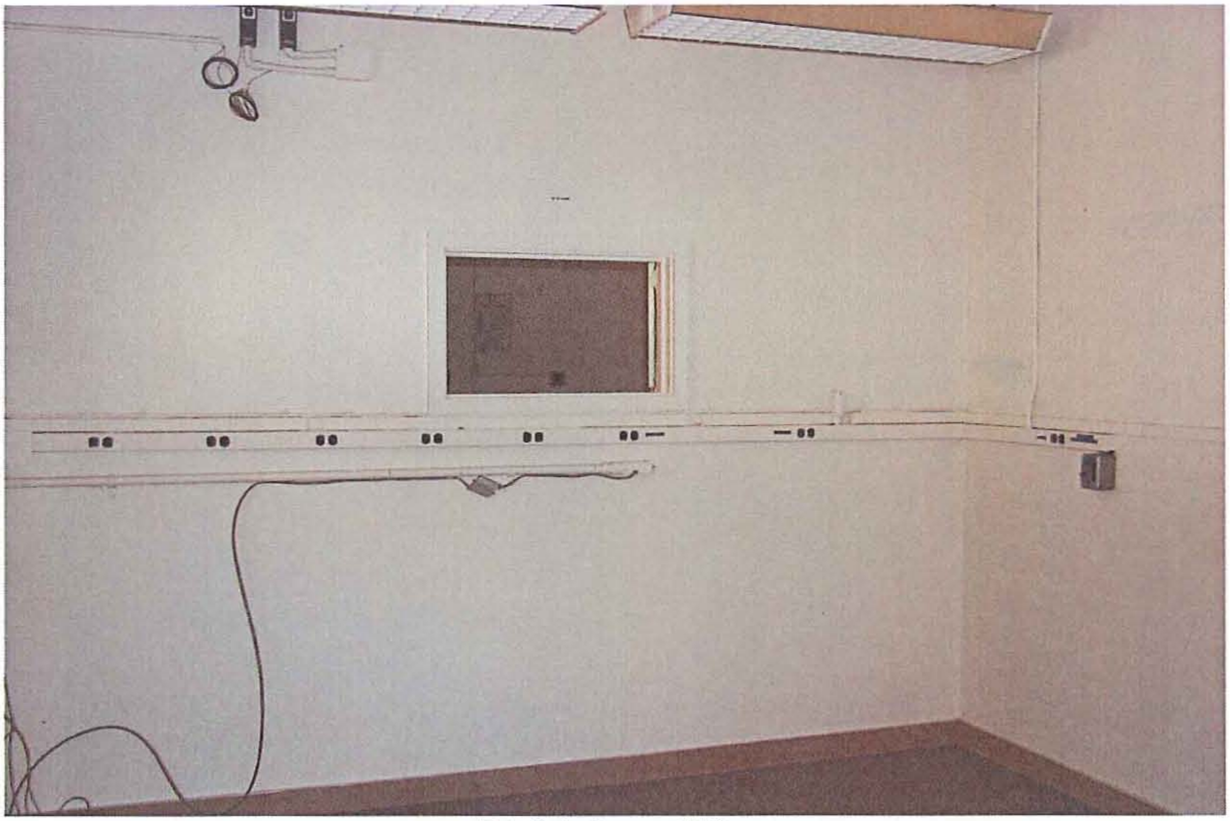
TA-2-1, Room 122



TA-2-1, Room 122



TA-2-1, Rooms 116 & 116A

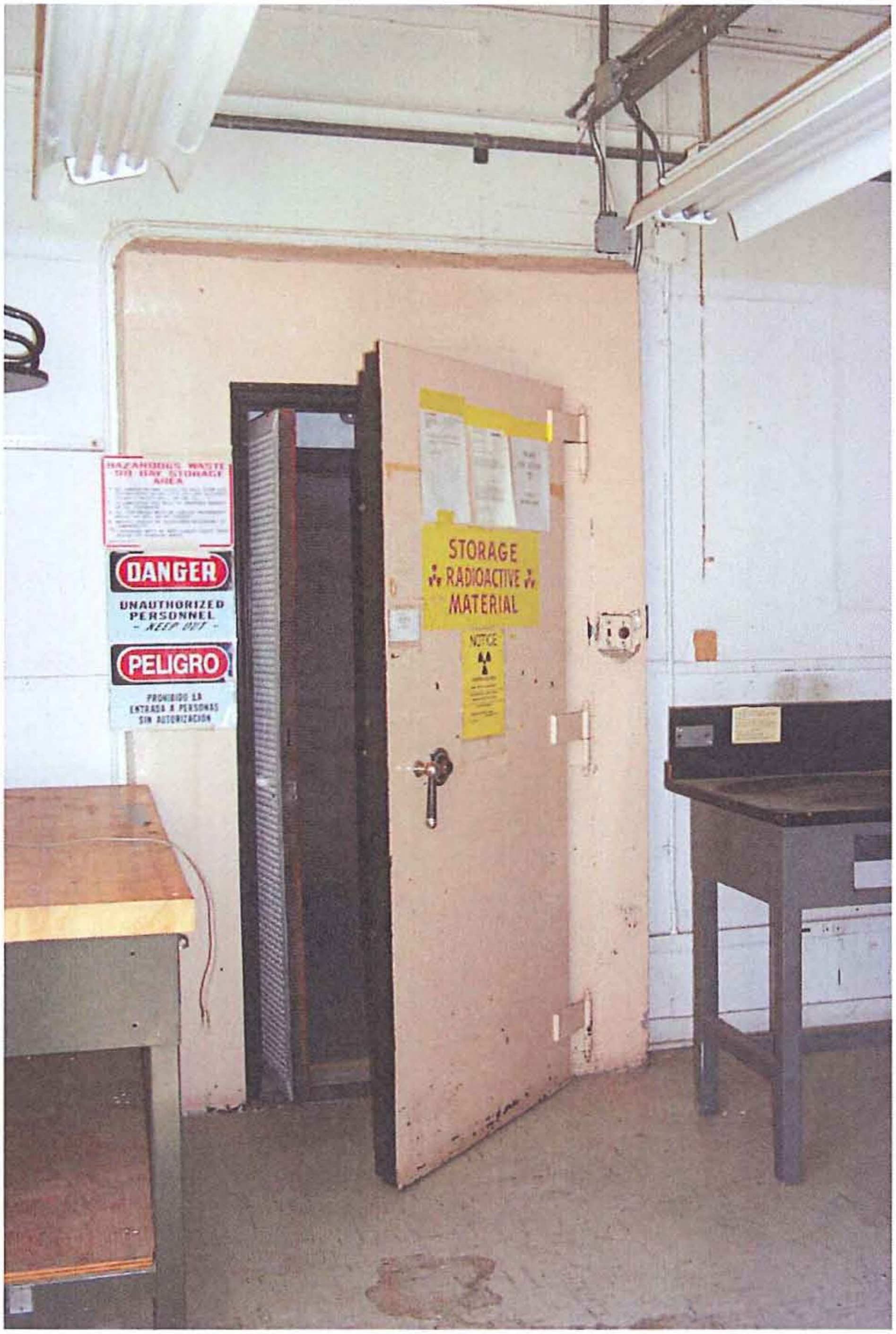


TA-2-1, Room 119

TA-2-1, Room 121

TA-2-1, Room 123

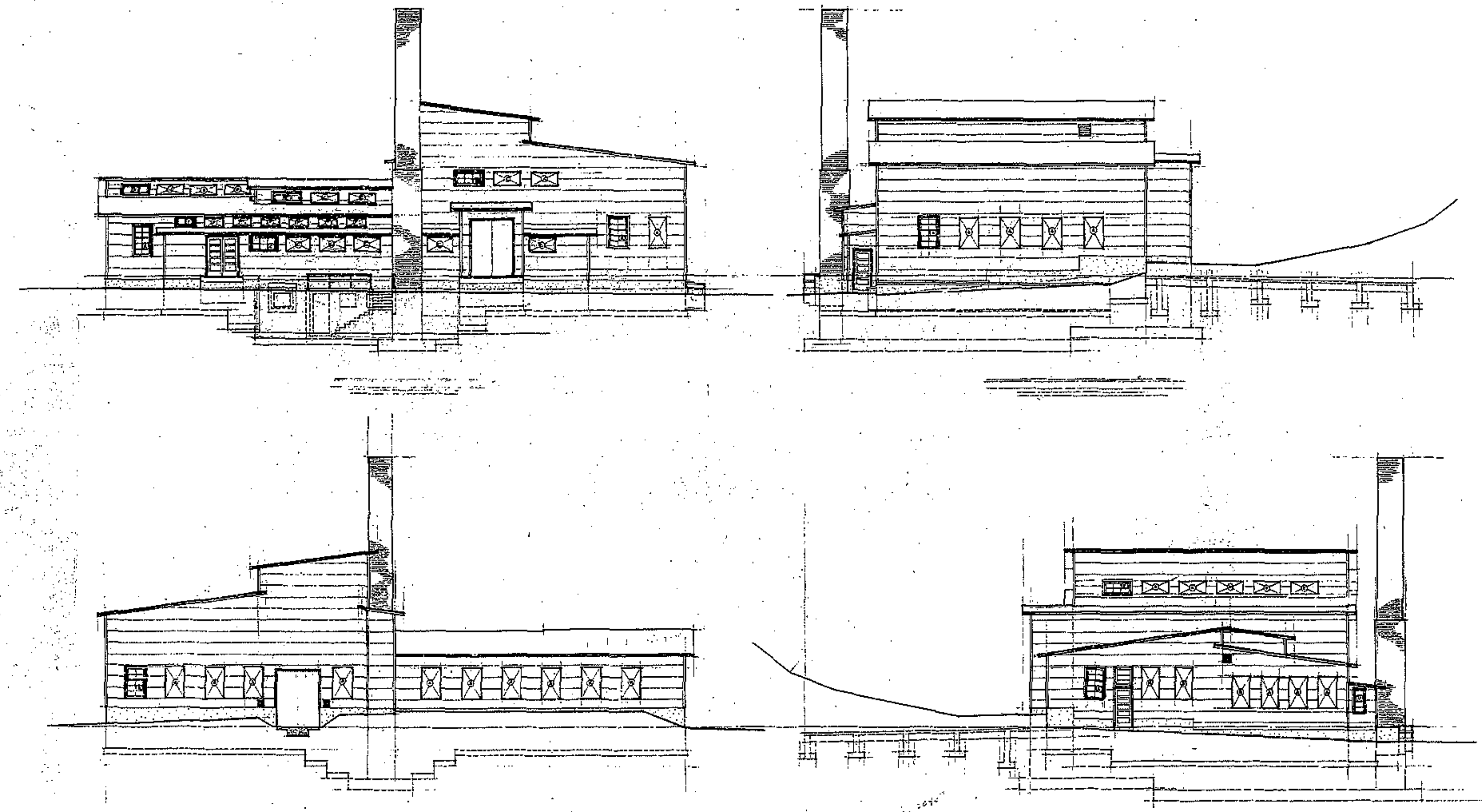
TA-2-1, Room 123



TA-2-1, Room 124-V

TA-2-1, Omega West Reactor, room 101, north and northwest sides

TA-2-1, Omega West Reactor, room 101, south side

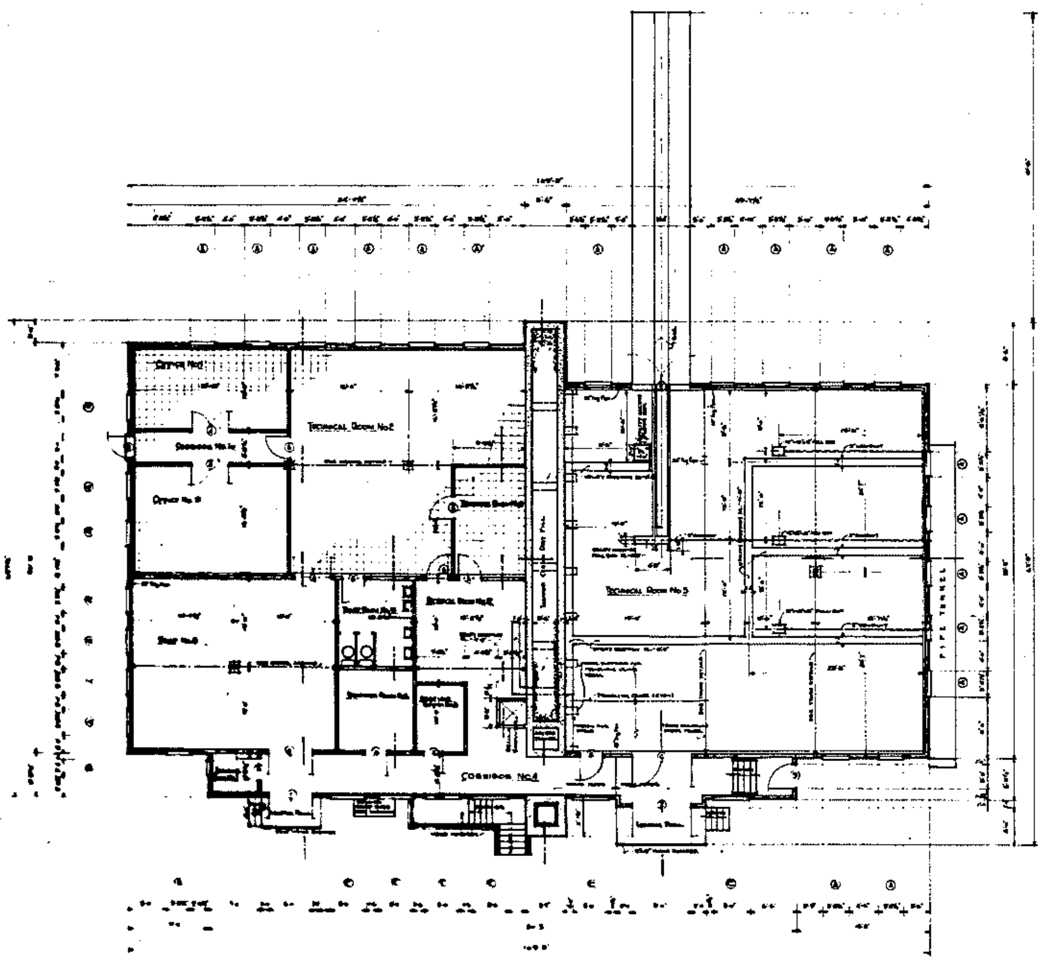


For further reference see
[illegible] 25-47.03 and 25-47.04

BLDG. OMEGA-1-TA-2
ELEVATIONS

OCT. 18, 1943

L.A.S.L. DWG. NO. ENG-C 1670



FIRST FLOOR PLAN

ROOM SCHEDULE

Room Number	Description	Floor	Walls	Ceiling	[illegible]	Finish	[illegible]	Remarks
1	Office	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
2	Technical Room	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	Technical Room	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4	Corridor	Wood & Conc.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
5	First Aid Room	Wood	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
6	Technical Room	Wood	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
7	Janitor Closet	Wood	[illegible]	[illegible]	[illegible]	[illegible]	None	
8	Shop	Wood	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
9	Office	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
10	Corridor	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
11	Technical Room	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
12	Technical Room	Wood	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
13	Toilet Room	Wood	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

WINDOW SCHEDULE

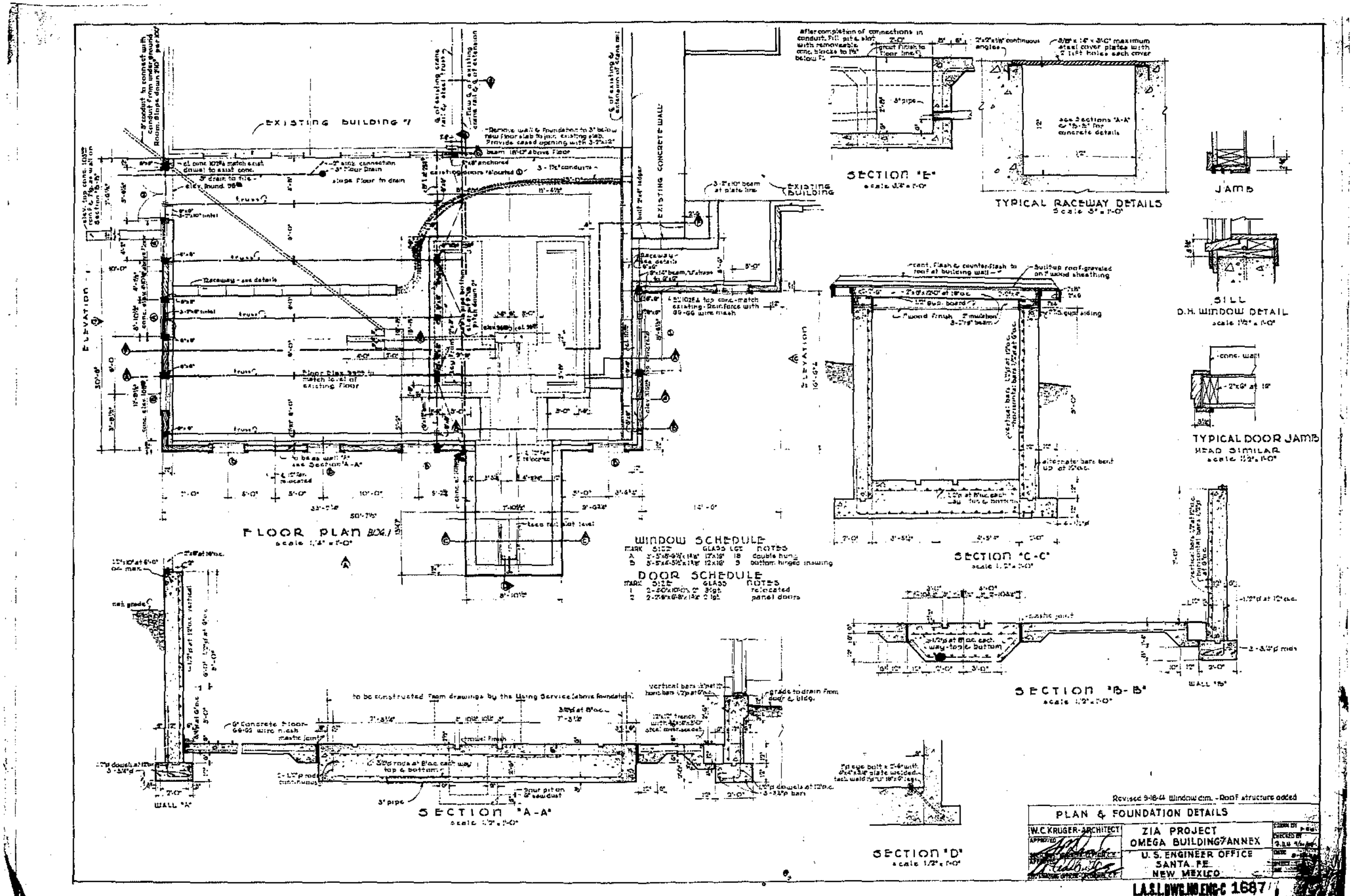
Type No.	Number of Windows	Size	Lights	Type	Remarks
A	26	[illegible]	10	[illegible]	
B	1	[illegible]	4	[illegible]	
C	4	[illegible]	4	Casement	[illegible]
D	2	[illegible]	4	Casement	[illegible]
E	[illegible]	[illegible]	4	[illegible]	
F	7	[illegible]	[illegible]	Casement	[illegible]
G	[illegible]	[illegible]	[illegible]	Casement	[illegible]
H	4	[illegible]	[illegible]	[illegible]	

DOOR SCHEDULE

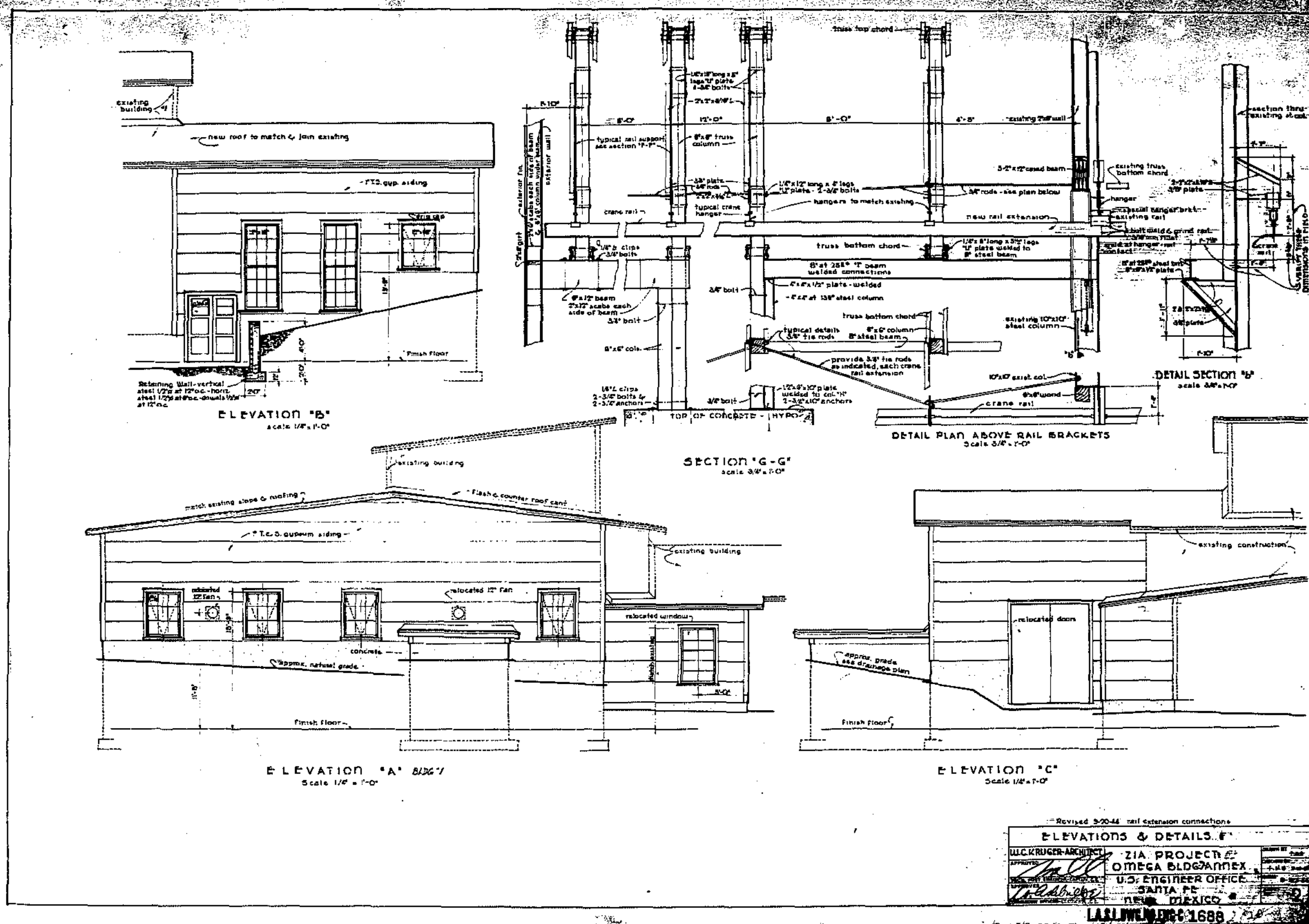
Type No.	Number of Doors	Size	Glass	Type	Remarks
1	1	[illegible]	No	[illegible]	[illegible]
2	2	[illegible]	[illegible]	Special	See Elevation
3	6	[illegible]	1 Light	5 Panel	See Elevation
4	1	[illegible]	No	5 Panel	
5	10	[illegible]	No	5 Panel	
6	1	[illegible]	[illegible]	Special	
7	1	[illegible]	No	5 Panel	
8	3	[illegible]	No	5 Panel	

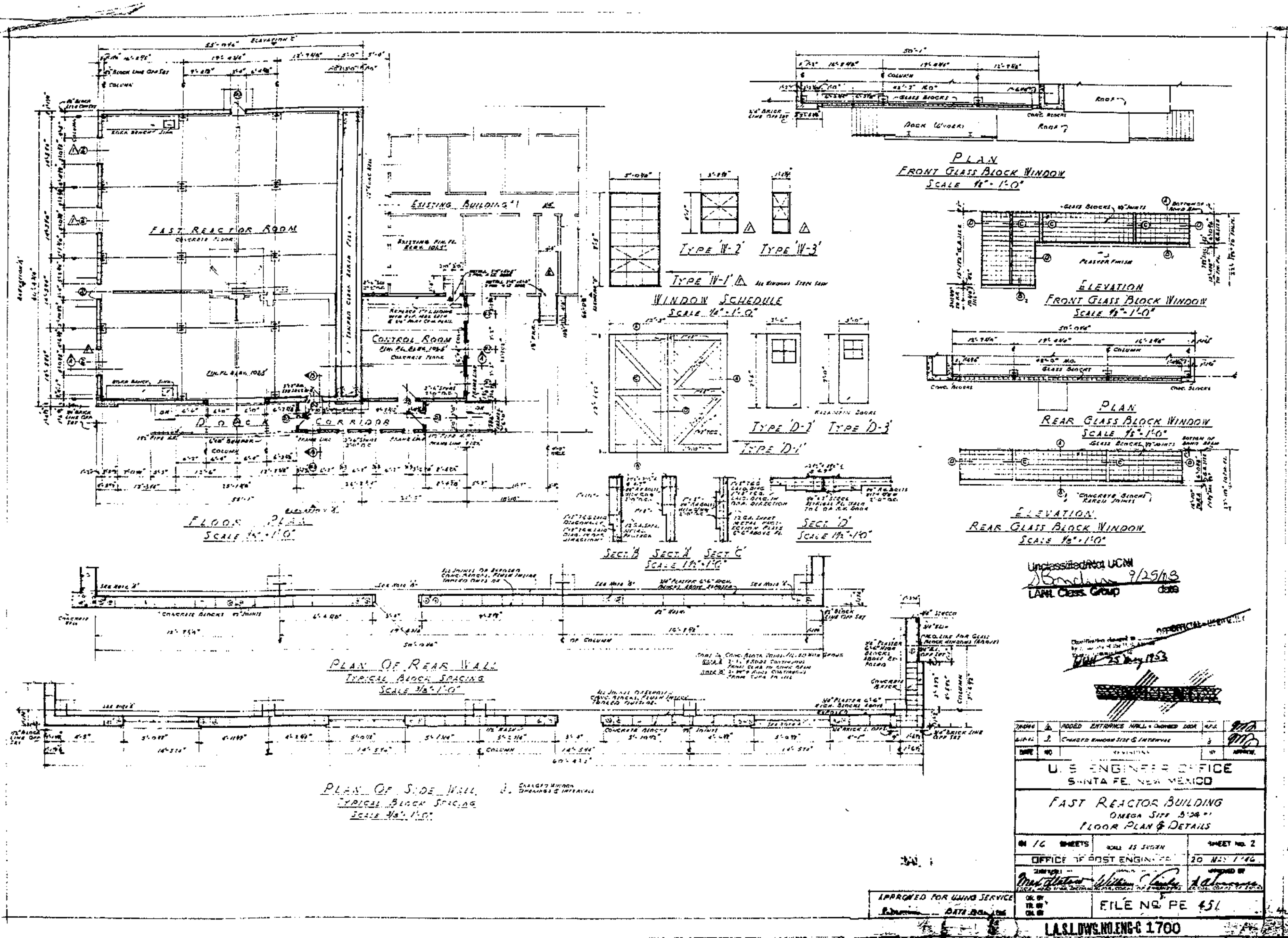
BLDG. OMEGA-1-TA-2
FIRST FLOOR PLAN
[illegible] WINDOW & DOOR SCHEDULES
[illegible] 1943

L.A.S.L. DWG. NO. ENG-C 1675

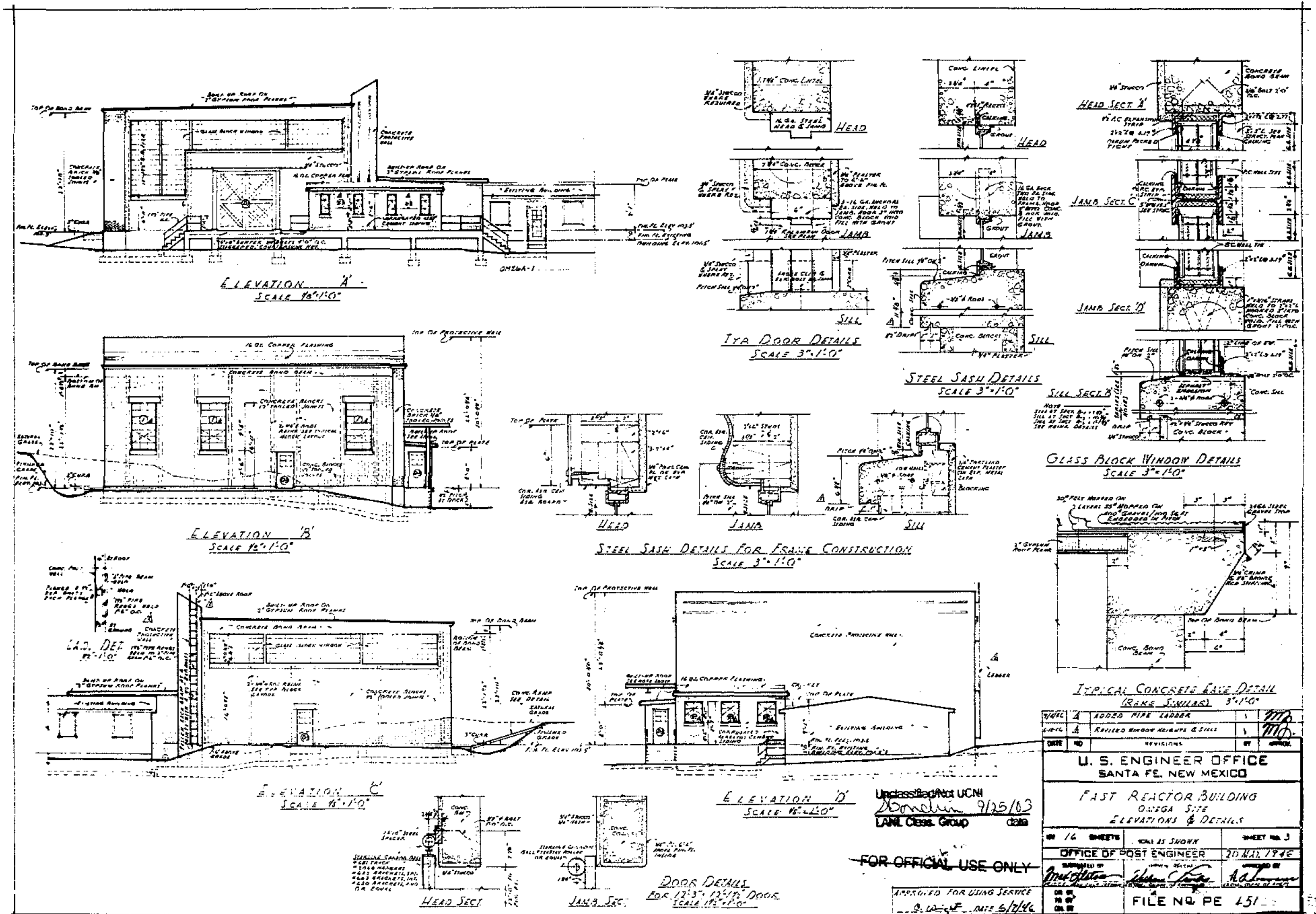


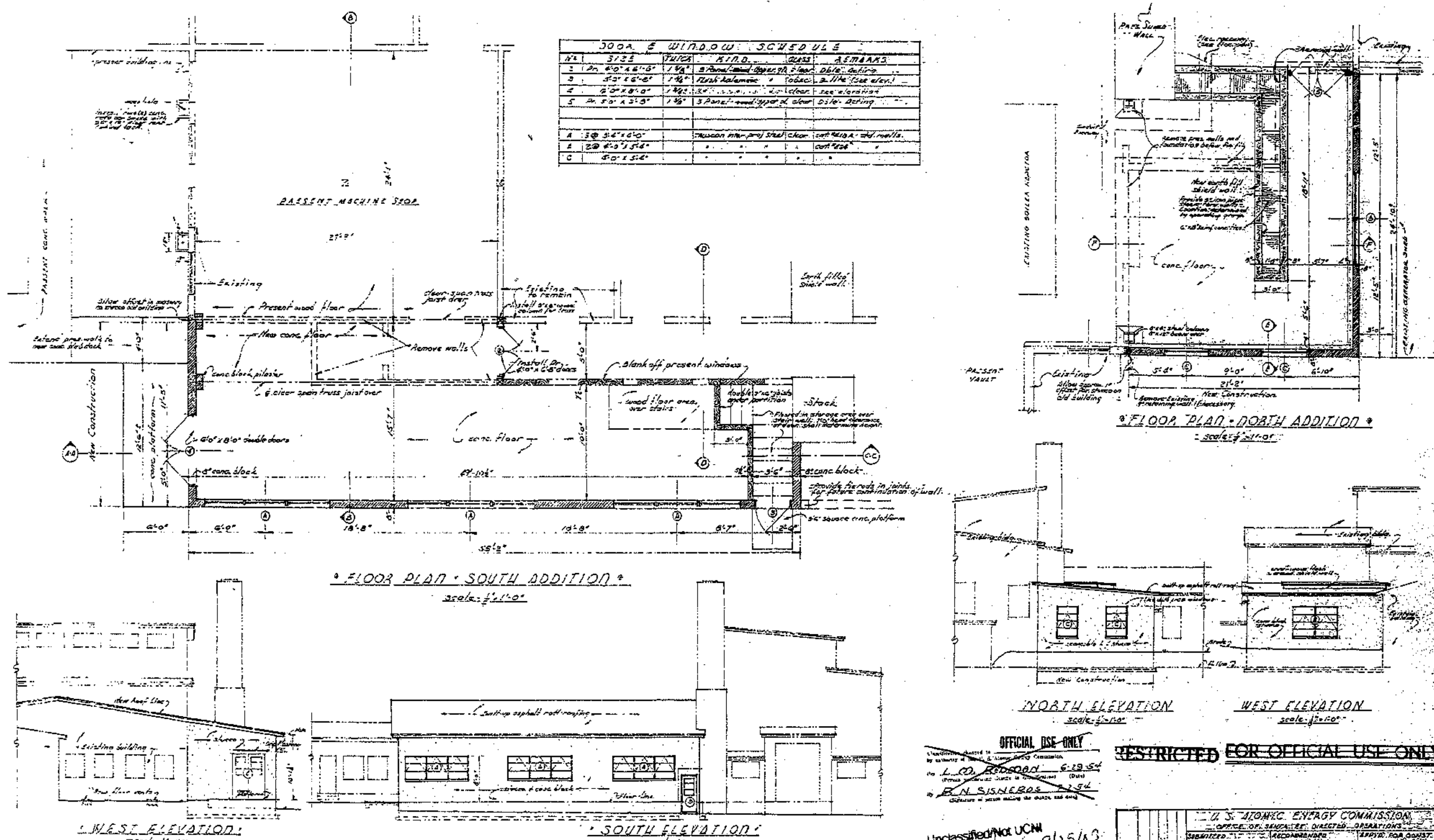
EXISTING BUILDING 7
EXISTING CONCRETE WALL
EXISTING BUILDING
FLOOR PLAN BDG.1
scale 1/4" = 1'-0"
ELEVATION 1
ELEVATION
SECTION "E"
scale 3/4" = 1'-0"
TYPICAL RACEWAY DETAILS
Scale 3" = 1'-0"
JAMB
SILL
D.H. WINDOW DETAIL
scale 1 1/2" = 1'-0"
TYPICAL DOOR JAMB
HEAD SIMILAR
scale 1 1/2" = 1'-0"
SECTION "C-C"
SECTION "B-B"
scale 1/2" = 1'-0"
SECTION "A-A"
scale 1/2" = 1'-0"
SECTION "D"
scale 1/2" = 1'-0"
WALL "A"
WALL "B"
WINDOW SCHEDULE
DOOR SCHEDULE
to be constructed from drawings by the Using Service (above foundation)
Revised 9-18-44 Window dim. - Roof structure added
PLAN & FOUNDATION DETAILS
W.C. KRUGER - ARCHITECT
ZIA PROJECT
OMEGA BUILDING ANNEX
U.S. ENGINEER OFFICE
SANTA FE
NEW MEXICO
L.A.S.L. DWG. NO. ENG-C 1687


ELEVATION "B"
scale 1/4" = 1'-0"
existing building
new roof to match & join existing
T.T.S. gyp. siding
finish floor
Retaining Wall-vertical steel 1/2"φ at 12" o.c.-horiz. steel 1/2"φ at 8" o.c.-dowels 1/2"φ at 12" o.c.
SECTION "G-G"
scale 3/4" = 1'-0"
truss top chord
existing 2x8 wall
typical rail support see section "F-F"
8"x8" truss column
crane rail
typical crane hanger
hangers to match existing
new rail extension
truss bottom chord
8" at 28# "I" beam welded connections
3/4" bolt
8"x6" col.
TOP OF CONCRETE - HYPO
existing truss bottom chord
hanger
existing rail
crane rail
existing 10"x10" steel column
DETAIL SECTION "B"
scale 3/4" = 1'-0"
section thru existing st. col.
verify these dimensions in field
DETAIL PLAN ABOVE RAIL BRACKETS
scale 3/4" = 1'-0"
provide 3/8" tie rods as indicated, each crane rail extension
ELEVATION "A" BLDG 1
Scale 1/4" = 1'-0"
existing building
match existing slope & roofing
flash & counter roof cant
T. & G. gypsum siding
relocated 12" fan
relocated window
concrete
approx. natural grade
finish floor
ELEVATION "C"
Scale 1/4" = 1'-0"
existing construction
relocated doors
approx. grade see drainage plan
finish floor
Revised 9-20-46 rail extension connections
ELEVATIONS & DETAILS
W.C. KRUGER-ARCHITECT
ZIA PROJECT
OMEGA BLDG. ANNEX
U.S. ENGINEER OFFICE
SANTA FE
NEW MEXICO
1688



FAST REACTOR ROOM
CONCRETE FLOOR
CONTROL ROOM
CORRIDOR
EXISTING BUILDING #1
FLOOR PLAN
SCALE 1/8" = 1'-0"
TYPE 'W-1'
TYPE 'W-2'
TYPE 'W-3'
WINDOW SCHEDULE
SCALE 1/4" = 1'-0"
TYPE 'D-1'
TYPE 'D-2'
TYPE 'D-3'
SECT 'B'
SECT 'A'
SECT 'C'
SCALE 1 1/2" = 1'-0"
SECT 'D'
SCALE 1 1/2" = 1'-0"
PLAN
FRONT GLASS BLOCK WINDOW
SCALE 1/2" = 1'-0"
ELEVATION
FRONT GLASS BLOCK WINDOW
SCALE 1/2" = 1'-0"
PLAN
REAR GLASS BLOCK WINDOW
SCALE 1/2" = 1'-0"
ELEVATION
REAR GLASS BLOCK WINDOW
SCALE 1/2" = 1'-0"
PLAN OF REAR WALL
TYPICAL BLOCK SPACING
SCALE 1/8" = 1'-0"
PLAN OF SIDE WALL
TYPICAL BLOCK SPACING
SCALE 1/8" = 1'-0"
Unclassified/Not UCNI
9/25/13
LANL Class. Group
date
U. S. ENGINEER OFFICE
SANTA FE, NEW MEXICO
FAST REACTOR BUILDING
OMEGA SITE
FLOOR PLAN & DETAILS
SHEET NO. 2
OFFICE OF POST ENGINEER
20 MAY 1946
APPROVED FOR USING SERVICE
FILE NO. PE 451
LASL DWG NO ENG-C 1700


ELEVATION 'A'
SCALE 1/8"=1'-0"
ELEVATION 'B'
SCALE 1/8"=1'-0"
ELEVATION 'C'
SCALE 1/8"=1'-0"
ELEVATION 'D'
SCALE 1/8"=1'-0"
TYP. DOOR DETAILS
SCALE 3"=1'-0"
STEEL SASH DETAILS
SCALE 3"=1'-0"
GLASS BLOCK WINDOW DETAILS
SCALE 3"=1'-0"
STEEL SASH DETAILS FOR FRAME CONSTRUCTION
SCALE 3"=1'-0"
TYPICAL CONCRETE EAVE DETAIL
(RAKE SIMILAR) 3"=1'-0"
DOOR DETAILS
HEAD SECT.
JAMB SEC.
ADDED PIPE LADDER
REVISED WINDOW HEIGHTS & SILLS
REVISIONS
U. S. ENGINEER OFFICE
SANTA FE, NEW MEXICO
FAST REACTOR BUILDING
OMEGA SITE
ELEVATIONS & DETAILS
SCALE AS SHOWN
OFFICE OF POST ENGINEER
20 MAY 1946
FILE NO. PE 451
FOR OFFICIAL USE ONLY
Unclassified/Not UCNI
LANL Class. Group
9/25/03
APPROVED FOR USING SERVICE
L.A.S.L. DWG. NO. ENG-C 1701



DOOR & WINDOW SCHEDULE					
No.	SIZE	THICK	KIND	GLASS	REMARKS
2	Pr. 4'-0" x 6'-6"	1 3/4"	3 Panel-wood-Upper gl.	clear	Dble. Acting
3	3'-0" x 6'-8"	1 3/4"	Flush-kalamein	obsc.	2 lite (see elev.)
4	6'-0" x 8'-0"	1 3/4"	[illegible]	clear	see elevation
5	Pr. 5'-0" x 3'-3"	1 3/8"	3 Panel-wood-upper gl.	clear	Dble. Acting
A	3@ 3'-4" x 6'-0"		Truscon inter-proj. Steel	clear	cont. #610A-std. mulls.
B	2@ 4'-0" x 5'-4"		" " "	"	cont. #624 "
C	4'-0" x 5'-4"		" " "	"	"

Painting Notes:
Exterior - All woodwork shall be three (3) coat to match existing. Note: Wash't (3) ④ doors shall be two (2) coat in colors as directed.
Interior - Wood trim and doors shall be three (3) coat gloss finish to match existing. Walls and overhead three (3) coat flat to match existing.
Stucco - Shall contain white admixture - no painting necessary.

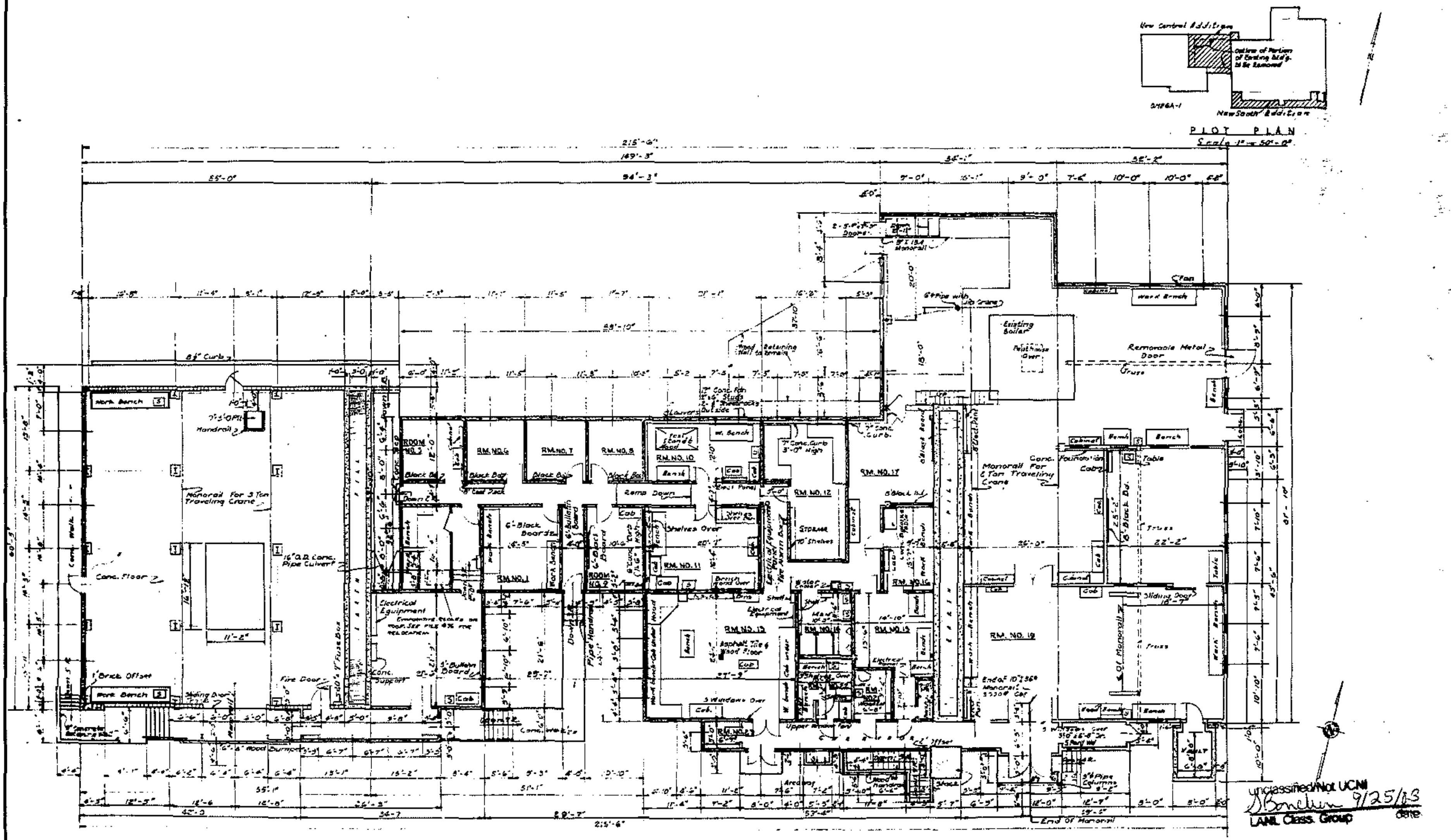
~~OFFICIAL USE ONLY~~
~~Classification changed to ____ by authority of the U.S. Atomic Energy Commission~~
~~Per L. M. Redman 6-29-54~~
~~(Person authorizing change in classification) (Date)~~
~~by B. N. Sisneros 7-2-54~~
~~(Signature of person making the change, and date)~~

Unclassified/Not UCNI
[signature] 9/25/13
LANL Class. Group date

RESTRICTED ~~FOR OFFICIAL USE ONLY~~

U. S. ATOMIC ENERGY COMMISSION
OFFICE OF SANTA FE DIRECTED OPERATIONS
SUBMITTED: FOR THE LAB. DIR. | RECOMMENDED: CHIEF, ENG. BRANCH | APPR'D. FOR CONST.: CHIEF, OPER. DIV.
LOS ALAMOS SCIENTIFIC LABORATORY
TECHNICAL & MAINTENANCE GROUP
ALTERATIONS & ADDITIONS TO OMEGA-1
T A 2
FLOOR PLANS AND ELEVATIONS
AUTHORIZED FOR: ABOC. | SECURITY | HEALTH | SAFETY | PLANT | FORM
SCALE | DRAWN BY | DATE | CHECKED BY | DATE | APPROVED | DATE | COMPANY | ENG-C-40

PRE-PELIM



EXISTING FIRST FLOOR PLAN

Note: Rooms No. 1, 2, 4, 6, 7, 8 & 9 shall be replaced with the work indicated on files No. 1799 & 1800 & other files related to their work.

Rooms No. 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, and adjoining portions of this building shall be remodeled, replaced & extended as indicated on files No. 1797, 1800, 1868, 1887, 1801, 1802, 1882, 1884, 1835, 1803 and other files related to this work. (See Index File No. 1836).

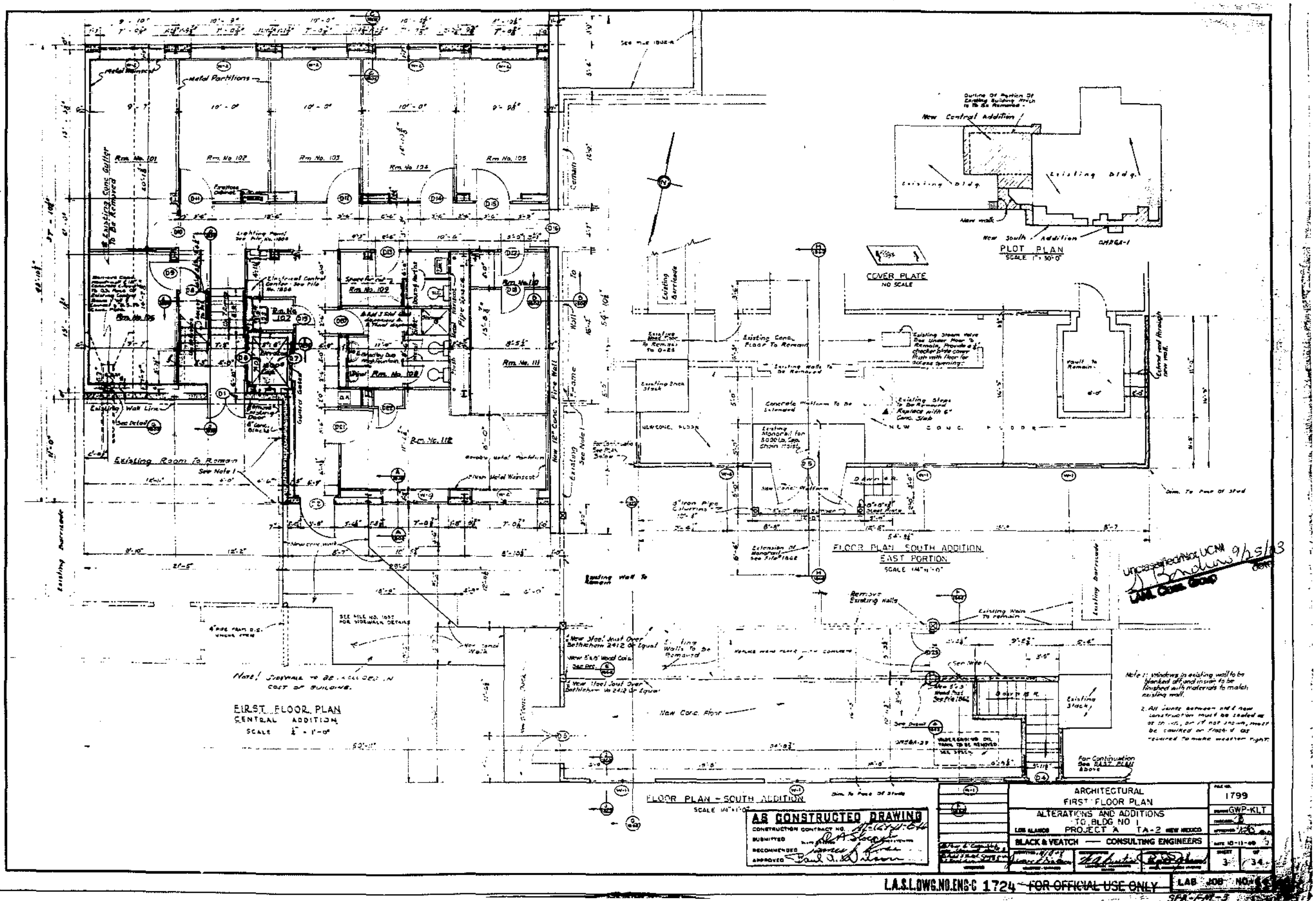
AS CONSTRUCTED DRAWING
CONSTRUCTION CONTRACT NO. W-7405-ENG-36
SUBMITTED
RECOMMENDED
APPROVED

ARCHITECTURAL
PLAN OF EXISTING BUILDING
ALTERATIONS & ADDITIONS TO BLDG. NO. 1
LOS ALAMOS PROJECT A TA-2 NEW MEXICO
BLACK & VEATCH — CONSULTING ENGINEERS

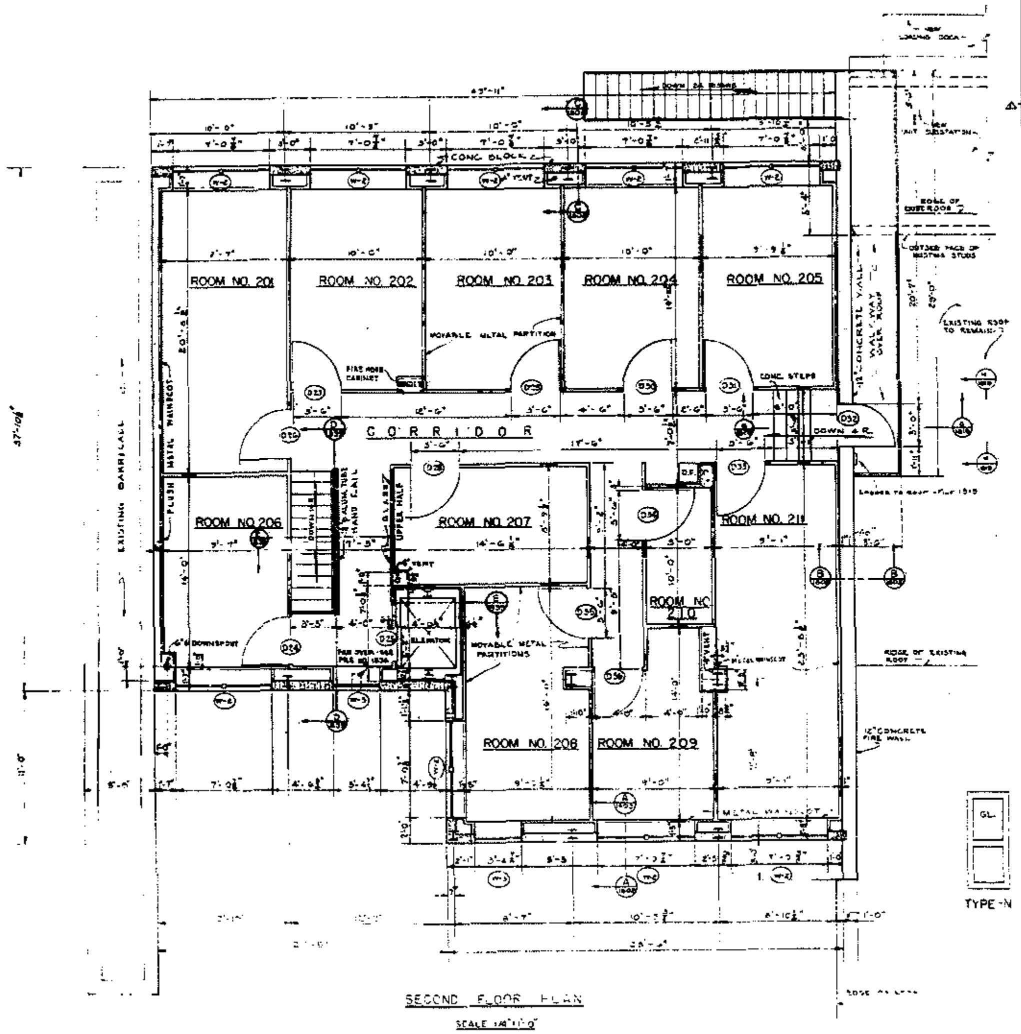
FILE NO. 1798
GWP

L.A.S.L. DWG. NO. ENG-C 1723
~~FOR OFFICIAL USE ONLY~~
LAB. JOB NO.

10-11-49



FIRST FLOOR PLAN
CENTRAL ADDITION
FLOOR PLAN SOUTH ADDITION
EAST PORTION
FLOOR PLAN - SOUTH ADDITION
PLOT PLAN
SCALE 1" = 30'-0"
COVER PLATE
NO SCALE
Existing Room To Remain
New 12" Conc. Fire Wall
Rm. No. 101
Rm. No. 102
Rm. No. 103
Rm. No. 104
Rm. No. 105
Rm. No. 109
Rm. No. 110
Rm. No. 111
Rm. No. 112
Metal Partitions
Existing Conc. Gutter To Be Removed
NEW CONC. FLOOR
New Conc. Floor
Existing Barricade
New Central Addition
New South Addition
Existing bldg.
New walk
Note! Sidewalk to be included in cost of building.
Note 1: Windows in existing wall to be blanked off and insulated to be finished with materials to match existing wall.
2. All joints between old & new construction must be sealed as shown, or if not shown, must be caulked or flashed as required to make weather tight.
For Continuation See EAST PLAN Above
Dim. To Face Of Studs
AS CONSTRUCTED DRAWING
ARCHITECTURAL
FIRST FLOOR PLAN
ALTERATIONS AND ADDITIONS
TO BLDG NO 1
PROJECT A TA-2
LOS ALAMOS NEW MEXICO
BLACK & VEATCH — CONSULTING ENGINEERS
1799
GWP-KLT
3 34
L.A.S.L. DWG. NO. ENG-C 1724
FOR OFFICIAL USE ONLY
LAB JOB NO
Unclassified/Not UCNI
9/25/03
LANL Class. Group



DOOR SCHEDULE

MARK	TYPE	MAT.	SIZE W	SIZE H	SIZE T	GLASS	DETAIL H	DETAIL J	DETAIL S	REMARKS
FIRST FLOOR										
D-1	A	METAL	4'-0"	6'-8"	1 3/4"	OBS. GLASS	10	11	12	
D-2	B	DO	3'-5"	7'-0"	DO	DO	DO	DO	DO	
D-3	C	WOOD	6'-0"	8'-0"	DO	DO	4	5	19	
D-4	H	DO	3'-0"	7'-0"	DO	DO	4	5	20	[illegible]
D-5	G	DO	8'-0"	10'-0"	DO	DO	4	5	20	SEE DETAIL 21
D-6 & D-7	D	METAL	4'-0"	7'-0"	DO	WIRE GLASS				ELEVATOR DOORS
D-8, D-13, D-19	F	DO	2'-6"	6'-9 1/2"	DO	OBSCURE				LOUVERS
D-20	F	DO	2'-6"	6'-9 1/2"	DO	DO				DO
D-9, D-10, D-11	F	DO	3'-6"	6'-9 1/2"	DO	DO				DO
D-12, D-14, D-16	F	DO	3'-6"	6'-9 1/2"	DO	DO				DO
D-21	F	DO	3'-6"	6'-9 1/2"	DO	DO				DO
D-15	L	DO	4'-0"	7'-0"	DO	WIRE GLASS	7	8	9	CL."C" FIRE DOOR
D-17 & D-18	E	DO	3'-0"	6'-9 1/2"	DO	NONE				LIGHT TIGHT LOUVERS
D-22	E	DO	2'-0"	6'-9 1/2"	DO	DO				LOUVERS
D-23	B	WOOD	4'-0"	7'-0"	DO	DSA CLEAR	4	5	6	OMIT THRESHOLD
D-37, D-38, D-39	N	DO	3'-0"	DO	DO	DO	DO	DO	DO	DO
SECOND FLOOR										
D-24, D-26, D-27	F	METAL	3'-6"	6'-9 1/2"	DO	OBSCURE				DOOR NO 24 TYPE K
D-29, D-30, D-31	K	DO	3'-6"	6'-9 1/2"	DO	DO				
D-35, D-36, D-?5	K	DO	3'-6"	6'-9 1/2"	DO	DO				
D-28	K	DO	3'-6"	5'-9 1/2"	DO	DO				LOUVER
D-25	D	DO	4'-0"	7'-0"	DO	WIRE GLASS				ELEVATOR DOORS
D-32	M	DO	3'-0"	7'-0"	DO	DO	7	8	9	CL.C. FIRE DOOR
D-34	J	DO	3'-6"	6'-9 1/2"	DO	NONE				LIGHT TIGHT LOUVER
D-40	G	WOOD	8'-0"	8'-0"	DO	DSA CLEAR	10*	11*	12*	SALVAGE FROM FIRST FLOOR

WINDOW SCHEDULE

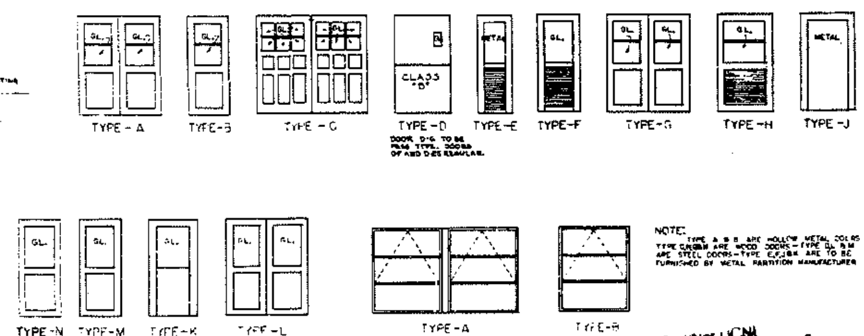
MK.	WIN. OPG. W	WIN. OPG. H	MAT.	TYPE	DETAILS H	DETAILS J	DETAILS S	REMARKS
W 1	7'-0 5/8"	4'-1"	STEEL	A	13	14	15	METAL SCREEN-SEE SPECS
W 2	DO	DO	DO	A	16	17	18	DO
W 3	3'-4 7/8"	DO	DO	B	13	14	15	DO
W 4	3'-4 7/8"	DO	DO	B	13	14	18	DO

WINDOWS IN ROOMS 112, 208, 209, , 211 & 206 TO HAVE VENETIAN BLINDS. ALL OTHER NEW WINDOWS TO HAVE ROLLER TYPE FABRIC SHADES.

* HEAD, JAMB & SILL FOR DOOR D-40 TO BE SIMILAR TO DETAILS 10, 11 & 12

FINISH SCHEDULE

RM. NO.	FLOOR	WALLS	CEILING	BASE	WAINSCOT	REMARKS
FIRST FLOOR						
101	ASPHALT TILE	METAL	ACOUSTICAL	METAL	METAL	
102	-	-	-	-	-	
103	-	-	-	-	-	
104	-	-	-	-	-	
105	-	-	-	-	-	
106	-	-	-	-	-	
107	[illegible]	-	NONE	-	-	
108	DO	-	ACOUSTICAL	-	-	
109	ASPHALT TILE	-	-	-	-	
110	-	-	-	-	-	
111	-	-	-	-	-	
112	-	-	-	-	-	
SECOND FLOOR						
201	-	-	-	-	-	
202	-	-	-	-	-	
203	-	-	-	-	-	
204	-	-	-	-	-	
205	-	-	-	-	-	
206	-	-	-	-	-	
207	-	-	-	-	-	
208	-	-	-	-	-	
209	-	-	-	-	-	
210	-	-	-	-	-	
211	-	-	-	-	-	
INTERIOR ALTERATIONS (SEE FILE NO. 1558)						
12	-	SHEETROCK	SHEETROCK	WOOD	HARDBOARD	
12 A	-	-	-	-	-	
13	-	-	-	-	-	



DOOR D-6 TO BE PASS TYPE DOORS OF AND D-23 SIMILAR.

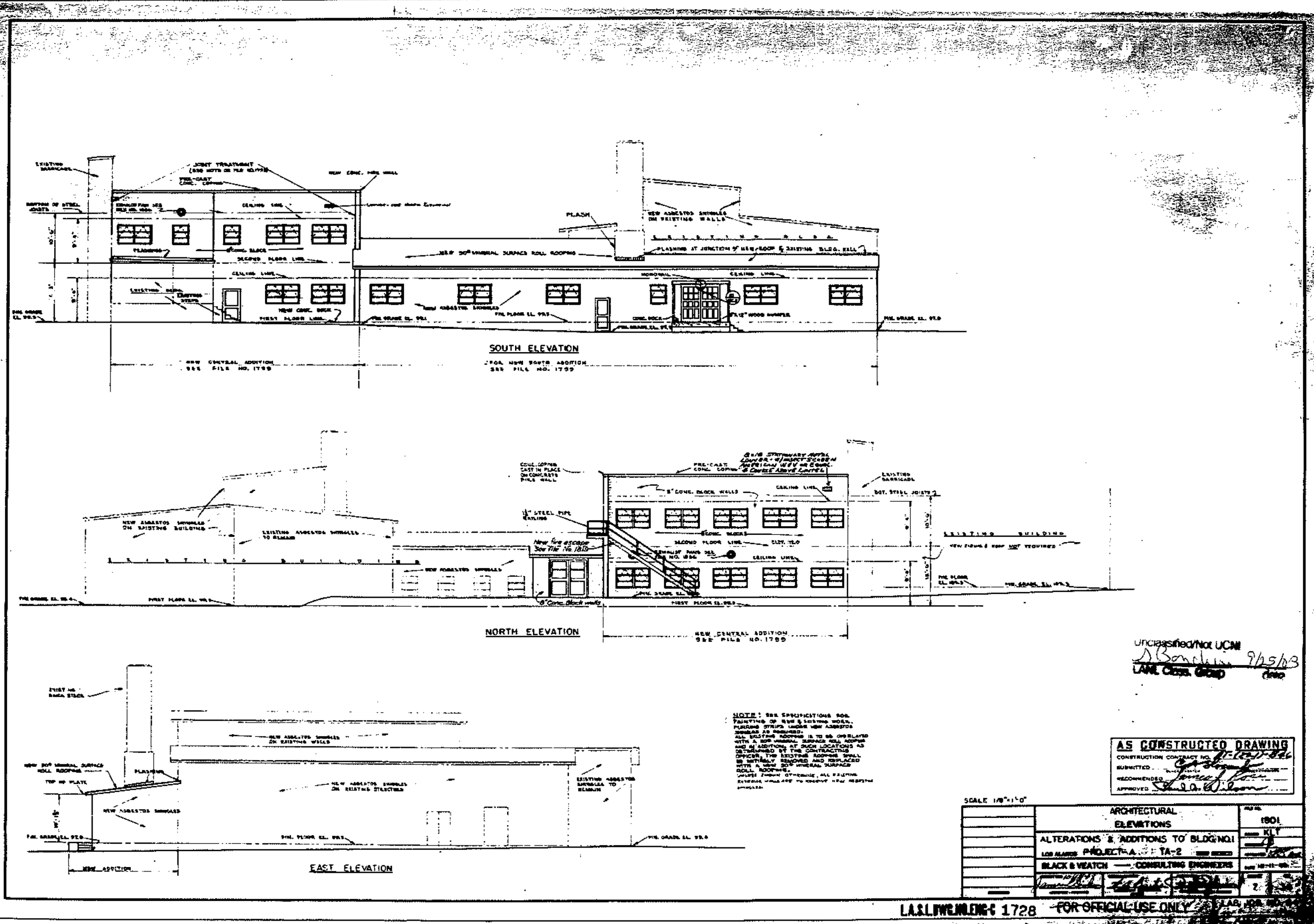
NOTE: TYPE A & B ARE HOLLOW METAL DOORS. TYPE C & G ARE WOOD DOORS - TYPE D, L, & M ARE STEEL DOORS - TYPE E, F, J & K ARE TO BE FURNISHED BY METAL PARTITION MANUFACTURER

Unclassified/Not UCNI 9/25/03 date
LANL Class. Group

AS CONSTRUCTED DRAWING
CONSTRUCTION CONTRACT NO. AT-(29-1)-846
SUBMITTED
RECOMMENDED
APPROVED

ARCHITECTURAL SECOND FLOOR PLAN & SCHEDULES	FILE NO. 1800
ALTERATIONS & ADDITIONS TO BLDG. NO. 1 LOS ALAMOS PROJECT A TA-2 NEW MEXICO	DRAWN GPR
BLACK & VEATCH — CONSULTING ENGINEERS	DATE 10-11-49
	SHEET 4 OF 34

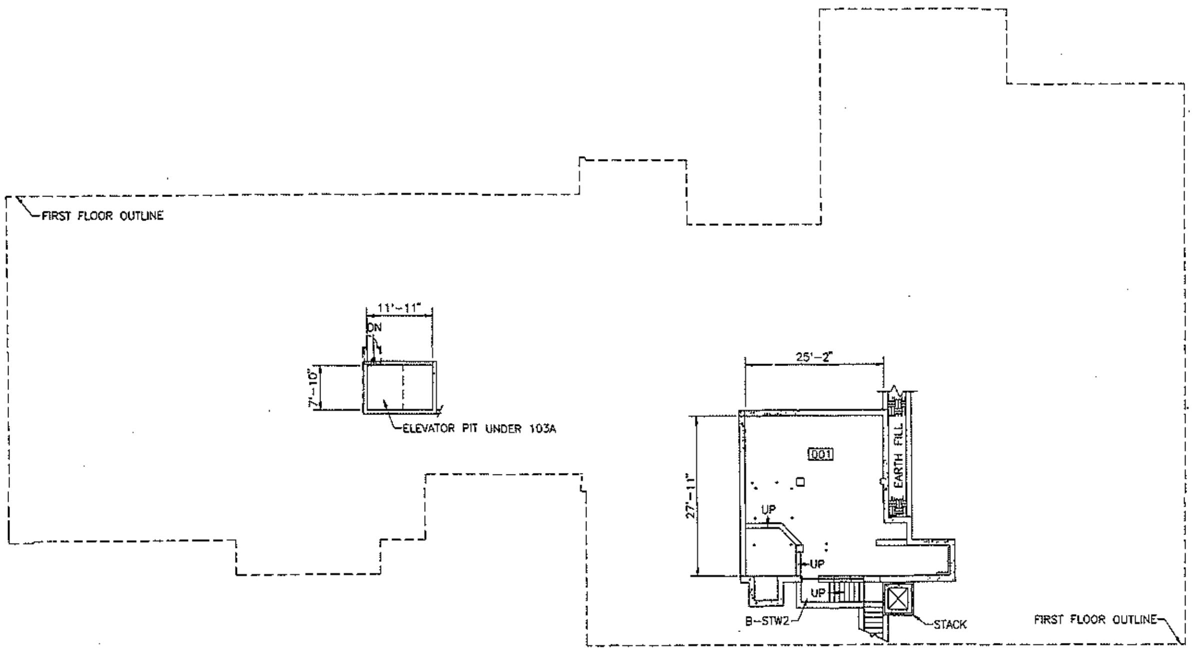
L.A.S.L. DWG. NO. ENG-C 1725 ~~FOR OFFICIAL USE ONLY~~ LAB. JOB NO. - 64


SOUTH ELEVATION
NEW CENTRAL ADDITION SEE FILE NO. 1799
FOR NEW SOUTH ADDITION SEE FILE NO. 1799
NORTH ELEVATION
New fire escape See File No. 1810
NEW CENTRAL ADDITION SEE FILE NO. 1799
EAST ELEVATION
Unclassified/Not UCNI
LANL Class. Group
9/25/03
AS CONSTRUCTED DRAWING
SCALE 1/8"=1'-0"
ARCHITECTURAL ELEVATIONS
ALTERATIONS & ADDITIONS TO BLDG NO.1
PROJECT TA-2
BLACK & VEATCH — CONSULTING ENGINEERS
1801
L.A.S.L. DWG. NO. ENG-C 1728
FOR OFFICIAL USE ONLY

ROOM INFORMATION CHART	
ROOM NUMBER	NET SQUARE FOOTAGE
001	805
ELEV/PIT	94
B-STW2	47

TOTAL ROOM NET SQUARE FOOTAGE = 946

GROSS SQUARE FOOTAGE = 1,123



LEGEND

CONCRETE

COLUMNS

BRICK

NOTES

1. ROOM NET SQUARE FOOTAGE IS COMPUTED BY MEASURING FROM THE INSIDE FACE OF EXTERIOR WALLS TO THE CENTERLINE OF ALL OTHER WALLS.
2. GROSS SQUARE FOOTAGE IS EQUAL TO ALL FLOOR AREA (INCLUDING ALL OPENINGS IN FLOOR SLABS) MEASURED TO THE OUTER SURFACES OF EXTERIOR OR ENCLOSING WALLS, AND INCLUDES ALL FLOORS, MEZZANINES, HALLS, VESTIBULES, STAIRWELLS, SERVICE AND EQUIPMENT ROOMS, PENTHOUSES, ENCLOSED PASSAGES AND WALKS, FINISHED USABLE SPACE WITH SLOPING CEILINGS (SUCH AS ATTIC SPACES) HAVING 5 FEET OR MORE HEADROOM, AND APPENDED COVERED SHIPPING OR RECEIVING PLATFORMS AT TRUCK OR RAILROAD CAR HEIGHT. ALSO INCLUDED IN GROSS FLOOR AREA, BUT CALCULATED ON ONE-HALF OF ACTUAL FLOOR AREA, ARE COVERED OPEN PORCHES, PASSAGES AND WALKS, WITH APPENDED UNCOVERED RECEIVING AND SHIPPING PLATFORMS AT TRUCK AND RAILROAD HEIGHT.

BASEMENT FLOOR PLAN

SCALE: 3/32" = 1'-0"

12 9 6 3 0 12 24 48
GRAPHIC SCALE

N

FIELD VERIFIED 09-27-93

NO	DATE	CLASS REV	DESCRIPTION	DWN	VER	CHKD	REL	SUB	REC	APP

MF

JOHNSON CONTROLS WORLD SERVICES INC.

AS-BUILT RECORD FLOOR PLAN
LABORATORY AND OFFICE BUILDING

ARCH: BASEMENT FLOOR PLAN

DRAWN C. SAMORA
VERIFIED C.C.S/C.D.S
CHECKED C. SANDOVAL
RELEASED H. SALAZAR
DATE 10-27-93

BLDG 01 TA-02

SUBMITTED JERRY FORTE
RECOMMENDED FRED THOMPSON
APPROVED FRED THOMPSON

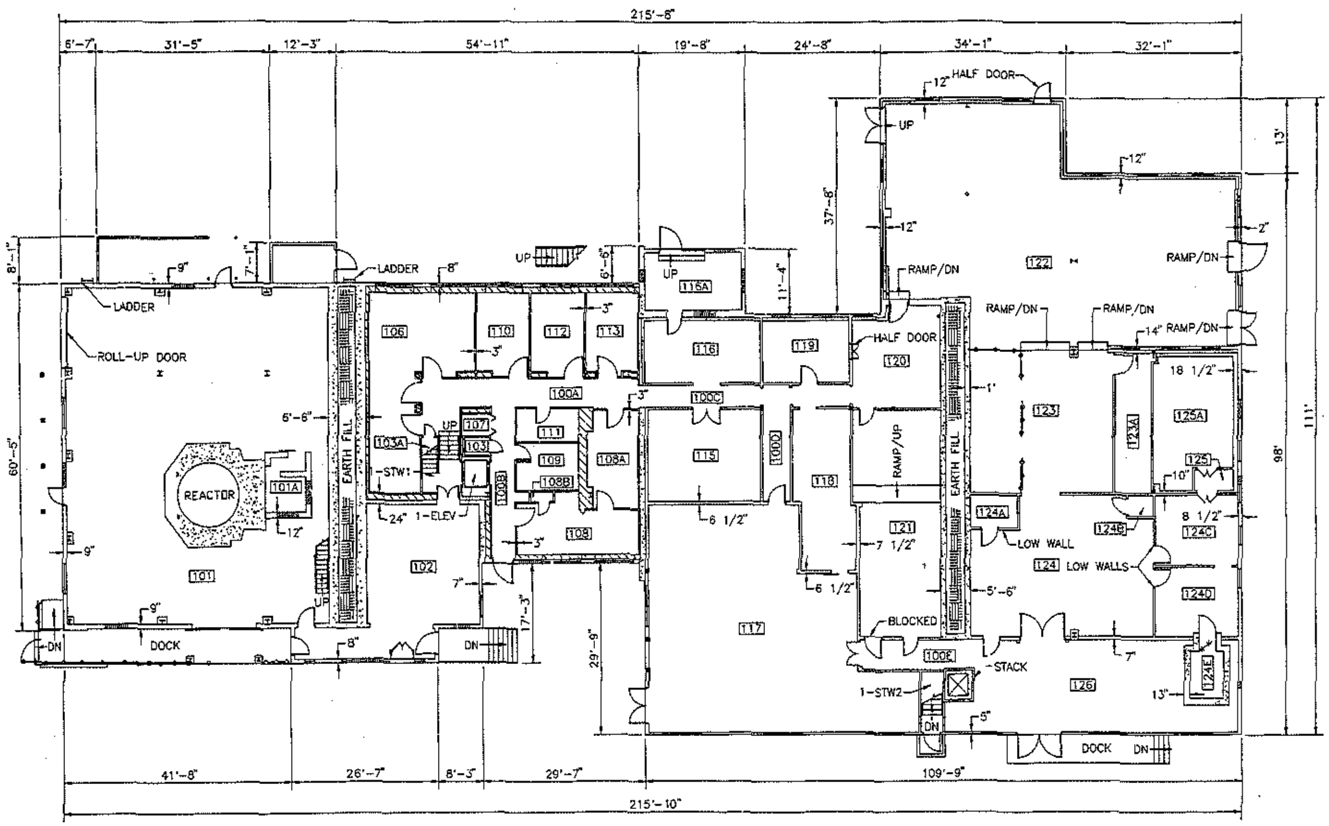
Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

SHEET 1 — 1 OF 3

CLASSIFICATION U REVIEWER H. SALAZAR DATE 12-14-93

PROJECT ID 7556 DRAWING NO AB119 REV

JCI NO 91-011



FIRST FLOOR PLAN

SCALE: 3/32" = 1'-0"

GRAPHIC SCALE

N

ROOM INFORMATION CHART

RM NO	NET SQUARE FOOTAGE	RM NO	NET SQUARE FOOTAGE
100A	251	116A	200
100B	130	117	1,540
100C	164	118	310
100D	89	119	179
100E	115	120	336
101	2,913	121	738
101A	85	122	2,230
102	680	123	737
103	17	123A	181
103A	11	124	829
106	623	124A	71
107	22	124B	20
108	205	124C	196
108A	170	124D	182
108B	9	124E	72
109	97	125	31
110	145	125A	335
111	69	126	777
112	145	1-STW1	69
113	146	1-STW2	48
115	364	1-ELEV	41
116	263	UTILITY	152

TOTAL ROOM NET SQUARE FOOTAGE = 15,997

GROSS SQUARE FOOTAGE = 16,554

LEGEND

- CONCRETE
- CONCRETE BLOCK
- LOUVER
- WOOD OR METAL STUD
- WINDOW
- COLUMNS
- WIRE MESH PARTITION
- I BEAM
- BRICK
- 3" METAL PARTITION
- UTILITY

NOTES

1. ALL INTERIOR WALLS ARE 4 1/2" THICK UNLESS OTHERWISE NOTED.
2. REFERENCE DRAWINGS ENG-C1623, ENG-C1674, AND ENG-R3333.
3. ROOM NET SQUARE FOOTAGE IS COMPUTED BY MEASURING FROM THE INSIDE FACE OF EXTERIOR WALLS TO THE CENTERLINE OF ALL OTHER WALLS.
4. GROSS SQUARE FOOTAGE IS EQUAL TO ALL FLOOR AREA (INCLUDING ALL OPENINGS IN FLOOR SLABS) MEASURED TO THE OUTER SURFACES OF EXTERIOR OR ENCLOSING WALLS, AND INCLUDES ALL FLOORS, MEZZANINES, HALLS, VESTIBULES, STAIRWELLS, SERVICE AND EQUIPMENT ROOMS, PENTHOUSES, ENCLOSED PASSAGES AND WALKS, FINISHED USABLE SPACE WITH SLOPING CEILINGS (SUCH AS ATTIC SPACES) HAVING 5 FEET OR MORE HEADROOM, AND APPENDED COVERED SHIPPING OR RECEIVING PLATFORMS AT TRUCK OR RAILROAD CAR HEIGHT. ALSO INCLUDED IN GROSS FLOOR AREA, BUT CALCULATED ON ONE-HALF OF ACTUAL FLOOR AREA, ARE COVERED OPEN PORCHES, PASSAGES AND WALKS, WITH APPENDED UNCOVERED RECEIVING AND SHIPPING PLATFORMS AT TRUCK AND RAILROAD HEIGHT.

NO	DATE	CLASS REV	DESCRIPTION	DWN	VER	CHKD	REL	SUB	REC	APP

JOHNSON CONTROLS WORLD SERVICES INC.

AS-BUILT RECORD FLOOR PLAN
LABORATORY AND OFFICE BUILDING

ARCH: FIRST FLOOR PLAN

DRAWN	C. SAMORA
VERIFIED	C.E.S/C.D.S
CHECKED	C. SANDOVAL
RELEASED	H. SALAZAR
DATE	10-27-93

BLDG 01 TA-02

SUBMITTED JERRY FORTE — RECOMMENDED FRED THOMPSON — APPROVED FRED THOMPSON

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

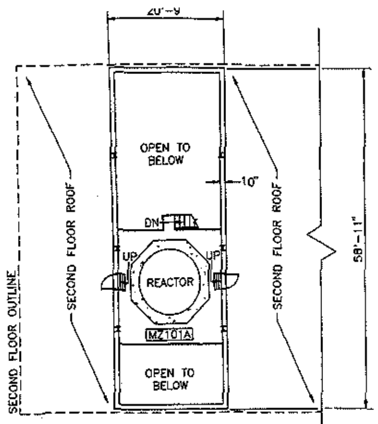
SHEET 2 — 2 OF 3

CLASSIFICATION U — REVIEWER — REVIEWER — DATE 3-14-95

PROJECT ID 7556 — DRAWING NO AB119 — REV

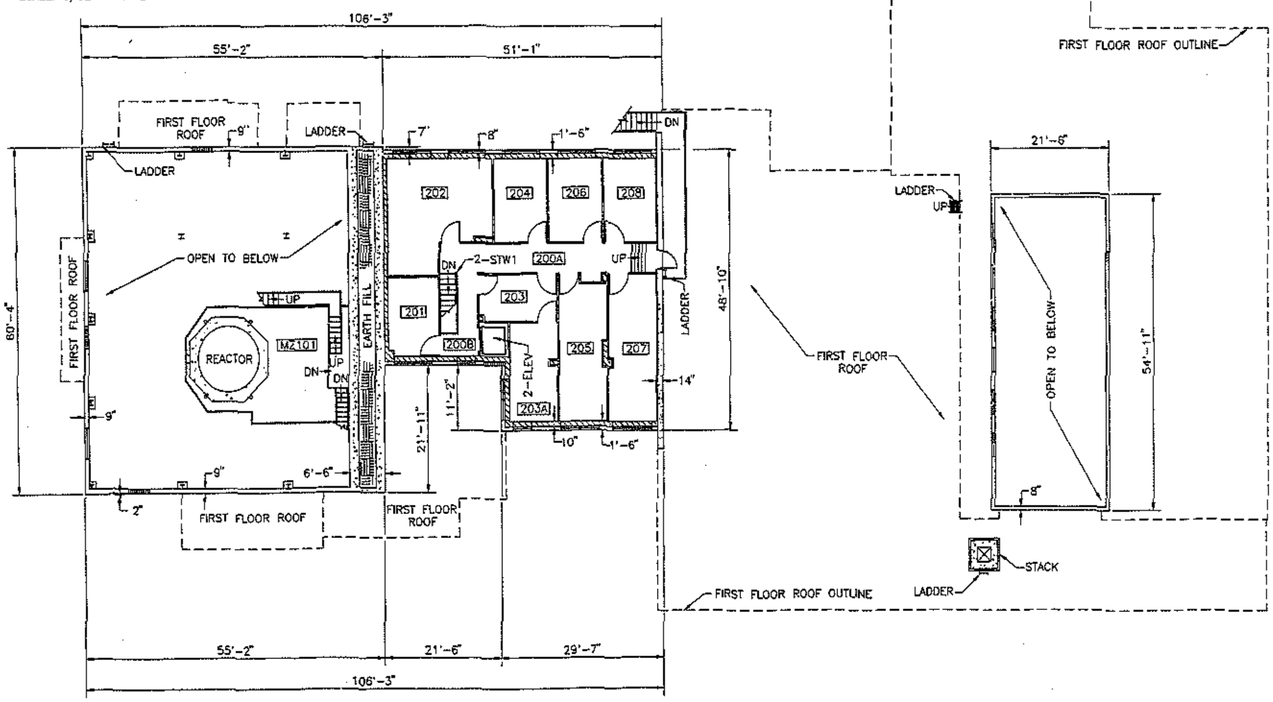
FIELD VERIFIED 09-14-93

JCI NO 91-011



MEZZANINE 101A ABOVE MZ101

SCALE: 3/32" = 1'-0"



SECOND FLOOR PLAN

SCALE: 3/32" = 1'-0"

12 9 6 3 0 12 24 48
GRAPHIC SCALE

N

ROOM INFORMATION CHART

RM NO	NET SQUARE FOOTAGE	RM NO	NET SQUARE FOOTAGE
200A	182	206	149
200B	110	207	226
201	131	208	142
202	341	MZ101	425
203	121	MZ101A	380
203A	152	2-STW1	33
204	148	2-ELEV	33
205	219	UTILITY	135

TOTAL ROOM NET SQUARE FOOTAGE = 2,927

GROSS SQUARE FOOTAGE = 7,969

LEGEND

CONCRETE
CONCRETE BLOCK
WINDOW
COLUMNS
I BEAM
BRICK
3" METAL PARTITION
WOOD AND METAL PARTION
UTILITY
LOUVER

NOTES

1. ALL INTERIOR WALLS ARE 3" THICK UNLESS OTHERWISE NOTED.
2. REFERENCE DRAWINGS ENG-R3334 AND ENG-C1725.
3. ROOM NET SQUARE FOOTAGE IS COMPUTED BY MEASURING FROM THE INSIDE FACE OF EXTERIOR WALLS TO THE CENTERLINE OF ALL OTHER WALLS.
4. GROSS SQUARE FOOTAGE IS EQUAL TO ALL FLOOR AREA (INCLUDING ALL OPENINGS IN FLOOR SLABS) MEASURED TO THE OUTER SURFACES OF EXTERIOR OR ENCLOSING WALLS, AND INCLUDES ALL FLOORS, MEZZANINES, HALLS, VESTIBULES, STAIRWELLS, SERVICE AND EQUIPMENT ROOMS, PENTHOUSES, ENCLOSED PASSAGES AND WALKS, FINISHED USABLE SPACE WITH SLOPING CEILINGS (SUCH AS ATTIC SPACES) HAVING 5 FEET OR MORE HEADROOM, AND APPENDED COVERED SHIPPING OR RECEIVING PLATFORMS AT TRUCK OR RAILROAD CAR HEIGHT. ALSO INCLUDED IN GROSS FLOOR AREA, BUT CALCULATED ON ONE-HALF OF ACTUAL FLOOR AREA, ARE COVERED OPEN PORCHES, PASSAGES AND WALKS, WITH APPENDED UNCOVERED RECEIVING AND SHIPPING PLATFORMS AT TRUCK AND RAILROAD HEIGHT.

NO	DATE	CLASS REV	DESCRIPTION	DWN	VER	CHKD	REL	SUB	REC	APP

NF

JOHNSON CONTROLS WORLD SERVICES INC.

AS-BUILT RECORD FLOOR PLAN
LABORATORY AND OFFICE BUILDING
ARCH: SECOND AND MEZZANINE FLOOR PLAN

DRAWN C. SAMORA
VERIFIED C.S/C.D.S
CHECKED C. SANDOVAL
RELEASED H. SALAZAR H. Sal
DATE 10-27-93

BLDG 01 TA-02

SUBMITTED JERRY FORTE
RECOMMENDED FRED THOMPSON 12/15/93
APPROVED FRED THOMPSON 12/16/93

Los Alamos — Los Alamos National Laboratory, Los Alamos, New Mexico 87545

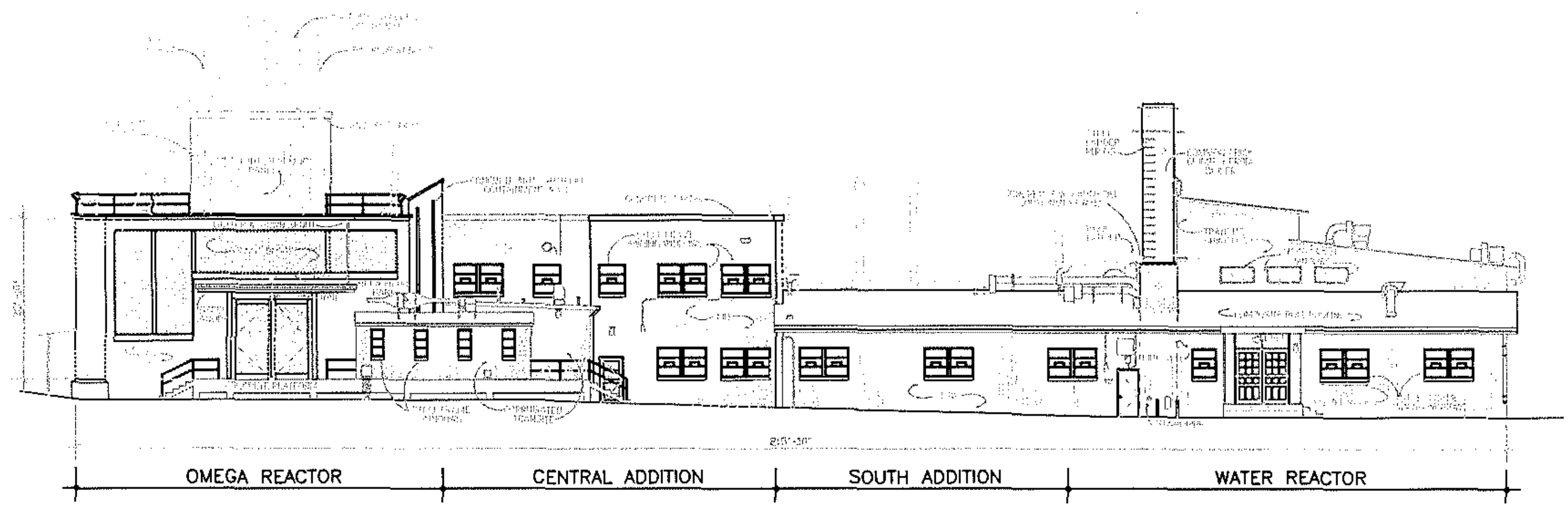
SHEET 3 — 3 OF 3

CLASSIFICATION U REVIEWER H. SALAZAR H. Sal DATE 12-14-93

PROJECT ID 7556 DRAWING NO AB119 REV

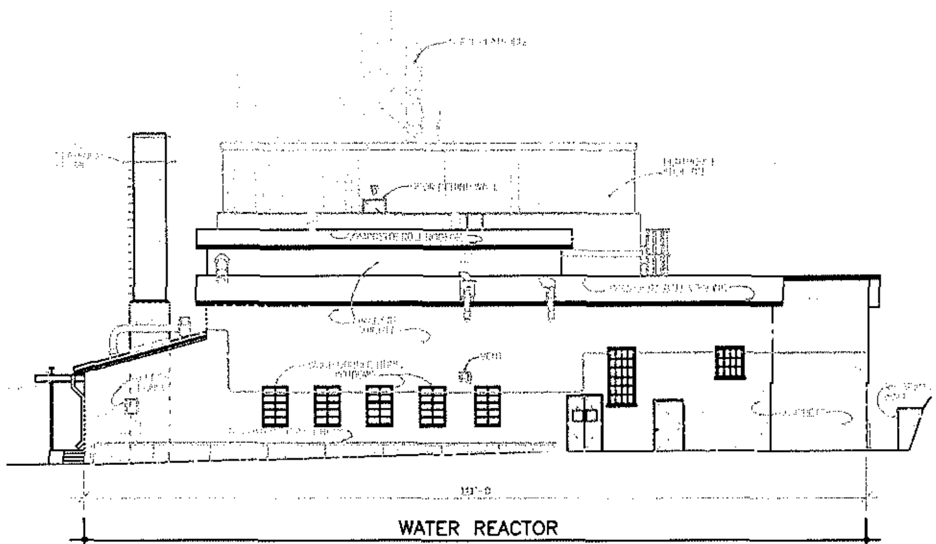
FIELD VERIFIED 09-14-93

JCI NO 91-011



SOUTH ELEVATION (1 / A-1)
SCALE: 1/8"=1'-0

DATA: 21,337 GROSS SF
17,762 NET SF



EAST ELEVATION (2 / A-1)
SCALE: 1/8"=1'-0

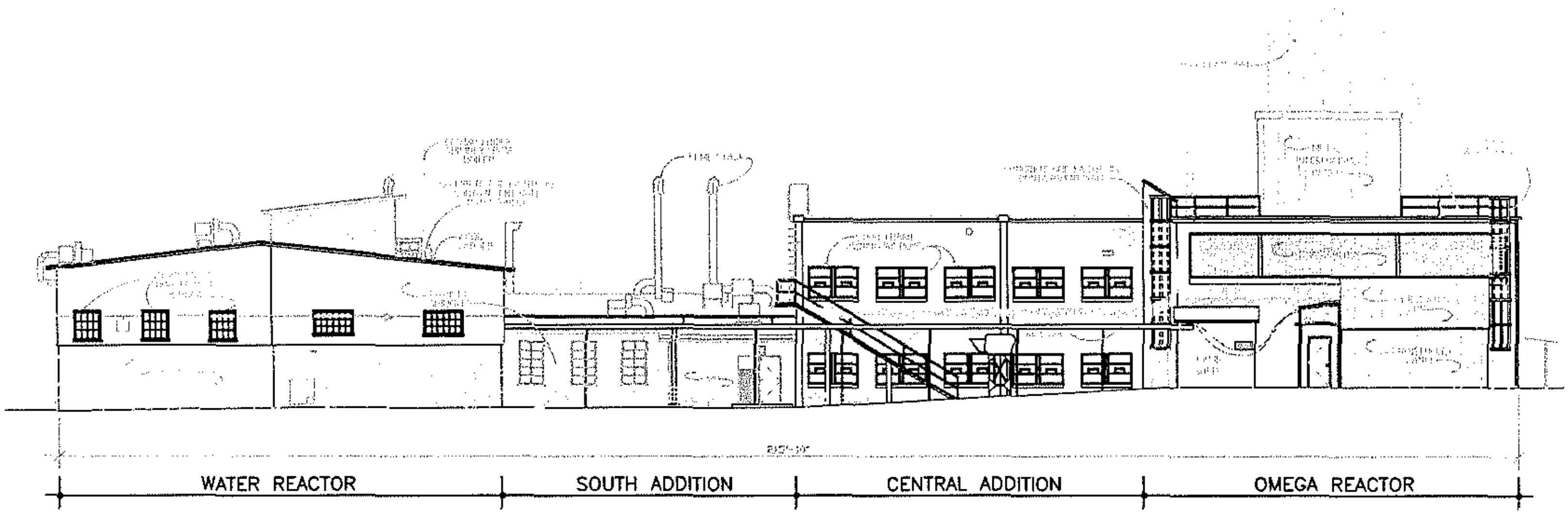
OMEGA WEST REACTOR
HISTORIC CONTEXT

BLDG 01 TA-02

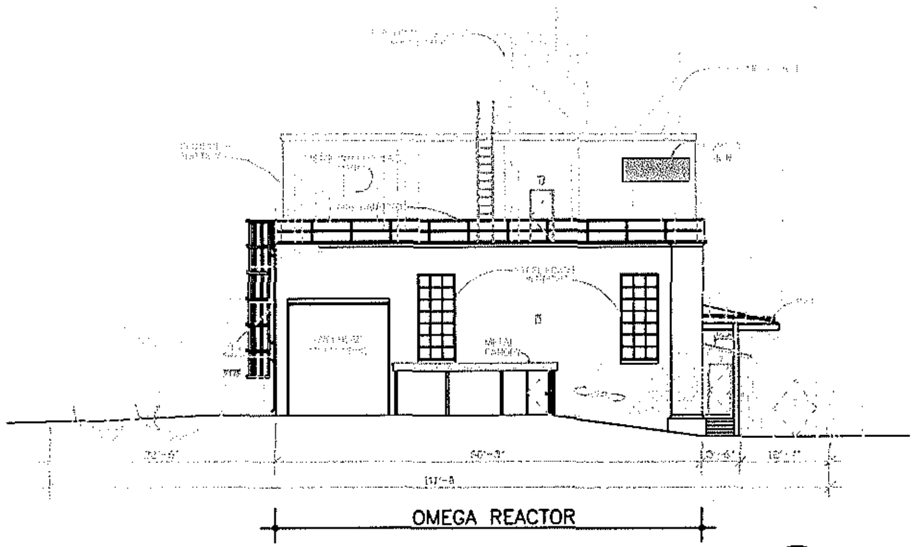
SHEET A-1
1 of 2

Los Alamos National Laboratory

LA-UR-03-0200



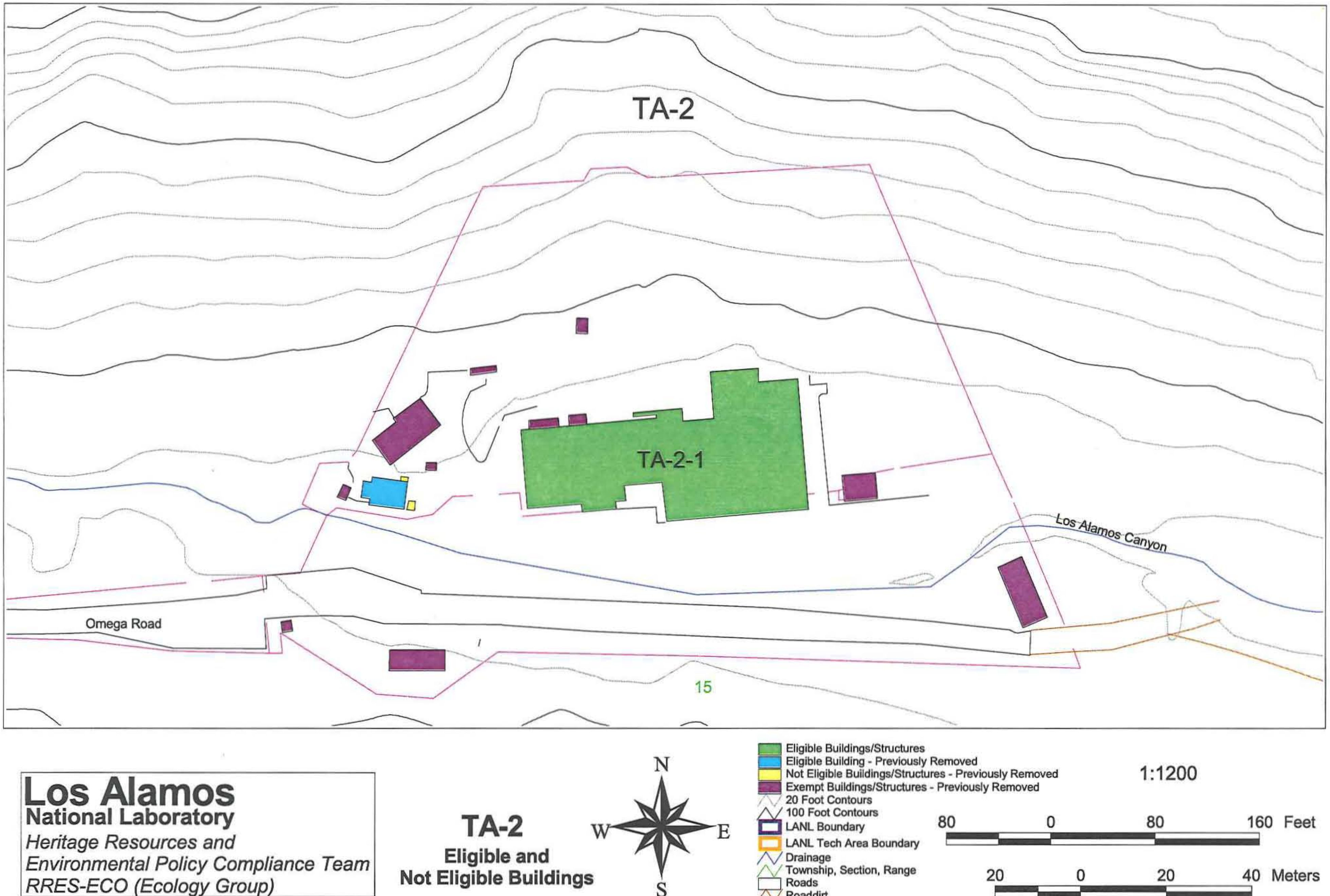
NORTH ELEVATION (1, A-2)
SCALE: 1/8"=1'-0



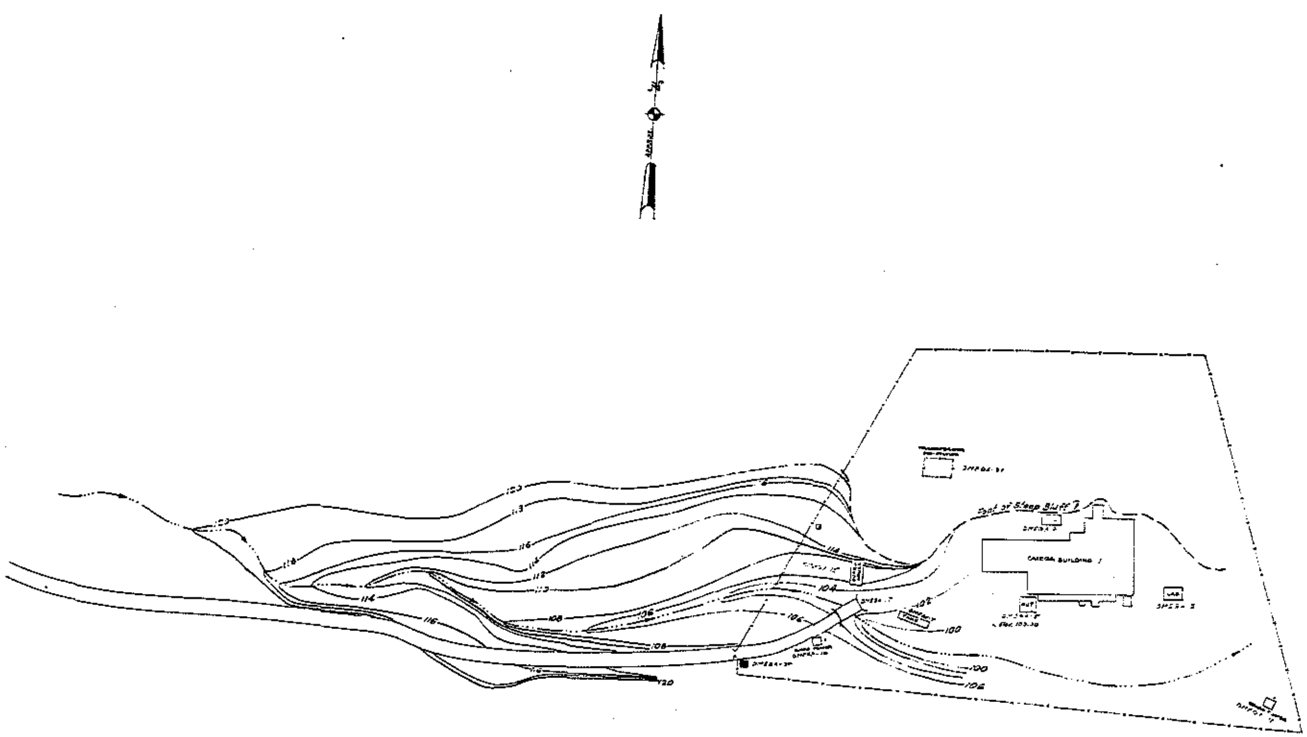
WEST ELEVATION (2, A-2)
SCALE: 1/8"=1'-0

OMEGA WEST REACTOR HISTORIC CONTEXT	DRAWN: K. HOMB
	DESIGN: —
	CHECKED: K. TOWERY
BLDG 01 TA-02	DATE: JAN 03
SUBMITTED	APPROVED FOR RELEASE
Los Alamos NATIONAL LABORATORY, PO Box 1663, Los Alamos, New Mexico 87545	SHEET A-2
	2 of 2
CLASSIFICATION U / REVIEWER MIKE RAGSDALE	DATE 13 JAN 03
LA-UR-03-0200	

Appendix B: Maps Showing TA-2's Construction History and Location of Eligible and Non-Eligible Properties


TA-2
TA-2-1
Los Alamos Canyon
Omega Road
15
Los Alamos
National Laboratory
Heritage Resources and
Environmental Policy Compliance Team
RRES-ECO (Ecology Group)
TA-2
Eligible and
Not Eligible Buildings
N
W
E
S
Eligible Buildings/Structures
Eligible Building - Previously Removed
Not Eligible Buildings/Structures - Previously Removed
Exempt Buildings/Structures - Previously Removed
20 Foot Contours
100 Foot Contours
LANL Boundary
LANL Tech Area Boundary
Drainage
Township, Section, Range
Roads
Roaddirt
Parkpave
Fences
1:1200
80 0 80 160 Feet
20 0 20 40 Meters

B-1



Omega Area
TA-2
October 1, 1944

DATE	NO.	REVISIONS	BY	APPROV.

U. S. ENGINEER OFFICE
SANTA FE, NEW MEXICO

TOPOGRAPHY
OMEGA AREA - T.A.-2

SHEETS | SCALE 1" = 50' | SHEET No.

OFFICE OF POST ENGINEER OCT. 1, 1944

SUBMITTED BY | APPROV. RECOM'D | APPROVED BY

FILE NO. PE O-

2050

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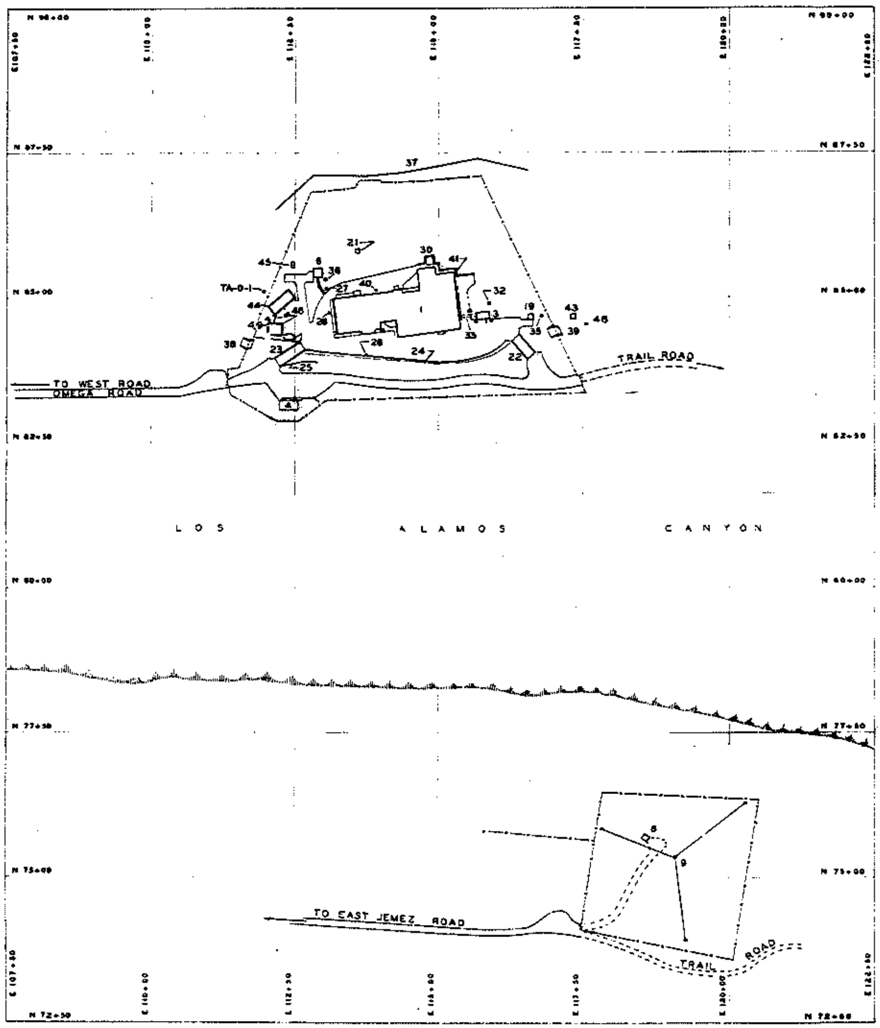

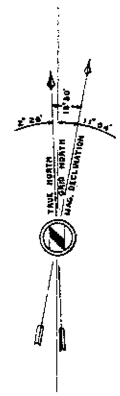

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-0-1	ULR-1	MANHOLE (PRV)

STRUCTURE NUMBER	DESIGNATION	REMARKS
TA-2-1	OMEGA-1	MAIN BUILDING
TA-2-2	OMEGA-2	GENERATOR BUILDING (REMOVED) 1946
TA-2-3	OMEGA-3	CHEMISTRY BUILDING
TA-2-4	OMEGA-4	LABORATORY
TA-2-5	OMEGA-5	STORAGE BUILDING (REMOVED) 1949
TA-2-6	OMEGA-6	DIESEL HOUSE
TA-2-7	OMEGA-7	BUTANE GAS SHELTER (REMOVED) 1950
TA-2-8	OMEGA-8	BLOWER HOUSE
TA-2-9	OMEGA-9	MAST
TA-2-10	OMEGA-10	GUARD TOWER A (REMOVED) 1949
TA-2-11	OMEGA-11	GUARD TOWER B (REMOVED) 1949
TA-2-12	OMEGA-12	GUARD BUILDING (REMOVED) 1955
TA-2-13	OMEGA-13	FIREHOSE HOUSE (REMOVED) 1950
TA-2-14	OMEGA-14	OFFICE BUILDING-TEMP. 3-HUTS (REMOVED) 1950
TA-2-15	OMEGA-15	GUARD QUARTERS (REMOVED) 1946
TA-2-16	OMEGA-16	RADIATION BARRICADE (REMOVED) 1958
TA-2-17	OMEGA-17	BRIDGE (REMOVED) 1950
TA-2-18	OMEGA-18	BRIDGE (REMOVED) 1950
TA-2-19	OMEGA-19	STACK GAS VALVE HOUSE
TA-2-20	OMEGA-20	WATER LINE VALVE HOUSE (REMOVED) 1950
TA-2-21	OMEGA-21	WATER LINE VALVE HOUSE
TA-2-22	OMEGA-22	BRIDGE (EAST)
TA-2-23	OMEGA-23	BRIDGE (WEST)
TA-2-24	OMEGA-24	RETAINING WALL (NORTH BANK)
TA-2-25	OMEGA-25	RETAINING WALL (SOUTH BANK)
TA-2-26	OMEGA-26	SALVAGE BASIN
TA-2-27	OMEGA-27	DROP INLET
TA-2-28	OMEGA-28	SURFACE INLET
TA-2-29	OMEGA-29	1000 GAL. FUEL OIL TANK (REMOVED) 1950
TA-2-30	OMEGA-30	BEAM TRAP
TA-2-31	OMEGA-31	TRANSFORMER STATION (REMOVED) 1950
TA-2-32	OMEGA-32	UNDERGROUND CHAMBER
TA-2-33	OMEGA-33	PIPE TRENCH
TA-2-34	OMEGA-34	GUARD HOUSE (REMOVED) 1945
TA-2-35	OMEGA-35	DRAINAGE BASIN
TA-2-36	OMEGA-36	DROP INLET
TA-2-37	OMEGA-37	ROCK CATCHER
TA-2-38	OMEGA-38	STREAM DEBRIS CATCHER - B
TA-2-39	OMEGA-39	STREAM DEBRIS CATCHER - A
TA-2-40	OMEGA-40	MANHOLE (GAS PRV)
TA-2-41	OMEGA-41	RETAINING WALL
TA-2-42	OMEGA-42	GUARD HOUSE (CANCELLED)
TA-2-43	OMEGA-43	SEPTIC TANK (SANITARY)
TA-2-44	OMEGA-44	EQUIPMENT BUILDING
TA-2-45	OMEGA-45	TRANSFORMER STATION
TA-2-46	OMEGA-46	SURGE TANK
TA-2-47	OMEGA-47	MANHOLE (WATER)
TA-2-48	OMEGA-48	MANHOLE (ACID)
TA-2-49	OMEGA-49	COOLING TOWER

VOID - SEE REV. 10, ENG. Z-2408 & ENG. R-2409

NO.	DATE	REVISIONS	BY	CHKD	APP.
9	9-1-59	REVISED TO STATUS OF 9-1-59	DOS		
8	7-1-57	REVISED TO STATUS OF 7-1-57	DOS	NB	
7	9-9-55	REDRAWN TO STATUS OF JULY 1, 1955	HOS	JAS	

AUTHORIZED FOR: HEALTH / SAFETY / FIRE PROT. / ARC.

LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
ENGINEERING DEPARTMENT — LOS ALAMOS, N. M.

STRUCTURE LOCATION PLAN
TA-2 OMEGA SITE

DRAWN: H. BYERS — DATE: 9/9/55 — SCALE: 1" = 100' — SHEET 1 OF 1 — ENG- R 114

LAB. JOB NO.

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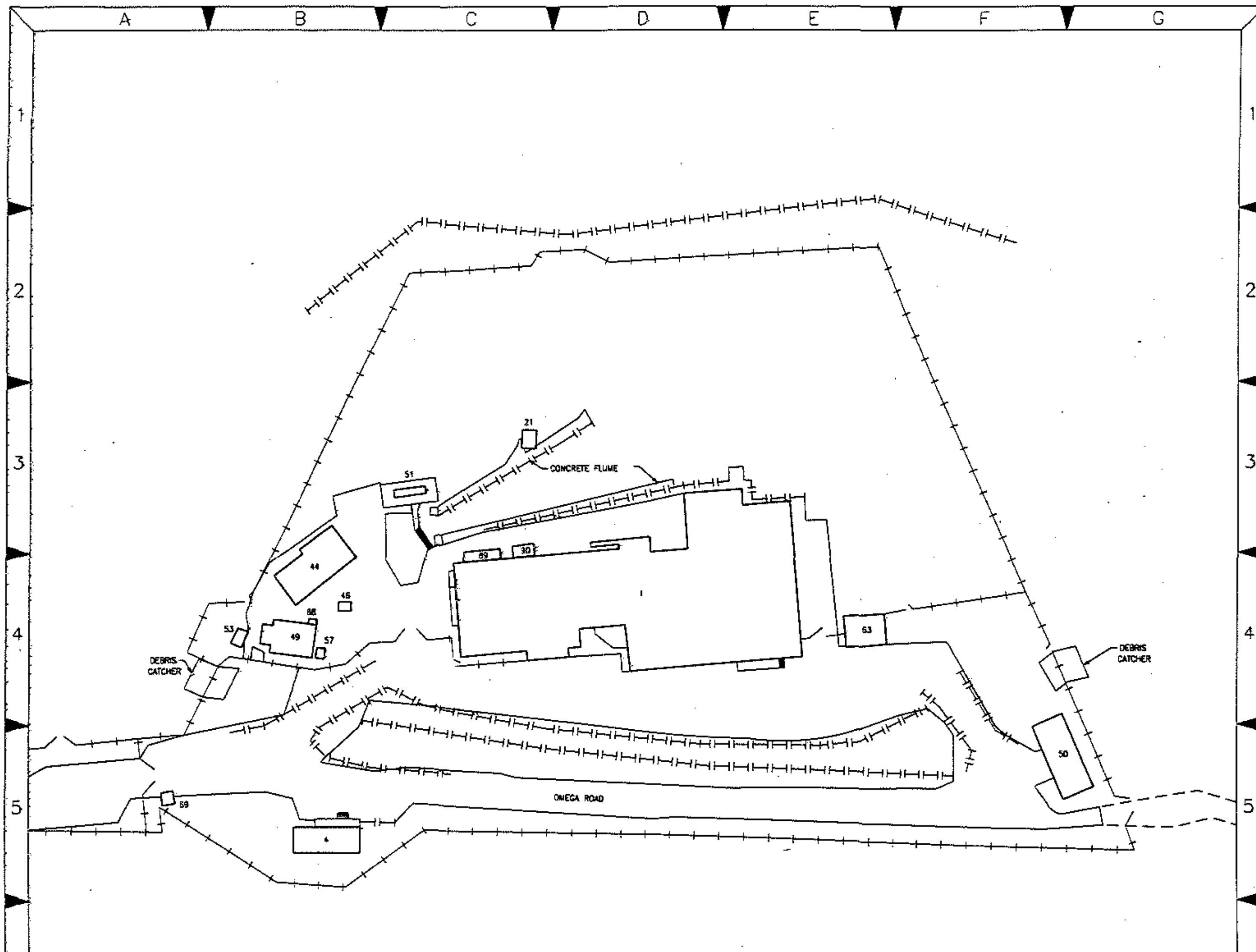
SLB 9/20/04

TA-2
Omega Site
Structure Location Plan
September 9, 1955
Revised to status of September 1, 1959



TA-2
Omega Site
Structure Location Map
November 8, 1993
Revised to status of October 20, 1999

KEY MAP

SHEET 2

STRUCTURE LOCATION INDEX

STRUCTURE TA-#	STRUCTURE DESIGNATION	STRUCTURE NOMENCLATURE	STRUCTURE LOCATOR SHEET NO.	STRUCTURE LOCATOR MAP KEY
02-1	OMEGA-1	OMEGA WEST REACTOR	2	D-4
02-4	OMEGA-4	STORAGE BUILDING	2	B-5
02-21	OMEGA-21	WATER LINE VALVE HOUSE	2	C-3
02-44	OMEGA-44	COOLING SYSTEM BUILDING	2	B-4
02-46	02-46	SURGE TANK	2	B-4
02-49	02-49	COOLING TOWER	2	B-4
02-50	OMEGA-50	STORAGE BUILDING	2	G-5
02-51	OMEGA-51	SUBSTATION	2	C-3
02-53	OMEGA-53	TRANSFER PIT	2	B-4
02-57	OMEGA-57	VALVE HOUSE	2	B-4
02-63	OMEGA-63	BOILER HOUSE	2	E-4
02-69	02-69	GUARD STATION #316	2	A-5
02-88	02-88	STORAGE BUILDING	2	B-4
02-89	02-89	STORAGE BUILDING	2	C-4
02-90	02-90	STORAGE SHED	2	C-3

SCALE: 1:360
30 0 30 50
FEET

N

NO	DATE	CLASS REV	DESCRIPTION	DWN	VER	CHKD	SUB	APP
2	10-28-99		REVISED TO STATUS OF 10-20-99	[illegible]	[illegible]	CES	HMS	[illegible]
1	05-16-94		REVISED TO STATUS OF 05-16-94	HMS	JPM	JPM	JAF	FCT

Johnson Controls
Northern New Mexico

AS-BUILT STRUCTURE LOCATION MAPS
TA-02
OMEGA SITE

DRAWN	J. WORK
VERIFIED	J. WORK
CHECKED	H. SALAZAR
DATE	11-08-93

SUBMITTED HAROLD SALAZAR
APPROVED FOR RELEASE LARRY BAYS

Los Alamos Los Alamos National Laboratory, Los Alamos, New Mexico 87545
SHEET 2 of 2

CLASSIFICATION UU REVIEWER HAROLD SALAZAR DATE 12-16-99
PROJECT ID 11952 DRAWING NO AB12 REV 2
JO NO 91-020

Appendix C: Interview Information

Oral Histories

Neely, Glenn
2002 Interview with Ken Towery and Ellen McGehee. Notes of August 15, 2002 interview with Glenn Neely on file at RRES-ECO, Los Alamos National Laboratory, Los Alamos, New Mexico.

Yarnell, John
2002 Interview with John Ronquillo and Ken Towery. Recording of September 2002 interview with John Yarnell on file at RRES-ECO, Los Alamos National Laboratory, Los Alamos, New Mexico.

Appendix D: Listing of Drawings on File at LANL for TA-2-1

REPORT FOR: DRAWINGS

TA	BLDG	PREFIX	DRAWNUM	PAGE	REV	DSHEET	LOG_DATE	DOC_DATE	PROJID	DISC	TITLE
2	1	AB	66	3	0		03-NOV-92	30-SEP-92	12135	M	AS-BUILT FACILITY STACK OMEGA 1, STACK; TA-2-1, FE-18
2	1	AB	66	4	0		03-NOV-92	30-SEP-92	12135	M	AS-BUILT FACILITY STACK OMEGA 1, STACK; TA-2-1, FE-21
2	1	AB	66	2	0		03-NOV-92	30-SEP-92	12135	M	AS-BUILT FACILITY STACK OMEGA 1, STACK; TA-2-1, FE-1
2	1	AB	66	1	0		03-NOV-92	30-SEP-92	12135	M	AS-BUILT FACILITY STACK, OMEGA 1, TA-2 & TA-61, STACK; TA-2-1, FE-1
2	1	AB	119	1	0		18-JAN-94	27-OCT-93	7556	A	AS-BUILT RECORD FLOOR PLAN LABORATORY AND OFFICE BUILDING, BASEMENT FLOOR PLAN
2	1	AB	119	2	0		18-JAN-94	27-OCT-93	7556	A	AS-BUILT RECORD FLOOR PLAN LABORATORY AND OFFICE BLDG., FIRST FLOOR PLAN
2	1	AB	119	3	0		18-JAN-94	27-OCT-93	7556	A	AS-BUILT RECORD FLOOR PLAN LABORATORY AND OFFICE BLDG., SECOND AND MEZZANINE FLOOR PLAN
2	1	C	32	1	0		21-OCT-46	23-SEP-46	0	S	REVISED TROLLEY HOIST FOR FAST REACTOR, BLDG. OMEGA-1
2	1	C	56	1	0		20-JUN-47	18-JUN-47	39	A	FAST REACTOR BLDG. 1, OMEGA SITE, RAILINGS, FITTINGS & SOCKET DETAILS
2	1	C	57	1	3		21-JUL-47	17-JUL-47	39	S	CONCRETE SHIELD FAST REACTOR BLDG. #1 OMEGA SITE, PLAN & SECTIONS
2	1	C	58	1	3		07-JUL-47	03-JUL-47	39	S	CONCRETE SHIELD FAST REACTOR BLDG. 1 OMEGA SITE, STEEL DETAILS
2	1	C	250	1	0		21-MAR-49	02-JAN-49	189	C	ADDITION TO BLDG. 1, OMEGA SITE. PLOT PLAN & SECTIONS
2	1	C	251	2	0		21-MAR-49	17-NOV-48	189	A	ADDITION TO BLDG. #1, OMEGA SITE. FOUNDATION PLAN & DETAILS
2	1	C	252	3	0		21-MAR-49	18-NOV-48	189	A	ADDITION TO BLDG. #1, OMEGA SITE. PLAN & ELEVATION
2	1	C	253	4	0		21-MAR-49	18-NOV-48	189	S	ADDITION TO BLDG. #1, OMEGA SITE. STRUCTURAL SECTIONS
2	1	C	254	5	0		21-MAR-49	15-JAN-49	189	A	ADDITION TO BLDG. #1, OMEGA SITE. STAIR & DOOR DETAILS
2	1	C	255	6	0		21-MAR-49	15-DEC-48	189	A	ADDITION TO BLDG. #1, OMEGA SITE. STEEL DETAILS
2	1	C	256	7	0		21-MAR-49	27-JAN-49	189	S	ADDITION TO BLDG. #1, OMEGA SITE. MONORAIL & JIB CRANE DETAILS
2	1	C	257	8	0		21-MAR-49	21-JAN-49	189	M	ADDITION TO BLDG. #1, OMEGA SITE. HEATING
2	1	C	258	9	0		21-MAR-49	21-DEC-48	189	E	ADDITION TO BLDG. #1, OMEGA SITE. ELECTRICAL
2	1	C	400	1	0		05-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. PLOT PLAN, FOUNDATION PLAN & SECT.
2	1	C	401	2	0		05-AUG-49	05-AUG-49	64	A	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRE-PRELIM) FLOOR PLAN & ELEVATION
2	1	C	402	3	0		05-AUG-49	04-AUG-49	64	A	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRE-PRELIM) SECTIONS & DETAILS

2	1	C	403	4	0	05-AUG-49	05-AUG-49	64	M	MECH.- ALTERATIONS & ADDITIONS TO OMEGA-1 HEATING & ELECTRICAL PLAN
2	1	C	404	5	0	05-AUG-49	05-AUG-49	64	A	ALTER. & ADD. TO OMEGA 1 (PRE-PRELIM) SOUTH ELEVATION
2	1	C	405	6	0	05-AUG-49	05-AUG-49	64	A	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRELIM) 1ST FLOOR PLAN
2	1	C	406	7	0	05-AUG-49	05-AUG-49	64	A	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRELIM) 2ND FLOOR PLAN
2	1	C	407	8	0	05-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. STRUCTURAL 1ST FLOOR FRAMING PLAN
2	1	C	408	9	0	04-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. STRUCTURAL 2ND FLOOR FRAMING PLAN
2	1	C	409	10	0	05-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. STRUCTURAL, ROOF FRAMING PLAN
2	1	C	410	11	0	05-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRELIM) STRUCTURAL SECTIONS
2	1	C	411	12	0	05-AUG-49	05-AUG-49	64	S	ALTERATIONS & ADDITIONS TO OMEGA 1. (PRELIM) STRUCTURAL ELEVATIONS
2	1	C	412	13	0	05-AUG-49	05-AUG-49	64	S	STRUCT.- ALTERATIONS & ADDITIONS TO OMEGA 1. STRUCTURAL, BRACING DETAILS
2	1	C	714	1	2	12-APR-50	12-APR-50	517	M	RENOVATIONS TO ROOM 11, BLDG. OMEGA 1. LOCATION, FLOOR, HEATING & PIPING PLANS
2	1	C	715	2	2	12-APR-50	12-APR-50	517	M	RENOVATIONS TO ROOM 11, BLDG. OMEGA 1. ROOM SECTION & DUCT DETAILS
2	1	C	716	3	2	15-APR-50	15-APR-50	517	E	RENOVATIONS TO ROOM 11, BLDG. OMEGA 1. ELECTRIC PLAN & COUNTERTOP DETAILS
2	1	C	806	1	1	13-MAY-50	29-JAN-51	263	G	WATER COOLER & FILTER, BLDG. OMEGA 1
2	1	C	907	1	1	26-JUL-50	19-APR-51	590	A	INTERIOR ALTERATIONS., BLDG OMEGA-1. LOCATION PLAN, FLOOR PLAN & SECTION
2	1	C	908	2	1	26-JUL-50	14-APR-51	590	S	INTERIOR ALTERATIONS, BLDG. OMEGA-1. ROOF PLAN AND DETS.
2	1	C	926	1	1	12-APR-51	19-JAN-56	845	A	JIB CRANE INSTALLATION, BLDG. OMEGA-1. FLOOR PLAN & CRANE DETAILS
2	1	C	979	1	1	06-SEP-50	06-SEP-50	639	A	BENCH INSTALLATION & ALTERATION, RM. 101, BLDG. OMEGA-1
2	1	C	1262	1	0	12-MAY-53	06-MAR-51	791	M	METAL HOOD & REVISIONS TO UTILITY SYSTEM, RM. 124, PLUMBING & ELECTRICAL DETAILS, BLOWER & HOOD DETAILS
2	1	C	1328	1	1	12-MAY-53	09-MAY-51	847	AC	ALTERATIONS TO AIR EXHAUST SYSTEM, OMEGA-1, PARTIAL FIRST FLOOR PLAN, CONCRETE FAN BASE,

2	1	C	1329	1	0	12-MAY-53	17-APR-51	822	E	POWER DRIVE FOR CRANE IN REACTOR ROOM, OMEGA BLDG.. SINGLE LINE DIAGRAM, FLOOR PLAN
2	1	C	1664	1	0	12-MAY-53	01-AUG-43	0	C	BLDG. OMEGA 1, TA-2. TOPOGRAPHY & GAS CYLINDER
2	1	C	1665	1	0	12-MAY-53	01-AUG-43	0	M	BLDG. OMEGA 1, TA-2. TRAVELING CRANE, GUSSETT, PLATE, HANGERS, TRUSS ELEVATIONS
2	1	C	1666	1	0	12-MAY-53	01-AUG-43	0	A	BLDG. OMEGA 1, TA-2. TIMBER TRUSS, PLAN BOT CHORD
2	1	C	1668	1	0	12-MAY-53	16-OCT-43	0	S	BLDG. OMEGA 1, TA-2. TRUSS & COLUMN DETAILS
2	1	C	1669	1	0	12-MAY-53	18-OCT-43	0	E	BLDG. OMEGA 1, TA-2. ELECTRIC SYSTEM, BASEMENT & 1ST FLOOR PLAN
2	1	C	1670	1	0	12-MAY-53	18-OCT-43	0	A	BLDG. OMEGA 1, TA-2. ELEVATIONS
2	1	C	1671	1	0	12-MAY-53	18-OCT-43	0	E	BLDG. 1, TA-2. ELECTRIC SYSTEM LAYOUT, BASEMENT & FIRST FLOOR PLAN
2	1	C	1672	1	0	12-MAY-53	18-OCT-43	0	S	BLDG. OMEGA 1, TA-2. FOOTING & BASEMENT PLAN
2	1	C	1673	1	0	12-MAY-53	18-OCT-43	0	A	BLDG. OMEGA 1, TA-2. GAS & AIR SYSTEMS, BASEMENT & FIRST FLOOR PLAN
2	1	C	1674	1	0	12-MAY-53	18-OCT-43	0	S	BLDG. OMEGA 1, TA-2. FOOTINGS & BASEMENT PLAN
2	1	C	1675	1	0	12-MAY-53	01-NOV-43	0	A	BLDG. OMEGA 1, TA-2. FIRST FLOOR PLAN, ROOM, WINDOW & DOOR SCHEDULES
2	1	C	1676	1	0	12-MAY-53	08-JAN-44	0	S	BLDG. OMEGA 1, TA-2. TRACK & RAIL SECTIONS
2	1	C	1679	1	0	12-MAY-53	10-AUG-44	0	S	BLDG. 1, OMEGA 1, TA-2. ONE TON MONORAIL
2	1	C	1685	1	0	12-MAY-53	13-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1. STORAGE VAULT
2	1	C	1686	1	1	12-MAY-53	22-SEP-44	0	C	ZIA PROJECT, OMEGA SITE, TA-2, BLDG 1 ANNEX. PLOT PLAN, PIPING & DETAILS
2	1	C	1687	1	1	12-MAY-53	18-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. PLAN & FOUNDATION DETAILS
2	1	C	1688	2	1	12-MAY-53	20-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. ELEVATION & DETAILS
2	1	C	1689	3	1	12-MAY-53	20-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. SECTIONS & DETAILS
2	1	C	1690	4	0	12-MAY-53	16-SEP-44	0	M	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. HEATING & PLUMBING
2	1	C	1691	5	0	12-MAY-53	22-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. BENCH & CABINET DETAILS
2	1	C	1692	6	0	12-MAY-53	23-SEP-44	0	A	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. TRUSS REVISION DETAILS
2	1	C	1693	7	0	12-MAY-53	28-SEP-44	0	E	ZIA PROJECT, OMEGA SITE, TA-2, BLDG. 1 ANNEX. ELECTRICAL
2	1	C	1694	1	1	12-MAY-53	07-SEP-44	0	A	REVISIONS, OMEGA SITE, BLDG. 1 ANNEX
										ADDITION TO BLDG. 1, OMEGA SITE, FLOOR PLAN,

2	1	C	1695	1	0	12-MAY-53	09-NOV-44	0	A	FOUNDATION PLAN, ELEVATION, SECTION, ELECTRICAL WIRING PLAN
2	1	C	1696	1	0	12-MAY-53	14-NOV-44	0	M	ADDITION TO BLDG. 1, OMEGA SITE. HEATING
2	1	C	1698	1	0	12-MAY-53	12-MAY-53	0	E	OMEGA SITE, ELECTRICAL DIST. & FLOODLIGHTING
2	1	C	1699	1	4	12-MAY-53	04-SEP-46	0	C	FAST REACTOR BLDG. 1, OMEGA SITE. PLOT PLAN, CONCRETE HEADWALL, CLEANOUT BOX, CURB AND DRAINS
2	1	C	1700	2	2	12-MAY-53	15-JUL-46	0	A	FAST REACTOR BLDG. 1, OMEGA SITE. FLOOR PLAN & DETAILS
2	1	C	1701	3	2	12-MAY-53	04-SEP-46	0	A	FAST REACTOR BLDG. 1, OMEGA SITE. ELEVATIONS & DETAILS
2	1	C	1702	4	1	12-MAY-53	18-JUN-46	0	A	FAST REACTOR BLDG. 1, OMEGA SITE. CROSS SECTIONS & DETAILS
2	1	C	1703	5	5	12-MAY-53	15-JUL-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL, FOUNDATION PLAN
2	1	C	1704	6	0	12-MAY-53	13-MAY-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL, FOUNDATION, SECTIONS & DETAILS
2	1	C	1705	7	1	12-MAY-53	20-MAY-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL FOUNDATION, SECTIONS & DETAILS
2	1	C	1706	8	2	12-MAY-53	15-JUL-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL, FOUNDATION, PLANS, SECTIONS & DET
2	1	C	1707	9	2	12-MAY-53	27-MAY-46	0	S	FACT REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL PROTECTIVE WALL. PLAN, SECTION, DETAILS
2	1	C	1708	10	0	12-MAY-53	22-MAY-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STRUCTURAL STEEL FRAMING, PLANS, ELEVATIONS
2	1	C	1709	11	0	12-MAY-53	20-MAY-46	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. STEEL & CONCRETE DETAILS
2	1	C	1710	12	2	12-MAY-53	24-MAY-46	0	S	FAST REACTOR BLDG. 1. OMEGA SITE. STEEL FABRICATION SCHEDULE
2	1	C	1711	13	0	12-MAY-53	10-MAY-46	0	M	FAST REACTOR BLDG. 1, OMEGA SITE. MECHANICAL
2	1	C	1712	14	4	12-MAY-53	26-AUG-46	0	E	FAST REACTOR BLDG. 1, OMEGA SITE. ELECTRICAL DIST. DIESEL-ELECT., STAND-BY GENERATOR
2	1	C	1713	15	0	12-MAY-53	20-MAY-46	0	E	FAST REACTOR BLDG. 1, OMEGA SITE. ELECTRIC POWER WIRING, SERVICE ENTRANCE & SWI
2	1	C	1714	16	1	12-MAY-53	28-AUG-46	0	E	FAST REACTOR BLDG. 1, OMEGA SITE. ELECTRIC LIGHTING PLANS & DETAILS
2	1	C	1715	1	0	12-MAY-53	18-OCT-43	0	S	FAST REACTOR BLDG. 1, OMEGA SITE. WALLS & SECTIONS
2	1	C	1715	1	0	12-MAY-53		0	UN	FAST REACTOR BLDG. 1, OMEGA SITE. WALLS & SECTIONS
2	1	C	1721	1	0	12-MAY-53	29-SEP-47	64	S	OMEGA SITE, MAIN LAB, NEW DOOR & DITCH, PLAN, SECTIONS AND DETAILS, HEAD & SILL SECTION NEW DOOR, NEW CONCRETE LINTEL
										OMEGA SITE, BLDG. 1. INDEX & TITLE SHEET, ADDITIONS &

2	1	C	1722	1	0	12-MAY-53	12-OCT-44	64	T	ALTERATIONS
2	1	C	1723	2	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL PLAN OF EXISTING BLDG., ALTERATIONS & ADDITIONS, FIRST FLOOR PLAN
2	1	C	1724	3	2	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL 1ST FLOOR PLAN, ALTERATIONS & ADDITIONS
2	1	C	1725	4	1	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL 2ND FLOOR PLAN & SCHDEULES, ALTERATIONS & ADDITIONS
2	1	C	1726	5	4	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, INTERIOR ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1727	6	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, ROOF PLAN, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1728	7	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, ELEVATIONS, ALTERATIONS & ADDITION, PROJECT
2	1	C	1729	8	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, SECTIONS, ALTERATIONS & ADDITIONS, PROJECT
2	1	C	1730	9	1	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, SECTIONS & DETAILS, SOUTH ADDITION
2	1	C	1731	10	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL. DOOR & WINDOW DETAILS, ALT. & ADD., PROJECT
2	1	C	1732	11	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, FIRST FLOOR CEILING PLAN, ALT. & ADD., PROJECT
2	1	C	1733	12	0	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, SECOND FLOOR CEILING PLAN, ALT. & ADD., PROJECT A
2	1	C	1734	13	1	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, MISCELLANEOUS DETAILS, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1735	14	1	12-MAY-53	11-OCT-49	64	A	OMEGA SITE, ARCHITECTURAL, EQUIPMENT LAYOUT, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1736	15	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, FOUNDATION PLAN & DETAILS, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1737	16	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, FIRST FLOOR PLAN & DETAILS, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1738	17	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, SECOND FLOOR PLAN & DETAILS, ALTERATIONS. & ADDITIONS, PROJECT A
2	1	C	1739	18	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, ROOF FRAMING PLAN, ALTERATIONS AND ADDITIONS, PROJECT A
2	1	C	1740	19	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, SOUTH ADDITION FOUNDATION PLAN & DETAILS, ALTERATIONS AND ADDITIONS, PROJECT A
2	1	C	1741	20	1	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, FRAMING SECTION & EXTERIOR STAIRWAY. ALTERATIONS & ADDITIONS, PROJECT A

2	1	C	1742	21	0	12-MAY-53	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, FOUNDATION DETAILS. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1743	22	1	09-NOV-00	03-OCT-49	64	S	OMEGA SITE, STRUCTURAL LAYOUT, MISCELLANEOUS DETAILS. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1744	23	1	12-MAY-53	10-OCT-49	64	E	OMEGA SITE, ELECTRICAL LAYOUT, PARTIAL FIRST FLOOR ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1745	24	0	12-MAY-53	10-OCT-49	64	E	OMEGA SITE, ELECTRICAL LAYOUT, SECOND FLOOR, ALTERATIONS & ADDITION, PROJECT "A"
2	1	C	1746	25	0	12-MAY-53	10-OCT-49	64	E	OMEGA SITE, ELECTRICAL LAYOUT, SOUTH ADDITION. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1746	26	0	12-MAY-53	10-OCT-49	64	E	OMEGA SITE, ELECTRICAL DETAILS, PARTIAL FIRST FLOOR. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1747	27	0	12-MAY-53	10-OCT-49	64	E	OMEGA SITE, ELECTRICAL PLAN, OUTSIDE WORK & UNIT SUB-STATION. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1748	28	0	12-MAY-53	15-NOV-49	64	E	OMEGA SITE, ELECTRICAL LAYOUT, POLE LINE & DETAILS, ALTERATIONS & ADDITION, PROJECT A
2	1	C	1749	29	0	12-MAY-53	10-OCT-49	64	M	OMEGA SITE, HEATING LAYOUT, FIRST AND SECOND FLOORS. ALTERATIONS & ADDITIONS, PROJECT "A
2	1	C	1750	30	1	12-MAY-53	10-OCT-49	64	M	OMEGA SITE, PLUMBING LAYOUT, WASTE & DRAIN PIPING, ALTERATIONS & ADDITION, PROJECT A
2	1	C	1751	31	2	12-MAY-53	10-OCT-49	64	M	OMEGA SITE, PLUMBING LAYOUT, AIR, GAS & WATER PIPING, ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1752	32	1	12-MAY-53	10-OCT-49	64	M	OMEGA SITE, PLUMBING & HEATING, SOUTH ADDITION, ALTERATIONS & ADDITION, PROJECT "A"
2	1	C	1753	33	0	12-MAY-53	10-OCT-49	64	AC	OMEGA SITE, VENTILATION LAYOUT, FIRST AND SECOND FLOORS. ALTERATIONS & ADDITIONS, PROJECT A
2	1	C	1754	34	0	12-MAY-53	10-OCT-49	64	M	OMEGA SITE, PLAN & PROFILE, GAS MAIN TO BLDG. 1, DRAIN LINE TO CREEK, ALTERATIONS AND ADDITIONS, PROJECT A
2	1	C	1755	34	0	12-MAY-53	17-NOV-49	64	A	OMEGA SITE, UNIT SUB-STATION DETAILS, ALTERATIONS & ADDITIONS, PROJECT "A"
2	1	C	1756	1	0	12-MAY-53	18-OCT-43	64	A	BLDG. OMEGA 1. FIRST FLOOR PLAN
2	1	C	1770	1	2	01-AUG-52	18-JUN-53	1191	S	BRIDGE CRANE REINFORCING, STRUCT. PLAN & DETAILS,
2	1	C	1771	2	1	01-AUG-52	18-JUN-53	1191	S	BRIDGE CRANE REINFORCING. STRUCTURAL DETAILS, BRIDGE CRANE PLAN, SPLICING DETAIL
2	1	C	2649	1	1	10-APR-52	10-MAR-52	999	C	REGRADE AREA NORTH OF BLDG. 1, OMEGA SITE, PLOT PLAN & DETAILS
2	1	C	2650	2	1	10-APR-52	10-MAR-52	999	C	REGRADE AREA NORTH BLDG. #1, OMEGA SITE, PROFILES
2	1	C	2651	3	1	10-APR-52	10-MAR-52	999	C	REGRADE AREA NORTH BLDG. #1, OMEGA SITE, CROSS SECTIONS

2	1	C	2652	4	1	10-APR-52	10-MAR-52	999	C	REGRADE AREA NORTH BLDG. #1, OMEGA SITE, CROSS SECTIONS
2	1	C	2653	5	1	10-APR-52	10-MAR-52	999	C	REGRADE AREA NORTH BLDG. #1, OMEGA SITE, CROSS SECTIONS
2	1	C	2705	1	1	07-JUN-52	07-MAY-52	1215	A	WINCH INSTALLATION, BLDG. #1, PLAN & DETAILS
2	1	C	7098	1	2	09-JUN-53	09-JUN-53	1452	AC	RACK VENTILATION, RMS. 112 AND 121-MECH. AND ELECT. PLANS AND SECTIONS
2	1	C	7099	2	2	09-JUN-53	09-JUN-53	1452	AC	RACK VENTILATION RMS. 112 AND 121 -MECH. AND ELECT. NOTES AND DETAILS
2	1	C	10473	1	1	18-JUL-57	24-APR-58	2038	C	OWR EXHAUST LINE BLDG. OMEGA 1, PLAN, PROFILES, DETAILS
2	1	C	10787	1	0	05-NOV-54	03-NOV-54	1596	F	FIRE PROTECTION & SPRINKLER SYS. INSTALL., BLDG. OMEGA-Q WATER & GAS LINE PLAN & PROFILE
2	1	C	10788	2	0	05-NOV-54	03-NOV-54	1596	F	FIRE PROTECTION AND SPRINKLER SYS. INSTALLATION, WATER LINE DETAILS
2	1	C	10789	3	0	05-NOV-54	03-NOV-54	1596	F	FIRE PROTECTION AND SPRINKLER SYS. INSTALLATION, SPRINKLER PLANS
2	1	C	10790	4	0	05-NOV-54	03-NOV-54	1596	F	FIRE PROTECTION AND SPRINKLER SYS. INSTALLATION , HAD PLANS
2	1	C	10791	5	0	05-NOV-54	03-NOV-54	1596	F	FIRE PROTECTION AND SPRINKLER SYS. INSTALLATION, SECTIONS
2	1	C	10792	6	0	05-NOV-54	03-NOV-54	1596	F	SPRINKLER SYS. INSTALLATION, SECTIONS
2	1	C	10793	7	1	05-NOV-54	03-NOV-54	1596	F	SPRINKLER SYS. INSTALLATION, DETAILS
2	1	C	12793	1	0	22-MAR-61	16-MAR-61	2512	A	OWR SAFETY PLATFORM INSTALL. & MONORAIL MODS., BLDG. OMEGA-1-LOCATION PLAN - PLATFORM DETAILS
2	1	C	12794	2	0	22-MAR-61	16-MAR-61	2512	E	OWR SAFETY PLATFORM INSTALLATION AND MONORAIL MODIFICATIONS & SAFETY RAIL, ELECTRICAL PLAN, ROOF SCUTTLE GUARD RAIL
2	1	C	14930	1	1	01-DEC-54	01-OCT-54	1449	C	WEST REACTOR INSTALLATION BLDG. 1 & 44, OMEGA 1 CIVIL PLOT PLAN
2	1	C	14931	2	1	01-DEC-54		1449	C	CIVIL - 12" & 30" CIRCULATING WATER PIPE PLAN & PROFILE
2	1	C	14935	6	2	01-DEC-54		1449	S	STRUCTURAL - FOUNDATION PLAN & SECTIONS OMEGA 1
2	1	C	14936	7	2	01-DEC-54		1449	S	STRUCTURAL - FLOOR SLAB & SECTIONS - OMEGA 1
2	1	C	14937	8	2	01-DEC-54		1449	A	OMEGA 1 - ARCH. PLAN
2	1	C	14938	9	0	01-DEC-54		1449	S	OMEGA 1 - PENTHOUSE - STRUC. SECTIONS
2	1	C	14939	10	1	01-DEC-54		1449	S	PENTHOUSE - STRUC. DETAILS - OMEGA 1
2	1	C	14940	11	1	01-DEC-54		1449	UN	PENTHOUSE - MISCELLANEOUS DETAILS - OMEGA 1
2	1	C	14941	12	1	29-JUL-54		1449	A	PENTHOUSE ARCH; ELEVATION & DETAILS

2	1	C	14942	13	1		29-JUL-54	1449	UN	BLDG. I - PENTHOUSE; DOOR DETAILS
2	1	C	14943	14	1		29-JUL-54	1449	UN	REACTOR ELEVATIONS, BLDG. I
2	1	C	14944	15	1		29-JUL-54	1449	UN	REACTOR SECTIONS, BLDG. 1
2	1	C	14945	16	2		29-JUL-54	1449	UN	REACTOR BAR INDEX & PLAN AT 42" ABOVE FINISHED FLOOR, BLDG. I
2	1	C	14946	17	3		29-JUL-54	1449	A	ARCH. PLAN AT 42" ABOVE FINISHED FLOOR, BLDG. 1
2	1	C	14947	18	2		29-JUL-54	1449	UN	PLAN AT 110" ABLVE F/F & MISCELLANEOUS DETAILS
2	1	C	14948	19	2		29-JUL-54	1449	UN	PLAN AT 22 93/4" ABOVE F/F DECK PLATE & STEPS TO PERSONNEL DOOR
2	1	C	14949	20	1		29-JUL-54	1449	UN	REACTOR STAIR DETAILS
2	1	C	14952	23	2		01-DEC-54	1449	UN	NEW & REVISED PIPING IN EXISTING BUILDING, OMEGA 1
2	1	C	14953	24	3		01-DEC-54	1449	M	MECHANICAL - PLANS & DETAILS, OMEGA 1 & 44
2	1	C	14954	25	2		01-DEC-54	1449	M	MECHANICAL EQUIPMENT LIST, OMEGA 1 & 44
2	1	C	14955	26	1		29-JUL-54	1449	UN	DISTRIBUTION SINGLE LINE DIAGRAM & NOTES
2	1	C	14956	27	2		29-JUL-54	1449	E	ELECTRICAL 480V 30 SUBSTATION
2	1	C	14959	30	3		29-JUL-54	1449	E	ELECTRICAL REACTOR RM. POWER PLAN & DETAILS
2	1	C	14960	31	1		29-JUL-54	1449	E	ELECTRICAL - REACTOR RM. LIGHTING PLAN - MATERIALS
2	1	C	14961	32	1		29-JUL-54	1449	E	ELECTRICAL - CONTROL RM. PLAN, SECTIONS & DETAILS
2	1	C	14962	33	1		29-JUL-54	1449	E	ELECTRICAL CONTROL CIRCUIT DIAGRAMS
2	1	C	15230	1	0		07-JUN-57	0	UN	TRUSS DETAILS, BLDG. 1, OMEGA (VOID)
2	1	C	15441	1	0		24-JUL-56	1882	S	MONORAIL INSTALL. WEST REACTOR RM., BLDG. 1, STRUCTURAL DETAILS
2	1	C	18257	1	0		04-SEP-58	1985	S	REACTOR CATWALK INSTALLATION BUILD. OMEGA-1 - STRUCTURAL PLAN AND DETAILS
2	1	C	18642	1	0		28-FEB-58	2084	AC	AIR CONDITIONING, ROOM 121, BLDG. 1 - MECHANICAL - PLAN
2	1	C	18643	2	0		28-FEB-58	2084	M	MECHANICAL - DETAILS
2	1	C	18644	3	0		28-FEB-58	2084	E	ELECTRICAL - PLANS & SCOPE
2	1	C	18645	4	0		28-FEB-58	2084	E	ELECTRICAL - SCOPE, WIRING DIAGRAM, DETAILS
2	1	C	18987	1	0		22-AUG-57	1985	S	REACTOR SAFETY RAILING & CAT WALK, BLDG. 1 - PLANS AND ELEVATIONS
2	1	C	18988	2	0		22-AUG-57	1985	S	REACTOR SAFETY RAILING AND CAT- WALK, SECTIONS AND DETAILS
2	1	C	20929	1	0		17-JUL-64	2976	C	SPECTROMETER TRACK INSTALLATION, BLDG. OMEGA-1 - CIVIL - FLOOR PLAN & SECTIONS
2	1	C	21425	1	1		27-FEB-58	1995	C	HANDLING & STORAGE FACILITY, BLDG. 1 - CIVIL - PLAN & DETAILS

2	1	C	21426	2	1	27-FEB-58	1995	S	STRUCTURAL FLOOR PLAN
2	1	C	21427	3	1	27-FEB-58	1995	UN	BUILDING MODIFICATION & STORAGE PIT
2	1	C	21428	4	1	27-FEB-58	1995	S	STRUCTURAL SECTIONS & DETAILS
2	1	C	21429	5	1	27-FEB-58	1995	M	OMEGA - MECHANICAL PLAN, SECTION & NOTES
2	1	C	21430	6	1	27-FEB-58	1995	M	MECHANICAL DETAILS
2	1	C	21431	7	1	27-FEB-58	1995	E	BLDG. 1 - ELECTRICAL - PLAN - DETAILS - NOTES
2	1	C	21432	1	1	03-JUL-58	1995	S	OMEGA-1 - PLAN & STRUCTURAL DETAILS
2	1	C	21433	2	1	03-JUL-58	1995	S	STRUCTURAL DETAILS
2	1	C	21434	3	1	03-JUL-58	1995	E	ELECTRICAL - PLAN - DETAILS AND NOTES
2	1	C	23380	1	0	28-SEP-61	2654	S	GUARD RAILS & ESCAPE LADDER, BLDG. OMEGA-1 - STRUCTURAL - DETAILS
2	1	C	23467	5	1	20-JUN-60	2077	UN	CONDUIT LAYOUT, OMEGA 1
2	1	C	23468	6	1	20-JUN-60	2077	UN	EQUIPMENT ROOM PLAN & DETAILS
2	1	C	23473	1	0	13-FEB-63	2827	UN	ALTERATIONS, RMS. 108, 114, BLDG. OMEGA-1 - PLAN, NOTES, EQUIPMENT LIST
2	1	C	23752	1	0	14-SEP-64	3131	S	ROOF HANDRAILS & DOCK MODIFICATIONS, OMEGA-1 - STRUCTURAL - PLANS & DETAILS
2	1	C	23753	2	0	14-SEP-64	3131	S	STRUCTURAL - PLANS, DETAILS, SECTIONS
2	1	C	25473	1	0	27-SEP-65	3298	A	ADDITIONAL OFFICE & LABORATORY SPACE, BLDG. OMEGA-1 - ARCHITECTURAL - PLAN & DET
2	1	C	25474	2	0	27-SEP-65	3298	E	ELECTRICAL - PLANS & DETAILS
2	1	C	26279	1	0	23-JAN-63	2790	AC	VENTILATION IMPROVEMENTS, ROOMS 116 & 118, BLDG. OMEGA-1, PLAN, SECTIONS, DETAIL
2	1	C	26364	1	0	02-MAR-65	3173	AC	AIR CONDITIONING MODIFICATIONS, ROOM 121, BLDG. OMEGA-1, PLAN, SECTIONS, EQUIPME
2	1	C	27152	1	0	10-MAY-62	2651	E	OWR CRANE CONTROL MODIFICATION, BLDG. OMEGA-1, ELECTRICAL - SECTION, DIAGRAM & D
2	1	C	27309	1	0	10-JUN-65	3134	M	HEATING MODIFICATIONS, ROOM 101, BLDG. OMEGA-1, MECHANICAL- PLAN & SECTIONS
2	1	C	27310	2	0	10-JUN-65	3134	M	HEATING MODIFICATIONS, ROOM 101, BLDG. OMEGA-1, MECHANICAL - ELEV. DETAILS & NOT
2	1	C	30364	1	1	08-FEB-63	2783	S	SHOP & DOCK MODIFICATIONS, BLDG. OMEGA-1 - STRUCTURAL - FLOOR PLANS & DETAILS
2	1	C	30365	2	1	08-FEB-63	2783	S	STRUCTURAL - DRAIN PLAN, REINFORCING SCHEDULE
2	1	C	30366	3	1	08-FEB-63	2783	M	MECHANICAL - PLAN, SECTION, NOTES
2	1	C	30367	4	1	08-FEB-63	2783	M	MECHANICAL - SECTIONS & DETAILS
2	1	C	30368	5	1	08-FEB-63	2783	UN	POWER DISTRIBUTION LAYOUT

2	1	C	30369	6	1	08-FEB-63		2783	E	SHOP LIGHTING MODIFICATIONS
2	1	C	34328	1	0	26-JUL-66		3359	M	O.W.R. COOLING SYSTEM IMPROVEMENTS, BLDGS. OMEGA-1, 44 & 49 - MECHANICAL - PLANS
2	1	C	34329	2	0	26-JUL-66		3359	M	MECHANICAL - EQUIPMENT LIST, NOTES, PLAN & DETAIL
2	1	C	34426	1	0	29-JUL-66		3478	S	O.W.R. STRUCTURAL MODIFICATIONS, BLDG. OMEGA 1 - STRUCTURAL; PLAN, ELEVATIONS &
2	1	C	34639	1	0	28-OCT-66		3364	S	OWR PLATFORM ENCLOSURE, BLDG. OMEGA-1 - STRUCTURAL, PLANS, ELEVATIONS, SECTIONS
2	1	C	35725	1	0	25-OCT-68		0	UN	INSTALLATION OF NITROGEN DEWAR, OMEGA 1
2	1	C	35843	1	0	25-SEP-67		0	UN	DOOR REPLACEMENT, BLDG. OMEGA-1
2	1	C	36618	1	0	26-JUN-68		3872	M	CHEMICAL HOOD INSTAL., RM. 101, BLDG. OMEGA-1, MECH; FL. PL., ELEV., DETS. MECH
2	1	C	36619	2	0	26-JUN-68		3872	M	MECH; ELEVATIONS & DETAILS
2	1	C	36620	3	0	26-JUN-68		3872	E	ELECTRICAL
2	1	C	41713	1	0	19-NOV-87		0	UN	STEAM & CONDENSATE PIPING REPLACEMENT PLAN VIEWS, BLDG. OMEGA 1
2	1	C	41713	3	0	19-NOV-87		0	UN	STEAM & CONDENSATE PIPING REPLACEMENT DETAILS
2	1	C	41713	2	0	19-NOV-87		0	UN	STEAM & CONDENSATE PIPING REPLACEMENT PIPING SCHEMATIC
2	1	C	41727	1	0			6896	G	OMEGA SITE DIESEL GEN. & GUEL TANK INST. STRUCTURAL MECH. PLOT PLAN, SECTION, DE
2	1	C	41727	2	0			6896	G	OMEGA SITE DIESEL GEN. & FUEL TANK INST. MECH. PLAN, SECTIONS, EQUIP. LIST BLDG.
2	1	C	41727	3	0			6896	G	OMEGA SITE DIESEL GENERATOR AND FUEL TANK INST. ELECTRICAL BLDG. OMEGA-1
2	1	C	42977	1	0	10-MAY-76		5533	T	CLEAN ROOM INSTALLATION, ROOM 125, BLDG. 1. TITLE SHEET
2	1	C	42977	2	0	10-MAY-76		5533	UN	PLANS, SECTION. AND SCHEDULE
2	1	C	42977	3	0	10-MAY-76		5533	F	MECH; CLEAN AIR LOCATIONS AND FIRE PROTECTION, ELEC; LIGHTING
2	1	C	42989	2	0	10-MAY-76	10-MAY-76	5573	E	CLEAN ROOM SITE PREPARATION ELEC
2	1	C	42989	1	0	10-MAY-76	10-MAY-76	5573	C	CLEAN ROOM SITE PREPARATION
2	1	C	43015	1	0	13-JUL-76		5086	M	STREAM AND CONDENSATE PIPING SYSTEM REPLACEMENT, BLDG. OMEGA 1. MECH; FLOOR PLA
2	1	C	43015	12	0	10-MAY-77		5086	E	ELEC - PLAN, SCOPE, NOTES, AND NAMEPLATES
2	1	C	43015	1	2	10-MAY-77		5086	M	HEATING SYSTEM REPLACEMENT, BLDG. OMEGA-1, TA-2. MECH; PLAN, DETAIL AND SCHEMAT
2	1	C	43015	5	0	10-MAY-77		5086	M	MECH; FLOOR PLAN AND DETAILS

2	1	C	43015	11	0	10-MAY-77		5086	E	ELEC - DIAGRAM, PLAN, BILL OF MATERIAL
2	1	C	43015	10	1	10-MAY-77		5086	M	MECH; CODE LIST
2	1	C	43015	9	2	10-MAY-77		5086	M	MECH; NOTES
2	1	C	43015	8	2	10-MAY-77		5086	M	MECH; EQUIPMENT LIST
2	1	C	43015	7	0	10-MAY-77		5086	M	MECH; SECTION AND DETAILS
2	1	C	43015	6	0	10-MAY-77		5086	M	MECH; PLAN AND SECTION
2	1	C	43015	4	1	10-MAY-77		5086	M	MECH; PARTIAL PLAN
2	1	C	43015	3	1	10-MAY-77		5086	M	MECH; PARTIAL PLAN
2	1	C	43015	3	0	13-JUL-76		5086	M	MECH; DETAILS, NOTES AND PARTS LIST
2	1	C	43015	2	2	10-MAY-77		5086	M	MECH; PLAN
2	1	C	43015	2	0	13-JUL-76		5086	M	MECH; PIPING SCHEMATIC
2	1	C	43095	2	1	22-APR-77		5666	C	CIVIL; PLAN, SECTION, SECTION, SCHEDULE, AND ELEVATION
2	1	C	43095	3	0	22-APR-77		5666	M	MECH; PLANS AND SECTIONS
2	1	C	43095	4	1	22-APR-77		5666	M	MECH; SECTIONS
2	1	C	43095	1	1	22-APR-77		5666	T	CLEAN CHAMBER INSTALLATION, BLDG. 1, TA-2. TITLE SHEET AND INDEX TO DRAWINGS
2	1	C	43095	5	0	22-APR-77		5666	E	ELECTRICAL
2	1	C	43421	1	0	23-MAR-78		5771	M	SANITARY SEWER IMPROVEMENTS, BLDG. 1 MECH; PLAN, EQUIP. LIST, NOTES AND SECTIO
2	1	C	43421	2	0	23-MAR-78		5771	E	ELEC; PLAN, BILL OF MATERIAL, NOTES AND NAMEPLATE
2	1	C	43568	9	0	08-JUL-80	20-MAR-80	6030	E	FIRE PROTECTION IMPROVEMENTS, ELEC. PLOT PLAN
2	1	C	43568	8	1	08-JUL-80	20-MAR-80	6030	E	FIRE PROTECTION IMPROVEMENTS, ELEC. BLOCK DIAGRAM
2	1	C	43568	1	1	08-JUL-80	20-MAR-80	6030	T	FIRE PROTECTION IMPROVEMENTS , TITLE SHEET AND INDEX TO DRAWINGS
2	1	C	43568	3	0	13-OCT-78	13-SEP-78	6030	M	FIRE PROTECTION IMPROVEMENTS, FIRST FLOOR PLAN
2	1	C	43568	4	1	08-JUL-80	20-MAR-80	6030	M	FIRE PROTECTION IMPROVEMENTS, MECH. SECOND FLOOR PLAN
2	1	C	43568	4	0	08-JUL-80	20-MAR-80	6030	M	FIRE PROTECTION IMPROVEMENTS, SECOND FLOOR PLAN
2	1	C	43568	6	1	08-JUL-80	20-MAR-80	6030	M	FIRE PROTECTION IMPROVEMENTS, MECH. SECTIONS AND DETAILS
2	1	C	43568	2	0	08-JUL-80	13-SEP-78	6030	M	FIRE PROTECTION IMPROVEMENTS PLOT PLAN BLDG. OMEGA-1 TA-2
2	1	C	43568	3	0	08-JUL-80	20-MAR-80	6030	M	FIRE PROTECTION, FIRST FLOOR PLAN AND BASEMENT FLOOR PLAN AND DETAILS
2	1	C	43568	11	1	08-JUL-80	20-MAR-80	6030	E	FIRE PROTECTION IMPROVEMENTS, ELECT. SECOND FLOOR PLAN

2	1	C	43568	7	1	08-JUL-80	20-MAR-80	6030	E	FIRE PROTECTION IMPROVEMENTS, ELEC. NAMEPLATES, BILL OF MATERIAL, AND NOTES
2	1	C	43568	10	1	08-JUL-80	20-MAR-80	6030	E	FIRE PROTECTION IMPROVEMENTS, ELEC. BASEMENT AND FIRST FLOOR
2	1	C	43568	2	0	08-JUL-80	20-MAR-80	6030	C	FIRE PROTECTION IMPROVEMENTS, PLOT PLAN, CIVIL AND MECHANICAL LEGENDS
2	1	C	43568	5	0	08-JUL-80	20-MAR-80	6030	M	FIRE PROTECTION IMPROVEMENTS, MECH. PARITAL PLANS AND DETAILS
2	1	C	43746	3	0	10-MAR-80		6153	M	MECH; SECTION AND DETAILS
2	1	C	43746	2	0	10-MAR-80		6153	M	MECH; FLOOR PLAN
2	1	C	43746	5	0	10-MAR-80		6153	E	ELEC; PLAN AND ELEVATIONS
2	1	C	43746	6	0	10-MAR-80		6153	E	ELEC; NOTES AND NAMEPLATES
2	1	C	43746	1	0	10-MAR-80		6153	M	HEATING SYSTEM EXPANSION MECH; REMOVAL PLAN BLDG. OMEGA-1 TA-2
2	1	C	43746	4	0	10-MAR-80		6153	M	MECH; NOTES AND EQUIPMENT LIST
2	1	C	44090	1	1	23-JUN-82	01-JUN-82	5664	F	FIRE PROTECTION IMPROVEMENTS, FP; PLOT PLAN, FLOOR PLAN & PIPE RISER DETAILS
2	1	C	44415	1	0	03-JUL-89	26-JUN-84	7566	T	HEATING SYSTEM UPGRADE, TITLE SHEET, INDEX TO DRAWINGS & LOCATION PLAN
2	1	C	44415	4	0	03-JUL-89	26-JUN-84	7566	M	HEATING SYSTEM UPGRADE, MECH; EQUIPMENT LIST & NOTES
2	1	C	44415	3	0	03-JUL-89	26-JUN-84	7566	M	HEATING SYSTEM UPGRADE, MECH; FLOOR PLAN, SECTION & DETAILS, LEGEND
2	1	C	44415	2	0	03-JUL-89	26-JUN-84	7566	G	HEATING SYSTEM UPGRADE, GEN; SUBMITTALS
2	1	C	44415	5	0	03-JUL-89	26-JUN-84	7566	E	HEATING SYSTEM UPGRADE, ELEC; FLOOR PLAN, BILL OF MATERIAL, NAMEPLATE SCHEDULE AND NOTES
2	1	C	44796	10	1	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GENERATOR INSTALLATION, ELEC; PANEL SCHEDULE "PP-A"
2	1	C	44796	4	2	20-SEP-85	17-SEP-85	7789	M	BACK UP POWER GEN. INSTALL., MECHANICAL NOTES AND EQUIPMENT LIST
2	1	C	44796	7	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GEN. INSTALLATION, PARTIAL FLOOR PLAN OF EQUIPMENT RM.
2	1	C	44796	9	2	20-SEP-85	17-SEP-85	7789	E	BACK UP, PARTIAL SINGLE LINE DIAGRAM OF DIESEL GENERATOR CONNECTION SCHEME
2	1	C	44796	5	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GEN. INSTALL., ELEC; SCOPE OF WORK, NOTES & LEGEND
2	1	C	44796	8	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GENERATION INSTALL., PARTIAL FLOOR PLAN & BLDG. ELEVATION
2	1	C	44796	6	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GEN. INSTALL., SINGLE LINE DIAGRAM OF EXISTING EQUIPMENT

2	1	C	44796	3	2	20-SEP-85	17-SEP-85	7789	M	MECH; DIESEL FUEL PIPING SCHEMATIC, DETAILS, MUFFLER SUPPORT AND THIMBLE DETAILS
2	1	C	44796	12	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GENERATOR INSTALL., BILL OF MATERIALS & NAMEPLATE SCHEDULE
2	1	C	44796	1	2	20-SEP-85	17-SEP-85	7789	T	BACKUP POWER GENERATOR INSTALL. OMEGA-1, TITLE SHEET INDEX OF DWGS & LOCATION
2	1	C	44796	2	2	20-SEP-85	17-SEP-85	7789	M	BACK UP POWER GEN. INSTALL., REMOVAL FLOOR PLAN, FLOOR PLAN, AND SECTIONS
2	1	C	44796	11	2	20-SEP-85	17-SEP-85	7789	E	BACK UP POWER GEN. INSTALL,PARTIAL FLOOR PLAN OF REMOTE ANNUNCIATOR CIRCUIT
2	1	C	45491	5	1	01-NOV-88		9470	C	CIVIL; SUBMITTAL LIST
2	1	C	45491	1	1	01-NOV-88		9470	C	LIFT STATION REPLACEMENT, BLDG. 1, CIVIL; PLAN, SECTIONS (AS-BUILTS)
2	1	C	45491	2	1	01-NOV-88		9470	C	CIVIL; NOTES
2	1	C	45491	4	1	01-NOV-88		9470	E	ELEC; SEQUENCER, CABLE SUPPORT DETAIL
2	1	C	45491	3	1	01-NOV-88		9470	E	ELEC; PLANS, NOTES, LEGEND B/M & NP. SCHEDULE
2	1	C	45721	1	0	03-MAY-89	02-MAY-89	10099	S	WATER BOILER REACTOR DECONT./DECOM., STRUCT; FLOOR PLAN, SECTIONS & DETAILS
2	1	C	45721	2	0	03-MAY-89	02-MAY-89	10099	S	WATER BOILER REACTOR DECONT./DECOM., STRUCT; SECTIONS & DETAILS
2	1	C	45732	2	0	30-AUG-89	30-AUG-89	10231	G	DESIGN DECON ROOM, GEN; SUBMITTAL LIST
2	1	C	45732	10	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; PIPING ISOMETRICS, STORAGE TANK CONTROL & SEQUENCE
2	1	C	45732	13	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; GENERAL PROVISIONS
2	1	C	45732	16	0	30-AUG-89	30-AUG-89	10231	E	DESIGN DECON ROOM, ELEC; CONTROL SCHEMATIC, SEQUENCE OF OPERATION
2	1	C	45732	9	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; SITE PLAN, NEW WORK PLAN, SECTIONS AND LEGEND
2	1	C	45732	9	0	30-AUG-89	30-AUG-89	10231	C	DESIGN DECON ROOM, MECH; SITE PLAN, NEW WORK PLAN, SECTIONS AND LEGEND
2	1	C	45732	4	0	30-AUG-89	30-AUG-89	10231	A	DESIGN DECON ROOM, ARCH; SECTIONS & DETAILS
2	1	C	45732	3	0	30-AUG-89	30-AUG-89	10231	A	DESIGN DECON ROOM, ARCH; DEMOLITION & NEW WORK PLANS, SECTION, DOOR SCHEDULE & ELEVATIONS
2	1	C	45732	17	0	30-AUG-89	30-AUG-89	10231	E	DESIGN DECON ROOM, ELEC; GENERAL NOTES, EQUIPMENT LIST, NAMEPLATE SCHEDULE
2	1	C	45732	14	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; GENERAL NOTES, CLASS "A" REMOVAL EQUIPMENT CODE, WATER LINE CROSSING DETAIL
2	1	C	45732	12	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; EQUIPMENT LIST

2	1	C	45732	1	0	30-AUG-89	30-AUG-89	10231	T	DESIGN DECON ROOM, TITLE SHEET, INDEX TO DRAWINGS & LOCATION PLAN, SCOPE OF WORK
2	1	C	45732	5	0	30-AUG-89	30-AUG-89	10231	A	DESIGN DECON ROOM, ARCH; NOTES & SECTIONS
2	1	C	45732	6	0	30-AUG-89	30-AUG-89	10231	S	DESIGN DECON ROOM, STRUCT; MANHOLE DETAILS, ISOMETRIC, SECTIONS
2	1	C	45732	8	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; REMOVAL FLOOR PLAN, SECTION, LEGEND AND NOTES
2	1	C	45732	7	0	30-AUG-89	30-AUG-89	10231	S	DESIGN DECON ROOM, STRUCT; GENERAL NOTES
2	1	C	45732	15	0	30-AUG-89	30-AUG-89	10231	E	DESIGN DECON ROOM, ELEC; NEW INSTALLATION, DEMOLITION AND DETAILS, WATER LEVEL ALARM SCHEMATIC DIAGRAM, PLAN VIEW
2	1	C	45732	11	0	30-AUG-89	30-AUG-89	10231	M	DESIGN DECON ROOM, MECH; PUMP PIPING DETAILS, EQUIPMENT LIST
2	1	C	45924	6	0	10-SEP-90	31-AUG-90	10786	M	DESIGN WASTE WATER COLLECTION SYSTEM, MECH; GENERAL NOTES AND SUBMITTAL
2	1	C	45924	7	0	10-SEP-90	31-AUG-90	10786	E	DESIGN WASTE WATER COLLECTION SYSTEM, ELEC; POWER PLAN, SECTION AND KEYED NOTES
2	1	C	45924	1	0	10-SEP-90	31-AUG-90	10786	C	DESIGN WASTE WATER COLLECTION SYSTEM, CIVIL; SITE PLAN
2	1	C	45924	4	0	10-SEP-90	31-AUG-90	10786	C	DESIGN WASTE WATER COLLECTION SYSTEM, CIVIL, GENERAL NOTES
2	1	C	45924	5	0	10-SEP-90	31-AUG-90	10786	M	DESIGN WASTE WATER COLLECTION SYSTEM, MECH; FLOOR PLAN, LEGEND, NOTES AND DETAIL
2	1	C	45924	8	0	10-SEP-90	31-AUG-90	10786	E	DESIGN WASTE WATER COLLECTION SYSTEM, ELEC; CONNECTION DIAGRAM & NOTES
2	1	C	45924	3	0	10-SEP-90	31-AUG-90	10786	C	DESIGN WASTE WATER COLLECTION SYSTEM, CIVIL; PIPING TRENCH DETAILS
2	1	C	45924	2	0	10-SEP-90	31-AUG-90	10786	C	DESIGN WASTE WATER COLLECTION SYSTEM, CIVIL; PLAN, SECTIONS AND DETAILS
2	1	C	45946	1	1	04-FEB-91	18-JAN-91	10415	S	REWORK CRANE STRUCTURE, STRUCT; STEEL FRAMING CRANE GIRDER REINFORCING DETAIL
2	1	C	45946	2	2	04-FEB-91	18-JAN-91	10415	S	REWORK CRANE STRUCTURE, STRUCT; STEEL FRAMING GENERAL NOTES
2	1	C	46064	8	0	12-AUG-91	24-APR-91	11694	E	REPLACE PCB TRANSFORMERS, ELEC; BLDG. 1 PARTIAL POWER PLAN, ROOM 116-A PLAN, ELEVATIONS AND BLDG. 4 POWER PLAN
2	1	C	46187	1	0	07-OCT-92	16-SEP-92	12461	T	INSTALL ABOVE GROUND STORAGE TANK, TITLE SHEET, SCOPE OF WORK AND NOTES
2	1	C	46187	9	0	07-OCT-92	16-SEP-92	12461	E	INSTALL ABOVE GROUND STORAGE TANK, ELEC; PLAN, EQUIPMENT LIST, NOTES SCHEMATIC AND LEGEND

2	1	C	46187	7	0	07-OCT-92	16-SEP-92	12461	M	INSTALL ABOVE GROUND STORAGE TANK, MECH; GENERAL NOTES
2	1	C	46187	5	1	07-OCT-92	14-OCT-92	12461	C	INSTALL ABOVE GROUND STORAGE TANK, CIVIL; CONTAINMENT TANK AND SECTIONS
2	1	C	46187	3	0	07-OCT-92	16-SEP-92	12461	C	INSTALL ABOVE GROUND STORAGE TANK, CIVIL; GENERAL NOTES
2	1	C	46187	4	0	07-OCT-92	16-SEP-92	12461	C	INSTALL ABOVE GROUND STORAGE TANK, CIVIL; SITE PLAN AND LEGEND
2	1	C	46187	2	0	07-OCT-92	16-SEP-92	12461	G	INSTALL ABOVE GROUND STORAGE TANK, GEN., SUBMITTALS, TEST AND INSPECTION PLAN
2	1	C	46187	8	0	07-OCT-92	16-SEP-92	12461	M	INSTALL ABOVE GROUND STORAGE TANK, MECH; PARTIAL FLOOR PLAN, DETAIL, EQUIPMENT LIST & LEGEND, ISOMETRIC DETAIL
2	1	C	46187	6	0	07-OCT-92	16-SEP-92	12461	C	INSTALL ABOVE GROUND STORAGE TANK, CIVIL; DETAILS AND SECTIONS
2	1	C	47124	2	0	03-SEP-92		5086	UN	HEATING SYSTEM REPLACEMENT ELEVATIONS & DETAILS, SYSTEM "A"
2	1	C	47124	7	0	03-SEP-92		5086	UN	ADDITIONS & DELETIONS PER ENG-4 REVN 1
2	1	C	47124	5	0	03-SEP-92		5086	UN	BASEMENT EQUIPMENT ROOM ONLY
2	1	C	47124	6	0	03-SEP-92		5086	UN	SYSTEMS "A" & "B" STM. CD & HHW CONNECTIONS
2	1	C	47124	1	1	03-SEP-92		5086	UN	HEATING SYSTEM REPLACEMENT NEW EXCHANGER PIPING PLAN, OMEGA-1
2	1	C	47124	4	0	03-SEP-92		5086	UN	HEATING SYSTEM REPLACEMENT EQUIPMENT RACK-CUT LIST-DETAILS
2	1	C	47124	3	0	03-SEP-92		5086	UN	HEATING SYSTEM REPLACEMENT ELEVATIONS & DETAILS, SYTEM "B"
2	1	C	47175	1	0	09-SEP-92		0	UN	METAL STORM SHELTER FOR DRY ACCESS TO SAMPLE STORAGE AT WA-1, TA-2
2	1	C	47175	6	0	09-SEP-92		0	UN	CUTTING DETAILS
2	1	C	47175	5	0	09-SEP-92		0	UN	CUTTING DETAILS
2	1	C	47175	4	0	09-SEP-92		0	UN	ROOF FRAMING ASSY DETAILS
2	1	C	47175	2	0	09-SEP-92		0	UN	EAST & WEST BENTS "A" & "B" FRAMING DET.
2	1	C	47175	3	0	09-SEP-92		0	UN	NORTH & SOUTH BRACED FRAME ASSY DETS
2	1	C	47184	1	0	09-SEP-92		0	F	CLEAN ROOM SPRINKLER SYSTEM MODIFICATION, BLDG. 1, TA-2
2	1	C	47999	1	0	14-NOV-92		0	M	SPRINKLER ADDITION OVER REACTOR AREA PARTIAL PIPING PLAN ROOM 122
2	1	C	47999	2	0	14-NOV-92		0	M	SPRINKLER ADDITION OVER REACTOR AREA SECTION AND ISOMETRIC ROOM 122

2	1	C	49433	5	0	23-SEP-93	27-AUG-93	14764	F	ES&H FIRE PROTECTION DEFICIENCIES, MECH; FIRE PROTECTION PLAN, DETAIL, NOTES AND LEGEND
2	1	C	49433	5	0	23-SEP-93	27-AUG-93	14764	M	ES&H FIRE PROTECTION DEFICIENCIES, MECH; FIRE PROTECTION PLAN, DETAIL, NOTES AND LEGEND
2	1	C	49861	37	0	16-JUN-99	30-SEP-96	16854	M	WASTE STREAM CORRECTIONS FMU #66, MECH., CORRECTIVE ACTIONS SUMMARY
2	1	C	49861	6	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., INSPECTION PLAN
2	1	C	49861	4	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., NOTES AND SCOPE OF WORK
2	1	C	49861	1	0	17-JUN-99	27-SEP-96	16854	T	WASTE STREAM CORRECTIONS FMU #66, TITLE SHEET AND LIST OF DRAWINGS, SEVERAL TEC AREAS
2	1	C	49861	3	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., NOTES AND SCOPE OF WORK
2	1	C	49861	5	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., INSPECTION PLAN
2	1	C	49861	7	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., TEST PLAN
2	1	C	49861	2	0	17-JUN-99	27-SEP-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., LEGEND AND GENERAL NOTES
2	1	C	49861	8	0	17-JUN-99	27-SEP-96	16854	P	WASTE STREAM CORRECTIONS FMU #66, MECH., PARTIAL FIRST FLOOR PLUMBING PLAN AND ELEV
2	1	C	49861	3	1	08-NOV-02	20-NOV-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., NOTES AND SCOPE OF WORK
2	1	C	49861	4	1	08-NOV-02	09-DEC-96	16854	G	WASTE STREAM CORRECTIONS FMU #66, GEN., NOTES AND SCOPE OF WORK
2	1	C	49861	38	1	08-NOV-02	09-DEC-96	16854	M	WASTE STREAM CORRECTIONS FMU #66, MECH., CORRECTIVE ACTIONS SUMMARY
2	1	C	49861	38	0	16-JUN-99	30-SEP-96	16854	M	WASTE STREAM CORRECTIONS FMU #66, MECH., CORRECTIVE ACTIONS SUMMARY
2	1	C	52821	1	0	13-JUN-01	23-SEP-81		F	FWO-FIRE, OMEGA 1, MECH., PLOT PLAN AND PIPE RISER DETAIL
2	1	C	69615	1	0	15-NOV-71	15-NOV-71	4766	M	HOOD FILTER, BLDG. OMEGA-1 RM-115, MECH; ELEC-STRUC
2	1	C	69616	2	0			4766	E	HOOD FILTER, ELECTRICAL BLDG. OMEGA-1, RM. 115
2	1	PL	3727	8	0	25-APR-77		5664	A	MAIN REACTOR BLDG. OMEGA-1, TA-2
2	1	PL	3727	9	0	25-APR-77		5664	UN	MIAN REACTOR BLDG. BLDG. OMEGA-1, TA-2
2	1	R	34	1	1	25-MAY-56	23-APR-47	0	C	AREA AFFECTED BY EXHAUST GAS FROM TA-2 WATER BOILER
2	1	R	58	1	0	25-MAY-56	09-AUG-49	0	A	FLOOR PLAN, BLDG. #1, OMEGA SITE
2	1	R	1717	1	0	11-JAN-63		0	F	FIRE ALARM EQUIPMENT, BUILDING OMEGA-1, FIRST FLOOR PLAN

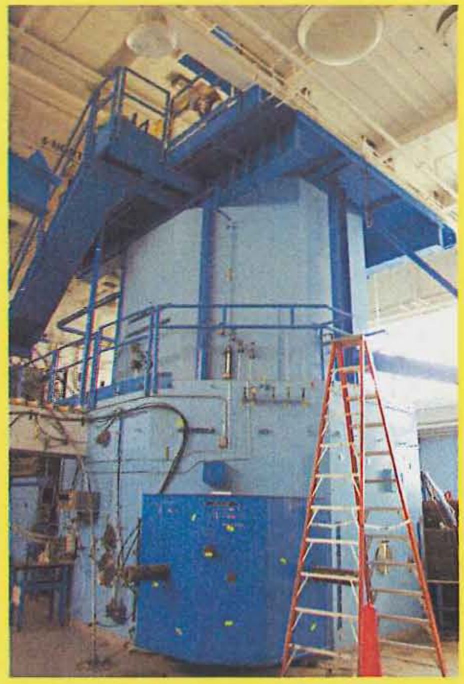
2	1	R	2360	1	0	06-APR-62	26-MAR-62	0	A	FALLOUT SHELTER SURVEY, FIRST FLOOR PLAN, OMEGA SITE
2	1	R	3333	1	4	05-SEP-63	21-MAR-84	0	A	BASEMENT & FIRST FLOOR PLAN, LABORATORY & OFFICE BUILDING
2	1	R	3334	2	3	05-SEP-63	21-MAR-84	0	A	SECOND FLOOR PLAN, MAIN BLDG.
2	1	R	3665	1	1	27-SEP-66	15-SEP-66	3546	A	EQUIPMENT SURVEILLANCE SYSTEMS, BASEMENT & FIRST FLOOR PLAN
2	1	R	3904	1	0	18-JAN-68	06-SEP-67	3586	A	AUDIO SYSTEM EQUIP. LOCATION, INTERCOM, BASEMENT & FIRST FLOOR PLAN
2	1	R	3908	1	1	18-JAN-68	05-SEP-67	3586	A	AUDIO SYSTEM EQUIP. LOCATION, BASEMENT & FIRST FLOOR PLAN
2	1	R	3909	2	0	18-JAN-68	05-SEP-67	3586	A	AUDIO SYSTEM EQUIP. LOC., SECOND FLOOR PLAN
2	1	R	3911	1	1	28-DEC-67	06-SEP-67	3586	A	AUDIO SYSTEM BLOCK DIAGRAM
2	1	R	3912	2	0	28-DEC-67	07-SEP-67	3586	A	AUDIO SYSTEM BLOCK DIAGRAM
2	1	SK	53	1	1	24-MAY-56	06-JUN-47	50	M	VENTILATION FOR REACTOR CONTROL ROOM IN BLDG. #1, OMEGA - SITE
2	1	SK	148	1	0	01-JUN-53	01-FEB-49	189	A	PROPOSED ADDITION TO BLDG. #1
2	1	SK	409	1	2	01-JUN-53		0	UN	INSTALL ONE 4 X 4 AIR COOLER IN CONTROL RM. OMEGA SITE
2	1	SK	424	1	1	01-JUN-53	24-SEP-47	0	A	DOOR IN EAST WALL OF BLDG. #1, OMEGA-SITE
2	1	SK	456	1	1	01-JUN-53	06-NOV-47	0	A	REMOVE PARTITIONS & INSTALL SHELVING IN RM. #12, BLDG. 1, OMEGA SITE
2	1	SK	486	1	2	26-NOV-58	29-JUL-53	0	C	WIRING FOR PIT MOTOR, OMEGA SITE
2	1	SK	528	1	2	01-JUN-53		0	A	CONST. & INSTALL SERVICE PLATFORM TO HOIST, TA-2
2	1	SK	552	1	2	01-JUN-53		0	UN	CONST. PARTITION, BENCH & SHELVES ROOM 2, OMEGA WEST, TA-2
2	1	SK	1242	1	0	21-AUG-97	22-JUN-51	874	C	Proposed Retaining Walls, Bldg. Omega-1
2	1	SK	1364	1	0	22-AUG-97	20-AUG-51	942	S	BARREL RACK FOR BLDG. 1, OMEGA SITE, PLOT PLAN AND DETAILS
2	1	SK	1446	1	0	22-AUG-97	21-NOV-51	999	C	Regrade Area North of Bldg. #1, Omega Site, Plot Plan and Details
2	1	SK	2567	1	0	10-SEP-97	09-NOV-55	1786	A	LABORATORY MODIFICATIONS, RMS. 120, 121, 122, FLOOR PLAN & SECTION
2	1	SK	7664	1	0	30-MAR-89		10144	F	SPRINKLER MODS CORRIDOR 101C & D, BLDG. 1
2	1	SK	7843	1	0	20-AUG-94	10-OCT-91	7789	M	BACK-UP POWER GENERATOR INSTALLATION, GEN; REMOTE RADIATOR INSTALLATION
2	1	c	49861	1	1	26-JUN-99	09-DEC-96	16854	T	WASTE STREAM CORRECTIONS FMU #66, TITLE SHEET AND LIST OF DRAWINGS, SEVERAL TA AREAS

LA-UR-04-6681

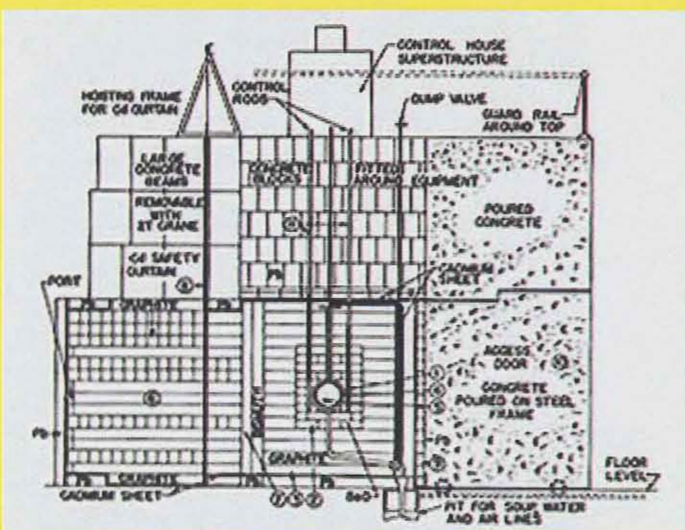
Historical Context of the Omega Reactor Facility, Technical Area 2

Volume 2a – Archival Photographs and Index

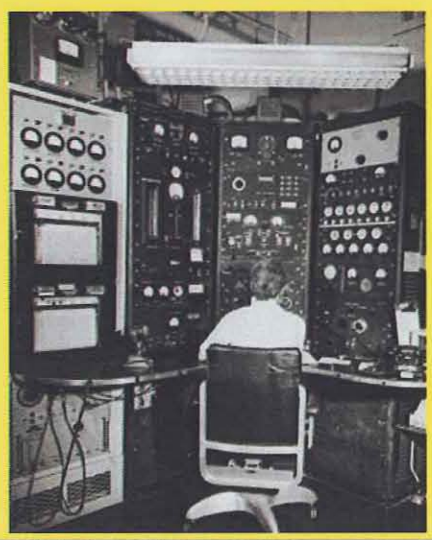
OWR Control Panel



Omega West Reactor (OWR)



HYPO "Water Boiler" Schematic



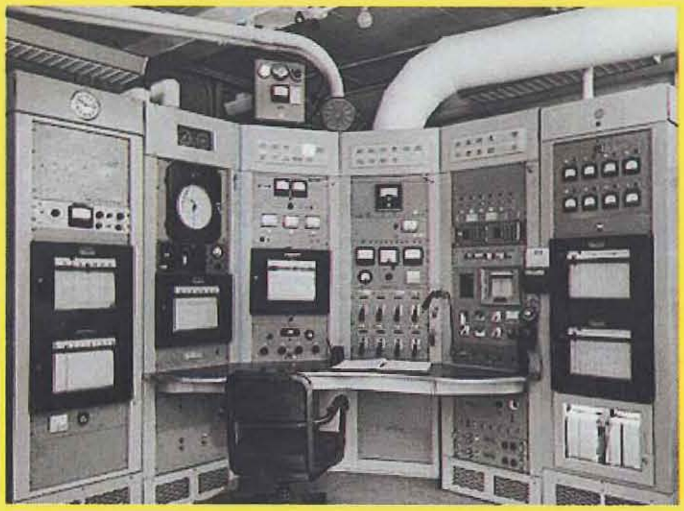
SUPO "Water Boiler" Control Panel

RRES-ECO Heritage Resources and Environmental Policy Compliance Team
Risk Reduction and Environmental Stewardship Division
LOS ALAMOS NATIONAL LABORATORY

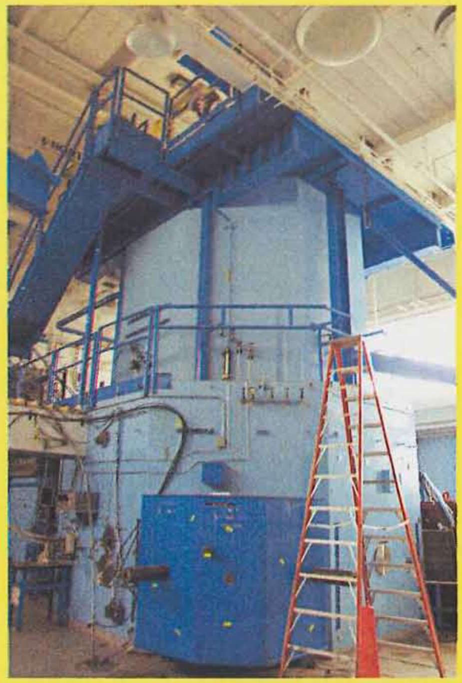
LA-UR-04-6681

Historical Context of the Omega Reactor Facility, Technical Area 2

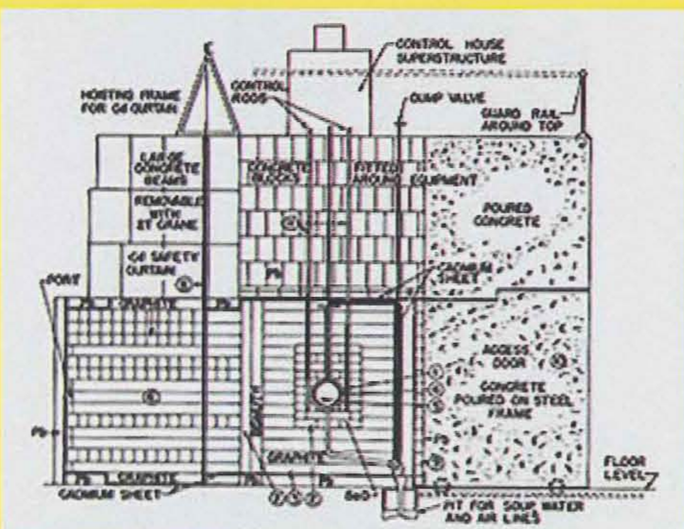
Volume 2b – Archival Photographs and Index



OWR Control Panel



Omega West Reactor (OWR)



HYPO "Water Boiler" Schematic

SUPO "Water Boiler" Control Panel

RRES-ECO Heritage Resources and Environmental Policy Compliance Team
Risk Reduction and Environmental Stewardship Division
LOS ALAMOS NATIONAL LABORATORY

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Technical Area 2 Water Boiler Reactors, Clementine Reactor, and Omega West Reactor
Technical Area 2, Buildings (1)
Los Alamos National Laboratory (LANL)
Los Alamos
Los Alamos County
New Mexico

Notes: The Laboratory is divided into different geographic areas called technical areas (TAs) that are designated by numbers. The properties at TA-2 Omega Site are identified using the current LANL system of placing the "TA" prefix and TA number before each building and structure number, creating a unique property identifier (ie. TA-2-1).

TA-2-1 has housed five nuclear reactors between 1944 and 1994. The Water Boiler Reactors provided critical mass data in support of Manhattan Project nuclear weapons development. The three Water Boiler Reactors and the later "Clementine" Reactor were prototype nuclear reactors and represent important stages in the development of modern reactor technology. In 1990, the American Nuclear Society declared the Los Alamos Water Boiler Reactor (1944-1974) a Nuclear Historic Landmark.

The eastern half of TA-2-1, a wooden building with a high bay, was constructed in 1944. The Water Boiler Reactors "LOPO" (in room 123), "HYPO," and "SUPO" (in room 122) were housed in this portion of the building. The western half is a two-story addition that was built in 1946 out of concrete block. The Reactors "Clementine" and "Omega West" (in room 101) were located in this portion of the building.

The Omega Reactor Facility (TA-2-1) was declared eligible for the National Register of Historic Places (Register) on October 13, 2000. This building was excess LANL property and scheduled for clean up and eventual demolition. This action is in accordance with LANL's commitment to clean up inactive sites and facilities "so that no unacceptable risk to the public or environment remains" (U.S. Department of Energy 1994). The removal of this property was carried out by LANL's Decontamination and Decommissioning (D&D) Program. (For additional information see related project documentation: *The Omega West Reactor and Water Boiler Building, TA-2-1; A Preliminary Report*, LA-UR-00-3854, Historic Building Survey Report No. 186, Los Alamos National Laboratory, and *Historical Context of the Omega Reactor Facility, Technical Area 2*, LA-UR-04-6681, Historic Building Survey Report No. 234, Los Alamos National Laboratory.)

References

U.S. Department of Energy
1994 Environmental Restoration and Waste Management Five-Year Plan Fiscal Years 1994-1998. DOE/S-00097P, U.S. Department of Energy, Washington, D.C.

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Technical Area 2 Omega Site, TA-2-1
Los Alamos National Laboratory (LANL)
Los Alamos
Los Alamos County
New Mexico

Presley Salazar, Photographer, IM-9, LANL — February 13 and 26, 2002
(RB02-001-001 through RB02-001-184)

Mike O'Keefe, Photographer, IM-9, LANL — February 27, 2002
(RB02-003-001 through RB02-003-051)

John Flower, Photographer, IM-9, LANL — March 2002
(RB02-001-185 through RB02-001-208)

Photograph Number	Description
RB02-001-207	TA-2-1, west side and south side (front), facing northeast.
RB02-001-208	TA-2-1, west side and south side (front) of the western half of the 1946 addition, facing northeast.
RB02-001-205	TA-2-1, west side and south side (front) of the original portion of the buildings, facing northeast.
RB02-001-203	TA-2-1, south side (front) of the original portion of the building, facing northeast.
RB02-001-199	TA-2-1, east side and south side (front) of the western half of the 1946 addition, facing northwest.
RB02-001-020	TA-2-1, south side (front) of the western half of the 1946 addition, facing northwest.
RB02-001-198	TA-2-1, south side (front) of the eastern half of the 1946 addition (central portion of the building), facing north.
RB02-001-194	TA-2-1 south side (front) of the eastern half of the 1946 addition and west side and south side (front) of original portion of building, facing northeast.

Photograph Number	Description
RB02-001-195	TA-2-1, west side and south side (front) of original portion of the building, facing northeast.
RB02-001-185	TA-2-1, south side (front) of original portion of the building, facing northeast.
RB02-001-189	TA-2-1, south side (front) and east side of original portion of building, facing northeast.
RB02-001-008	TA-2-1, east side, facing northwest.
RB02-001-047	TA-2-1, east side, northern portion, facing northeast.
RB02-001-041	TA-2-1, east side, facing south southwest.
RB02-001-042	TA-2-1, north side (back) and east side of eastern portion of building, facing southwest.
RB02-001-035	TA-2-1, north side (back) of eastern portion of building, facing south.
RB02-001-039	TA-2-1, north side (back) and east side of eastern portion of building, facing southwest.
RB02-001-034	TA-2-1, north side (back) and west side of eastern portion of building, facing southeast.
RB02-001-032	TA-2-1, north side (back) of central portion of building (west half of original portion of building), facing south.
RB02-001-030	TA-2-1, north side (back) of east half of 1946 addition, facing southwest.
RB02-001-028	TA-2-1, north side (back) of 1946 addition, facing southeast.
RB02-001-025	TA-2-1, north side (back) of 1946 addition, facing southeast.
RB02-001-023	TA-2-1, west side of 1946 addition, facing east.
RB02-001-128	TA-2-1, room 122, south and west walls (south wall with door), facing southwest. Note one wall "vault" in west wall on right side and debris from ceiling fall.

Photograph Number	Description
RB02-001-125	TA-2-1, room 122, west and north walls, facing northwest. Note two wall "vaults" in west wall on left side and double doors.
RB02-001-122	TA-2-1, room 122, west and north walls, facing northwest.
RB02-001-131	TA-2-1, room 122, northwest corner, close up of ceiling fall, facing northwest and up.
RB02-001-119	TA-2-1, room 122, east wall with an equipment loading door and a double pedestrian door, facing east.
RB02-001-110	TA-2-1, room 122, looking into room 123, facing south.
RB02-001-114	TA-2-1, room 123, chain link "caged" area along west wall, facing southwest.
RB02-001-116	TA-2-1, room 123-A, facing south.
RB02-001-082	TA-2-1, room 124, facing northwest. Note room 124-A at left.
RB02-001-084	TA-2-1, room 124, facing northeast. Note room 124-B center, and doorways into rooms 124-C and 123-D at right.
RB02-001-087	TA-2-1, room 124, facing south southwest. Note doors into room 126.
RB02-001-062	TA-2-1, room 124-D, facing southeast. Note vault door on east wall.
RB02-001-058	TA-2-1, room 124-D, facing southwest. Note doorway into room 124.
RB02-001-063	TA-2-1, room 124-D, facing northeast. Note doorway into room 124-C.
RB02-001-054	TA-2-1, room 124-D, facing south. Note closed vault door to vault room 124-V.
RB02-001-053	TA-2-1, room 124-V, double vault doors partially open, facing south.
RB02-001-050	TA-2-1, room 124-V, inside of vault, facing south.
RB02-001-073	TA-2-1, room 124-C, facing southwest. Note doorway into room 124.
RB02-001-071	TA-2-1, room 124-C, facing northeast. Note doorway into room 125-A.

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Photograph Number	Description
RB02-001-066	TA-2-1, room 124-C, facing northwest. Note doorway into room 125-A.
RB02-001-076	TA-2-1, room 125-A, facing north northwest.
RB02-001-079	TA-2-1, room 125-A, facing south southeast.
RB02-001-090	TA-2-1, room 126, facing northwest.
RB02-001-093	TA-2-1, room 126, facing southeast.
RB02-001-101	TA-2-1, room 117, facing northwest.
RB02-001-095	TA-2-1, room 117, facing northeast.
RB02-001-098	TA-2-1, room 117, facing southeast.
RB02-001-107	TA-2-1, room 117, facing east southeast.
RB02-001-104	TA-2-1, room 117, chalkboard, facing east.
RB02-001-134	TA-2-1, room 120, facing north northeast.
RB02-001-137	TA-2-1, room 120, facing southwest.
RB02-001-140	TA-2-1, room 121, facing south.
RB02-001-142	TA-2-1, room 118, facing south.
RB02-001-145	TA-2-1, room 119, pass through window into room 120 on east wall, facing southeast.
RB02-001-149	TA-2-1, room 115, facing southeast.
RB02-001-152	TA-2-1, room 115, facing southwest.
RB02-001-155	TA-2-1, room 116, looking into room 116-A, facing northwest.
RB02-001-158	TA-2-1, room 116, facing northeast.
RB02-001-163	TA-2-1, corridor 100-C, facing east.

Photograph Number	Description
RB02-001-161	TA-2-1, room 112, typical office/lab, facing northwest.
RB02-001-177	TA-2-1, room 108A, office, facing south.
RB02-001-179	TA-2-1, room 108 office, facing west.
RB02-001-166	TA-2-1, room 104/106, facing north.
RB02-001-168	TA-2-1, room 106, west wall, facing west southwest.
RB02-001-171	TA-2-1, room 106, facing southeast.
RB02-001-182	TA-2-1, corridor 100-B and freight elevator, facing northwest.
RB02-001-174	TA-2-1, looking up steps to room 102 – the control room for Omega West Reactor, facing south.
RB02-003-050	TA-2-1, room 102, Omega West Reactor control room, facing south.
RB02-003-001	TA-2-1, room 102, Omega West Reactor control room, facing west.
RB02-003-003	TA-2-1, room 102, Omega West Reactor control room, facing north northeast.
RB02-003-051	TA-2-1, room 102, Omega West Reactor control room – eastern portion of control panel, facing north.
RB02-003-004	TA-2-1, room 102, Omega West Reactor control panel, facing northwest.
RB02-003-005	TA-2-1, room 101, Omega West Reactor, facing northwest.
RB02-003-007	TA-2-1, room 101, Omega West Reactor, facing northwest and up.
RB02-003-038	TA-2-1, room 101, Omega West Reactor, facing northwest.
RB02-003-008	TA-2-1, room 101, Omega West Reactor, facing northeast.
RB02-003-009	TA-2-1, room 101, Omega West Reactor, facing northeast and up.
RB02-003-042	TA-2-1, room 101, Omega West Reactor, facing northeast.

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Photograph Number	Description
RB02-003-025	TA-2-1, room 101, Omega West Reactor, facing southeast.
RB02-003-027	TA-2-1, room 101, Omega West Reactor, facing southeast and up.
RB02-003-011	TA-2-1, room 101, Omega West Reactor, facing southeast.
RB02-003-014	TA-2-1, room 101, Omega West Reactor, facing southeast.
RB02-003-022	TA-2-1, room 101, Omega West Reactor, facing southeast.
RB02-003-028	TA-2-1, room 101, Omega West Reactor, facing south southeast.
RB02-003-031	TA-2-1, room 101, Omega West Reactor, facing south southwest and up.
RB02-003-020	TA-2-1, room 101, Omega West Reactor, facing south southwest.
RB02-003-037	TA-2-1, room 101, Omega West Reactor, ceiling hatch, facing south and up.
RB02-003-044	TA-2-1, room 202, (Library), facing southwest.
RB02-003-045	TA-2-1, room 202, (Library), facing northwest.
RB02-003-046	TA-2-1, room 202, (Library), facing southeast.
RB02-003-048	TA-2-1, room 206, typical office, facing north.
RB02-003-049	TA-2-1, room 207, typical office, facing south.