LA-UR-00-5888

I

Approved for public release; distribution is unlimited.

Title:	Sherwood and Scyllac Buildings, TA-3-105 and TA-3-287; A Preliminary Report
Author(s):	Ellen D. McGehee and Kari L. M. Garcia
Submitted to:	The New Mexico State Historic Preservation Officer in Compliance with the National Historic Preservation Act of 1966 (As Amended)





Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the U.S. Department of Energy under contract W-7405-ENG-36. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

LA-UR-00-XXXX

Sherwood and Scyllac Buildings, TA-3-105 and TA-3-287; A Preliminary Report

Historic Building Survey Report No. 189

Los Alamos National Laboratory

December 7, 2000 Survey No. 773

Prepared for the Department of Energy Los Alamos Area Office

prepared by

Ellen D. McGehee And Kari L. M. Garcia Cultural Resource Managers

ESH-20 Cultural Resources Team Environment, Safety, and Health Division LOS ALAMOS NATIONAL LABORATORY

Introduction:

The following information has been prepared as part of a notification of potential adverse effect to two historic Los Alamos National Laboratory (LANL) properties, TA-3-105 and TA-3-287. The proposed decontamination and decommissioning (D&D) action is related to a revitalization project at Technical Area (TA) 3, the main administrative area at LANL. D&D activities will adversely effect the attributes that make these two buildings eligible for the National Register of Historic Places.

This report is intended to provide the initial background information necessary to initiate the Section 106 consultation process; additional documentation will follow when a treatment plan is developed and final mitigation measures are determined. This short report contains a description of the proposed action, brief property descriptions, historical background information, building integrity and contamination information, and recommendations for National Register of Historic Places eligibility.

The SHPO is requested to concur with the eligibility determinations contained in this report and to concur that the proposed decontamination and decommissioning action will adversely effect TA-3-105 and TA-3-287.

Project Description:

In May and June 1999, a historic building survey was conducted for two buildings proposed for decontamination and decommissioning, TA-3-105 (the Sherwood Building) and TA-3-287 (the Scyllac Building). Work processes carried on in both buildings were related to fusion energy and plasma physics. The buildings were operational during the Cold War years at Los Alamos (1956-1990).

Ancillary structures associated with building TA-3-105 are also scheduled for decontamination and decommissioning: four modular office buildings (TA-3-400, -401, -402, and -403), a trailer office (TA-3-1597), and a single substation (TA-3-122). These structures are not eligible for the National Register due to their recent age and lack of historical significance.

A 1998 engineering analysis concluded that upgrading TA-3-105 and TA-3-287 to conform with the TA-3 revitalization effort would not be cost effective. Furthermore, the buildings could no longer be used for their original experimental purposes because of the densely populated nature of TA-3. In the event that the proposed D&D project is carried out, all buildings and structures listed above will be destroyed.

Background Information:

Physical Description - TA-3 and Buildings TA-3-105 and TA-3-287

TA-3, South Mesa Site, is a large technical area located on top of South Mesa, across Los Alarnos Canyon from the town of Los Alarnos, New Mexico. TA-3 functions as the

administrative center of LANL. The main administrative building (TA-3-43), the Oppenheimer Study Center, the Otowi Building, and numerous office and laboratory buildings are located at this technical area. Buildings TA-3-105 and TA-3-287 are in a centrally located complex of buildings near the LANL administrative building. TA-3-105, the Sherwood Building, was constructed from 1956 to 1959. It is a grouping of rectangular structures joined by common walls and corridors constructed in stages. Building materials include steel frame, masonry block and transite siding, and concrete foundations and sub-grade walls. TA-3-287, the Scyllac Building, was constructed from 1968 to 1970. It is a three-floor, steel framed building with a basement (see attached maps, photos and drawings).

Brief Historical Background

The United States began its controlled thermonuclear research program, "Project Sherwood," in 1951. Project Sherwood's mission was to develop an essentially inexhaustible source of energy from the controlled fusion of the nuclei of light atoms. Experiments in controlled thermonuclear reactions were started at Los Alamos in 1951 (GTS Duratek 1999). In 1957, Los Alamos achieved the first controlled thermonuclear plasma using the Scylla theta pinch device (Los Alamos National Laboratory 1995).

In the early days, there were two categories of approach: the steady state approach and the pulsed approach. The steady state approach used stellerators and mirrors. The pulsed approach was represented by theta and z-pinch technology. Los Alamos scientists concentrated on the "pinch concept" developed by Willard Bennett in 1934. When pinch technology is used, an electric current is passed through the plasma creating a magnetic field, which constricts or "pinches" the plasma, thus pulling the plasma away from the material walls. Work continued at Los Alamos from 1959-1990 using theta and z-pinch technologies in the hope of developing an efficient fusion energy source that could be used commercially (GTS Duratek 1999).

Work processes conducted in TA-3-105 and TA-3-287 were key components of Los Alamos' controlled thermonuclear research program. Important Sherwood experiments included the Perhapsatron Series, the Columbus Series, Picket Fence, Ixion, the Hydromagnetic Plasma Gun, the Plasma Acceleration Machine, Plasma Shield Research, and the Scylla Series. Other experiments included the Reverse Field Pinch, the ZT-40, and the Compact Torus Facility. Work conducted at the Scyllac Building included the Scyllac Toroidal Sector and the Scyllac full torus (GTS Duratek 1999).

Integrity Issues and Potential for Contamination

All original experimental equipment from both buildings has been removed resulting in a loss of interior integrity. The buildings have not otherwise been significantly modified. Both TA-3-105 and TA-3-287 are currently being used as office space and storage.

Hazardous materials present in both buildings include asbestos-containing materials (ACM) and lead-based paint. ACM are present in piping insulation and wrapping

materials, wallboard, floor tile, and possibly some roofing materials. Other potential contaminants in both buildings include polychlorinated biphenyls (PCBs), a group of chemicals commonly used in transformers and capacitors. Radiological contamination is not expected in either building due to the nature of the equipment and the types of experiments and operations conducted in the buildings (GTS Duratek 1999).

Eligibility Recommendation:

TA-3-105 and TA-3-287, although less than fifty years old, are eligible for nomination to the National Register of Historic Places. This determination is made under Criterion A of the National Historic Preservation Act of 1966, due to their association with important events during the Cold War years at Los Alamos (criteria consideration G: "properties that have achieved significance within the last fifty years") (U.S. Department of Interior, 1991). Although TA-3-105 and TA-3-287 have suffered a loss of interior integrity, they are still eligible under Criterion A for their associations with Cold War events of historical importance—experiments conducted at both buildings have contributed to internationally important research in both fusion energy and plasma physics.

References Cited:

GTS Duratek

1999 Sherwood and Scyllac historical background information prepared by GTS Duratek, Commodore Advanced Sciences, Inc. for LANL EM/D&D. Draft on file at ESH-20, Los Alamos National Laboratory, Los Alamos, New Mexico.

Los Alamos National Laboratory

1995 Dateline: Los Alamos, Special Issue, LALP-95-2-6&7, Los Alamos, New Mexico.

U.S. Department of the Interior

1991 How to Apply the National Register Criteria for Evaluation, *In National Register Bulletin*, No. 15, U.S. National Park Service, Washington, D.C.







Sherwood Building (TA-3-105) East View



Sherwood Building (TA-3-105) NE View



Sherwood Building (TA-3-105) NE View





Sherwood Building (TA-3-105) Main East Bay



Sherwood Building (TA-3-105) Main West Bay





- · · ·

. .



· .



Scyllac Building (TA-3-287) SE View





Scyllac Building (TA-3-287) North View



Scyllac Building (TA-3-287) Main Bay



$\begin{array}{c c c c c c c c c c c c c c c c c c c $	ROOM NUMBER	ROOM NET SQUARE FOOTAGE
1) 2249 11 2249 12 26 13 26 14 150 14 150 150 16 27 16 27 17 20 18 20 10 20 10 10 20 10 20 10 20 10 20 1	10	214
M211 65 12 55 13 56 14 56 15 575 16 575 16 575 16 575 16 575 16 131 21 9966 21A 1106 22 64 24 64 255 11	10A	
12 35 14 560 16 1575 184 1575 184 1575 184 1595 195 1966 214 1555 214 1555 214 1555 215 155 214 1555	11	
3 600 16 120 16 120 16 120 17 100 21 3606 21 3606 21 105 21 105 24 64 28 64 0788/7 11		
14 130 16 1575 164 400 1099 1316 211 9906 214 1595 255 64 1058 64	12 1	
16 1625 164 840 169 131 21 9846 214 106 24 165 25 64 0/0.077 11	13	
164 840 185 131 21 9896 21A 1106 24 85 25 94 0EFY 11		
105 131 21 9696 21A 1105 24 65 25 64 26 64		
21 9886 21A 1106 24 85 26 64 UIRJIY 11	104	
21A 1106 24 55 25 04 UBLITY 11		121
24 85 26 64 UIRITY 11		9666
26 64 UTELITY 11	21A	1106
UTHIEY		
	- 25	64
	UILITY /	11
B-STW1 116 H-STW2 239		316
		739
B-STW4 154		

LEGEND

CONCRETE	provide and start
UTILITY SPACE	for a second
LOUVER	<u>+</u>
HETAL STUD	<u>k</u> 4
WINDOW	jana na sa j
1 BEAM	I

NOTES

1. ALL INTERIOR WALLS ARE 5 1/2" THICK UNLESS OTHERWISE NOTED.

2. REFERENCE DRAWINGS ENG-C68410 AND ENC-R1902

2. REFERENCE DRAMINGS ENG-C68410 ANU ENG-R1002 3. ROOL NET SOURCE FOOLKSE IS COLUMPIED BY MEXDURING FROM THE INSIDE FACE OF THE EXTERMER MALLS TO THE EINTERINE OF ALL CHER MALLS 4. CROSS SOURCE TOTAGE IS EDUNL TO ALL FUNDA MAS INCLUDING 4. LOPENNESS IN FLOOR SLAGD MASSIRED TO THE OFFER SOFFACTS OF EXTERIOR OR FINCIDEN MALLS, AND INCLUDES ALL FLOORS, MEZZANNESS, HALLS, VESTBULES, STAINWELLS, SERVICE AND EQUIPAENT ROOMS, PLINTOUSES, ENCLOSED WESAGES AND WALLS, AND INCLUDES ALL FLOORS, MEZZANNESS, HALLS, VESTBULES, STAINWELLS, SERVICE AND EQUIPAENT ROOMS, PLINTOUSES, ENCLOSED WESAGES AND WALLS, AND INCLUDES ALL FLOORS, MEZZANNESS, MAD APENDED COMPRED SIRVESS IN GROSS FLOOR AND, A ENT SCHING EQUINAS (SUCH AS ATTLE SPACES) AND SHORE ALT ROLC, CHI DMAL AND APENDED COMPLETED IN GROSS FLOOR AND, A ENT CALCULATED MAD MAPENDED UNDERDERING OR RECOVER, AND SHIPHARD PLATFORMS AT TRUCK AND RALPOND HEXHT.







LAB/OFFICE BLDG

ARCH: FIRST FLOOR PLAN

Lat Altimon National La Lat Altimon New Next

H Enf

F. fant water they have the

BLDG 257 SUBMITTED /1+15 .6x

1

ŝ

Los Alemos

CLASSIFICATION (1 REVENCE IL SHLAZAR

7556

%iks

ĉ

Ď

Sutur RELEASED CATE TĂ----3

CHECKED 244

2

the stand Sugar

constary

AB175





1. ALL INTERIOR WALLS ARE 5 1/2 THICK UNLESS OTHERWISE NOTED.

2. REFERENCE DRAWINGS ENG-C68412 AND ENG-R1904

3. ROOM NET SQUARE FOOTAGE IS COMPUTED BY MEASURING FROM THE INSIDE FACE OF THE EXTERIOR WALLS TO THE CENTERLIKE OF ALL DTHER WALLS.

FACE OF THE EXTERIOR WALLS TO THE CENTERINE OF ALL DIFLET WALLS. CRED'S SUBMER FORDAGE IS THAN TO ALL FOOD AREA (NCLUDEN) ALL DEPENDES IN FLOOD SLAES) MEASURED TO THE OUTER SUBMACES OF EXTERIOR OF ENCLOSING WALLS. AND INCLUSS ALL FLOORS, MEZANINES, NULLS, VESTIMUELS, STANDER AND EQUIPMENT ROOKS, MEZANINES, INCLUSSED PASSAGES AND NAKES, NINHELD USINGLI SPACE INTO SLOPING EDUIDED AND ASSAGES AND NAKES, SINGHED USINGLI SPACE WITH SLOPING CENINGS (SUDAL AS ATTLE SPACES) INVIKES & FEET ON HORE HELDINGOM, AND APPOINTE COVERED SHAPPING OR RECEIVEND FLATFORMS, CATELOUR OR NOT ADDRESS (SUDAL ASSA THE SPACES) INVIKES & FEET ON HORE HELDING ON AND APPOINTE COVERED SHAPPING OR RECEIVEND FLATFORMS AT THUCK OR NOT MALKS, MICH APPOINTED IN COVERED HECEDING AND SHIPPING FLATFORMS AT TRUCK AND RALLOOD HECHT.



3

