

MAR 8 1985

NE-24

DeLaney

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NE-24

Gilman Hall, University of California, Berkeley, California, Conditional Certification Documentation

Verlette Gatlin, MA-232

I am attaching for entry into the Public Document Room, two copies of the subject documentation. These documents are the backup data for the conditional certification that the site is radiologically acceptable for restricted use as noted in the certification statement published in the Federal Register. Inasmuch as the conditional certification is made public through the Federal Register, it is prudent that the attached backup documentation also be available to the public. The docket consists of:

1. Introduction: Introduction to the certification docket for Gilman Hall, University of California, Berkeley, California.
2. Exhibit I: Summary of activities at Gilman Hall, University of California, Berkeley, California.
3. Exhibit II: Documents supporting the conditional certification of Gilman Hall, University of California, Berkeley, California.

If there are any further questions, please call me on 353-5439.

19
 Arthur J. Whitman
 FUSRAP/Surplus Facilities Group
 Division of Remedial Action Projects
 Office of Nuclear Energy

Attachment (2)

bcc:

E. Keller, OR
 J. Davis, SAN
 P. Hill, SAN
 J. Cooper, MA-213.13
 S. Miller, GC-11
 C. Miller, RL
 A. Whitman, NE-24
 Aerospace

NE-73 (4)
 NE-24 RF
 Whitman RF

NE-24:AWhitman:ph:353-5439:3/4/85:IBM:63/91:
 3-13-6

CA.3-6

CERTIFICATION DOCKET
FOR GILMAN HALL, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

Department of Energy
Office of Nuclear Energy
Office of Terminal Waste Disposal and Remedial Action
Division of Remedial Action Projects

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INTRODUCTION TO
CERTIFICATION DOCKET
UNIVERSITY OF CALIFORNIA, GILMAN HALL
BERKELEY, CALIFORNIA

The Department of Energy (DOE), Office of Nuclear Energy, Office of Terminal Waste Disposal and Remedial Action, Division of Remedial Action Projects (and/or the predecessor agency, offices, and divisions) has reviewed the past activities of the Manhattan Engineer District and Atomic Energy Commission at Gilman Hall, University of California, Berkeley, California, and completed a radiological survey of the site. The site was determined to contain areas of low-level radioactive contamination. Remedial actions were implemented to remove and to cover contaminated materials. All remedial measures have been completed and DOE has determined that the condition of the site is radiologically acceptable for the current use considering the control provided by the University's California State General License. As a result, this site is being removed from the Formerly Utilized Sites Remedial Action Program under the condition that the University of California takes full responsibility of the contaminated residues still present that have been covered to prevent exposures to individuals on the site and agrees to clean up the remaining residues in accordance with applicable standards and guidelines through normal contract closeout procedures prior to expiration of its General License.

Purpose

This docket references the published reports that contain information supporting the certification of the site's radiological condition and contains certain other unpublished references and correspondence supporting the site's certification.

This certification docket references and contains only the material most pertinent to the certification; a more comprehensive

package of records is to be archived by DOE through the Assistant Secretary for Management and Administration and will be available through either the DOE Records Office or the DOE Historian Office. Copies of the certification docket will be maintained by the Department at the DOE Public Document Room in Washington, D.C., so that the docket will be accessible to members of the general public.

Property Identification

The Gilman Hall site is a four-story building with a subbasement floor located on the Campus of the University of California, Berkeley, California. See attached map for location on campus.

Docket Contents

A brief summary of the history and activities of the Manhattan Engineer District and Atomic Energy Commission are discussed in Exhibit I of the certification package.

An additional summary of the Gilman Hall site is located in the report entitled A Background Report for the Formerly Utilized Manhattan Engineer District/Atomic Energy Commission Sites Program, September 1980, U.S. Department of Energy, DOE/EV-D097A.

Preliminary radiological surveys were conducted by Lawrence Laboratories in 1976 and additional surveys were conducted in 1981. These surveys have been summarized in the following documents:

- o Jackson, Calvin D (ER&D) to Martin B. Biles (DOE), "Gilman Hall Study," November 10, 1976--Summary of radiological survey of Gilman Hall done by Lawrence Laboratories.
- o Jackson, Calvin D. (ER&D) to Art Whitman (DOE), "Recent Radiation Surveys of Gilman Hall, University of California," August 7, 1981--Radiological surveys of 1981 of Gilman Hall.



ATTACHMENT 1. MAP OF THE UNIVERSITY OF CALIFORNIA CAMPUS AT BERKELEY, CALIFORNIA

The contents of these summarized surveys are included in Exhibit I.

Documents that state the status and decision of the remedial activities are as follows:

- o Frangos, Thomas G. (DOE) to S. Meyers (DOE), "Notification of Need for Some Form of Remedial Action--A Portion of Gilman Hall," November 28, 1979--EV/ECT has determined portion of Gilman Hall contaminated by MED and AEC activities.
- o Meyers, Sheldon (DOE) to Thomas G. Frangos (DOE), "Removal of Gilman Hall, University of California, Berkeley, California, from the Formerly Utilized Sites Remedial Action Program (FUSRAP)," March 26, 1980--Decision to remove Gilman Hall site from FUSRAP.
- o Mott, William E. (DOE) to Joseph O. Ward (Department of Health Services), "University of California, Gilman Hall, Berkeley, California," April 4, 1980,--Comments requested on Background Report.
- o Fess, Kenneth B. (Department of Health Services) to William E. Mott (DOE), "Response to letter dated April 4, 1980," May 9, 1980--Comments on decontaminating Gilman Hall.
- o Frangos, Thomas G. (DOE) to S. Meyers (DOE) "Removal of Gilman Hall, University of California, Berkeley, California, from the FUSRAP," May 9, 1980--Response to March 26, 1980, memo to delete Gilman Hall site from FUSRAP.
- o Gates, Joseph M. (EH&S) to Calvin D. Jackson (ER&D), "Status of Residual Radioactivity in Gilman Hall," October 28, 1981--Presentation of Remedial Action Plan to cover contamination with floor tiles.
- o Gates, Joseph M. (EH&S) to Calvin D. Jackson (ER&D), "Remedial Action Necessary for Gilman Hall," November 3, 1981.
- o Peterson, Andris (University of California) to Wes Warner (DOE), "State of California Radioactive Material License 1333-62," July 11, 1983--Copy of license enclosed.

Remedial action was completed by Lawrence Laboratories beginning in 1981 through 1983. The radiological surveys and remedial actions are documented in the following reports and correspondence:

- o Gates, Joseph M. (EH&S) to J.T. Davis, (DOE) "Radiological Survey and Remedial Actions--Gilman Hall, University of California, Berkeley," May 6, 1983.
- o Davis, James T. (DOE) to E.L. Keller (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," June 1, 1983.
- o Keller, E.L. (DOE) to E.G. DeLaney (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," June 15, 1983.
- o Davis, James T. (DOE) to John Baublitz (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," July 25, 1983.

EXHIBIT I

Summary of Activities at Gilman Hall, University of California, Berkeley, California

Gilman Hall was used in support of the Manhattan Engineer District and early Atomic Energy Commission activities in the early 1940s. Research involved the production of minute quantities of plutonium by bombarding uranium with cyclotron-produced neutrons. Other work included verification of plutonium's existence and chemical properties, and demonstration of the feasibility of chemical separating plutonium produced in the first chain-reacting pile at the University of Chicago.

Gilman Hall is located on the campus of the University of California and is owned by the University. The third floor and basement floor areas were associated with the Manhattan Project and early Atomic Energy Commission activities.

In 1976, a radiological survey of Gilman Hall was conducted by DOE as part of the Formerly Utilized Sites Remedial Action Program (FUSRAP). During this survey, low-level alpha contamination was detected under the asphalt tile flooring in two rooms on the third floor. Low levels of cesium-137 also were detected in an unused sewer line under the basement floor. Because the levels of contamination were low and the removable contamination was not present, no immediate action was taken. However, the contamination activity did exceed NRC guidelines for surface contamination at unrestricted facilities.

On November 28, 1979, the Office of Environment notified the Office of Nuclear Energy that the Gilman Hall site required consideration for remedial action. The Office of Nuclear Energy proposed that because the University of California Radioactive Materials License 1333-62 covered the materials associated with Gilman Hall, controls be instituted that would require contamination removal

and control procedures for any future renovation and/or demolition work.

In June 1981, the Office of Environmental Health and Safety (EH&S) discovered additional contamination in a room not originally surveyed by DOE; therefore, EH&S decided to survey the entire building. During this survey, only low-level contamination was detected in a total of 12 rooms, 3 hallways, and 6 exterior alcoves of the building. A few isolated areas of removable contamination also were detected.

From December 1981 through February 1983, under agreement between DOE and the University, Lawrence Berkeley Laboratory (LBL) personnel performed the remedial action decontamination and shielding of the contaminated areas. Those areas not requiring direct contact with contamination were performed by contractors. The follow-up survey conducted by EH&S detected no radiation levels above background or any removable contamination remaining in accessible areas.

The total cost to complete these remedial activities came to \$68,000. During these clean-up activities, no removable surface contamination was produced. Regulatory radiation dose limits for nonoccupational exposure were at no time exceeded.

Following review of the final project report, the Office of Terminal Waste Isolation and Remedial Action determined that the conditions at the Gilman Hall site were acceptable for the current use of the site under the controls of the University's California State General License. Therefore, this site is being removed from the Formerly Utilized Remedial Action Program under the condition that the University accept the responsibility of the remaining covered contaminated residuals and agrees to clean up these remaining residues in accordance with applicable standards and guidelines through normal contract closeout procedures prior to expiration of its General License.

EXHIBIT II

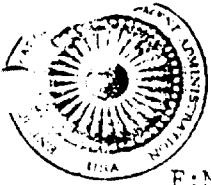
Documents Supporting the Certification of Gilman Hall, University of California, Berkeley, California

- o Jackson, Calvin D. (ER&D) to Martin B. Biles (DOE), "Gilman Hall Study," November 10, 1976.
- o Frangos, Thomas G. (DOE) to S. Meyers (DOE), "Notification of Need for Some Form of Remedial Action--A Portion of Gilman Hall," November 28, 1979.
- o Meyers, Sheldon (DOE) to Thomas G. Frangos (DOE), "Removal of Gilman Hall, University of California, Berkeley California, from the Formerly Utilized Sites Remedial Action Program (FUSRAP)," March 26, 1980.
- o Mott, William E. (DOE) to Joseph O. Ward (Department of Health Services), "University of California, Gilman Hall, Berkeley, California," April 4, 1980.
- o Fess, Kenneth B. (Department of Health Services) to William E. Mott (DOE), "Response to letter dated April 4, 1980," May 9, 1980.
- o Frangos, Thomas G. (DOE) to S. Meyers (DOE), "Removal of Gilman Hall, University of California, Berkeley, California, from the FUSRAP," May 9, 1980.
- o Jackson, Calvin D. (ER&D) to Art Whitman (DOE), "Recent Radiation Surveys of Gilman Hall, University of California," August 7, 1981 (attachment enclosed).
- o Gates, Joseph M. (EH&S) to Calvin D. Jackson (ER&D), "Status of Residual Radioactivity in Gilman Hall," October 28, 1981 (referenced report attached to Calvin Jackson's letter dated August 7, 1981).
- o Gates, Joseph M. (EH&S) to Calvin D. Jackson (ER&D), "Remedial Action Necessary for Gilman Hall," November 3, 1981.
- o Gates, Joseph M. (EH&S) to J.T. Davis (DOE) "Radiological Survey and Remedial Actions--Gilman Hall, University of California, Berkeley," May 6, 1983 (report attached).
- o Davis, James T. (DOE) to E.L. Keller (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," June 1, 1983 (referenced report attached to Joseph Gate's letter dated May 6, 1983).

- o Keller, E.L. (DOE) to E.G. DeLaney (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," June 15, 1983 (referenced report attached to Joseph Gate's letter dated May 6, 1983).
- o Peterson, Andris (University of California) to Wes Warner (DOE), "State of California Radioactive Material License 1333-62," July 11, 1983.
- o Davis, James T. (DOE) to John Baublitz (DOE) "Completion of Decontamination of Gilman Hall, University of California at Berkeley," July 25, 1983.

The following published documents are included in this package by reference:

A Background Report for the Formerly Utilized Manhattan Engineer District/Atomic Energy Commission Sites Program, September 1980, U.S. Department of Energy, DOE/EV-D097A.



ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

SAN FRANCISCO OPERATIONS OFFICE

1333 BROADWAY

OAKLAND, CALIFORNIA 94612

F:MHS-4

NOV 10 1976

Martin B. Biles, Director, Division of Safety, Standards and Compliance, HQ

GILMAN HALL STUDY

The enclosed report contains the result of a survey of designated areas of Gilman Hall on the University of California at Berkeley Campus. The survey was conducted by representatives of the Lawrence Laboratories. The third floor and basement floor areas were surveyed. Selection of areas for survey was based on the history of prior use associated with the Manhattan Project and/or early Atomic Energy Commission activities.

While the results of the survey show the presence of low levels of residual activity in the two areas surveyed, it is clear that these levels represent no health hazard.

Key findings are as follows:

1. Entire survey was free of removable contamination.
2. Low level but measurable alpha activity was detected under the asphalt tile covering small areas in two rooms on third floor.
3. Low but significant levels of Cesium¹³⁷ were detected in and around a floor drain and two other areas in the basement.

Although these levels do not represent a health hazard to the occupants of the survey areas, they do exceed those recommended by the Proposed ANSI Standard for the release of facilities for uncontrolled use and should be addressed from that perspective.

The following options should be considered:

1. Leave the area as is, since the activity is low and has been fixed in place for many years.
2. Leave the survey areas as is for now but provide a control procedure which would require any future renovation and/or demolition work to be covered by contamination removal and control procedures.

NOV 10 1976

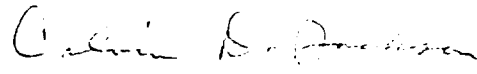
3. Require complete removal of all activity to levels meeting proposed ANSI standards. Such a step would require stripping away floor tile and probably sandblasting concrete surfaces to remove fixed contamination, followed by floor restoration.

Cost analysis for these options has not been performed.

Due to the close association of the UC Campus with the Lawrence Berkeley Laboratory, we believe that a feasible control procedure could be worked out whereby LBL would assume the responsibility for providing contamination control coverage in the event of future renovation and/or demolition activities involving the designated survey areas. SAN, therefore, recommends option 2 for designated areas.

However, if the intent of the survey is to decontaminate facilities to eliminate any further control then clearly option 3 for the Third Floor and Basement Area should be implemented.

Please let us know if additional information is needed.



Calvin D. Jackson, Director
Environment and Safety Division

Enclosure:
As stated

U.S. DEPARTMENT OF ENERGY

memorandum

DATE August 7, 1981

TO DIRECTOR
FROM San Francisco Operations Office (ESPS)

SUBJECT Recent Radiation Surveys of Gilman Hall, University of California

TO Art Whitman, Office of Operational Safety (EV-141), HQ

In reference to our discussion of August 6, 1981 I am forwarding the latest information on "Phase II and Phase III" (attachments 1 and 2 respectively) of the Gilman Hall situation at the University of California, Berkeley. As a result of additional low level radioactive contamination being detected, the University Radiation Safety Officer plans to meet with the Chancellor to discuss the survey results on Friday, August 7, 1981.

In view of the discovery of additional radioactive contamination on bare walking surfaces, the University plans to cover the concrete floors in all affected areas with a tile covering. It is expected that DOE will be requested to provide the necessary funding for the floor covering and to assist in any necessary decontamination cost. We plan to utilize the Lawrence Berkeley Laboratory in carrying out any DOE responsibilities that we assume in this matter.

I will keep you informed of any changes in the current situation. Please advise if we can provide additional information.



Calvin D. Jackson, Director
Environment, Safety and
Program Support Division

Attachment




May 11, 1981

Attachment I

TO: Radiation Safety Committee
FROM: Andris Peterson, Radiation Safety Officer
SUBJECT: Contamination of Gilman Hall

HISTORICAL ASPECTS:

Work with radioactive material was conducted in Gilman Hall as part of the Manhattan Project during World War II and perhaps even earlier. This work was under the safety supervision of the Lawrence Berkeley Laboratory (LBL).

It is known that ^{239}Pu , ^{233}U , ^{137}Cs and probably other radioisotopes were used. Room 307 Gilman Hall is now a National Historical Site as ^{239}Pu was discovered there. The fissionability of ^{233}U was first demonstrated in Room 303.

EVENTS LEADING TO THE NEWS MEDIA COVERAGE OF MAY 7, 1981:

As part of its program to survey and evaluate sites formerly used in the Manhattan Project, the now Department of Energy (DOE) contacted campus and LBL Environmental Health and Safety (EH&S) to discuss the Gilman Hall situation in August, 1976.

All rooms utilized during the period of interest were identified through LBL records and discussions with campus personnel who had participated in this project. It was decided that DOE would request Lawrence Livermore Laboratory (LLL) to survey Gilman Hall.

The LLL survey team accompanied by campus and LBL EH&S personnel surveyed the building in August, 1976. Using very sophisticated equipment not available to the campus or LBL, the LLL team determined that there was alpha contamination under the floor tiles in Rooms 301B and 307 as well as ^{137}Cs in drain pipes and under the floor of Rooms 19 and 21. Details of the LLL survey are found in Appendix I.

Since none of the residual radioactivity was removable, and since the dose rate readings in Rooms 19 and 21 were relatively low, 0.3 to 8 mrem/hr at contact, a joint decision was made by the Campus, LBL and DOE that no immediate action was necessary. Furthermore, the campus' Radioactive Materials License covers Gilman Hall and any radioactivity in it. Work with the very same radioisotopes could be re-initiated in these rooms at the request of any professor subject to approval of the Radiation Safety Committee. It was decided that the contamination would be removed and disposed as radioactive waste if any major repairs were made to the floor or drain lines in the four previously mentioned rooms.

Gilman Hall was re-visited by DOE personnel on March 3, 1980 to re-evaluate and formalize the decisions made in 1976. All parties agreed to the original decisions and DOE requested the removal of Gilman Hall from the "Formerly Utilized Sites Remedial Action Program", See Appendix II. DOE included a brief summary of the status of Gilman Hall in their report titled "A Background Report for the Formerly Utilized Manhattan Engineer/Atomic Energy Commission Site Program. This report was issued in September, 1980, See Appendix III.

EVENTS OF MAY 7, 1981:

The Oakland Tribune published a story on Gilman Hall and that U.S. Representative Ron Dellums was conducting a private investigation of the radioactivity in Gilman Hall, was requesting a State investigation of the building and would not be satisfied with anything less than complete removal of the radioactive material from Gilman Hall.

Neither the Office of EH&S nor the campus Public Information Office knew of any investigation on the part of Congressman Dellums or his staff.

On May 7, 1981 the campus Public Information Office and the Office of EH&S was requested to comment on the Gilman Hall situation by three local T.V. stations, three radio stations and four newspapers. After discussing the situation with Mr. R. Colvig, Public Information, it was decided that Mr. A. Peterson, Campus Radiation Safety Officer, would handle the questions posed by the news media and contact DOE while Mr. Colvig would notify the Chancellor's Office and keep it informed of developments. This agreement was carried out.

A meeting with members of the Department of Chemical Engineering is scheduled to be held on May 12, 1981 to explain the true situation in Gilman Hall and allay the fears raised by the extensive media coverage.

CONCLUSIONS AND RECOMMENDATIONS:

1. Nothing new has taken place in Gilman Hall. All radiation levels were determined and appropriate decisions were made in 1976.
2. To the best knowledge of EH&S and the Office of Public Information, no one on Congressman Dellums' staff has contacted the campus regarding any investigations or made any requests for information.
3. The radioactive material in Rooms 301B, 307, 19 and 21 Gilman Hall is fixed and does not present a health hazard to the occupants of the building.
4. The radiation levels found in Gilman Hall are well within the limits of all applicable campus Radioactive Materials Licenses and all State and Federal Regulations.

5. It is still the opinion of campus EH&S, LBL and DOE that no immediate steps are necessary to remove the contamination found in Gilman Hall.
6. The contaminated areas will be removed if major repairs are made to any of the four rooms previously mentioned or if demolition of the building is necessary.
7. EH&S will survey all four rooms on an annual basis starting October, 1981.

AP:fo

cc: R. A. Colvig
E. S. Dutto
G. H. Grant
R. P. Hafner
R. F. Kerley
C. J. King
S. Lynn
G. J. Maslach
G. P. Russo

July 7, 1981

Jacobs

TO: Radiation Safety Committee

FROM Environmental Health and Safety

SUBJECT: Contamination Found in 310 Gilman Hall

SUMMARY:

Contamination was discovered in Room 310 Gilman Hall. The contaminant was natural uranium, probably left by persons involved in the Manhattan Project. The material was found in a 20 square-foot section of wall and floor, mostly behind a newly-removed laboratory bench. Maximum radiation levels were 3 millirem per hour at contact and .5 millirem per hour at 1 foot. No removable contamination was detected prior to disturbing the area. Lawrence Berkeley Laboratory EH&S removed all contaminated material, except a residual amount deep in the concrete floor. After repairs, no contamination or radiation levels above background could be detected. It was concluded that personnel working in the area have been exposed to levels well below non-occupational radiation dose limits.

DESCRIPTION:

On June 8, 1981 a request was made that EH&S monitor an area of Room 310 Gilman Hall prior to removal of a laboratory bench. This room is not on the Department of Energy list of labs used in this building 30-35 years ago by the Manhattan Project. There are no records indicating EH&S-authorized radioisotope work in that area. The surveyors did, however, discover contamination sufficient to elicit survey meter response in the floor and wall adjacent to the bench scheduled for removal. The gamma radiation levels ranged from background to 1 millirem per hour at contact. No alpha radiation could be detected. Maximum levels at 1 foot were .2 millirem per hour. Smear tests were taken and no removable contamination was detected. No contamination or radiation levels above background were detected elsewhere in the room, or the rooms adjacent and below.

On June 9, the removal of the bench was monitored. There was no contamination on the bench itself, but contamination was detected on the wall behind the bench and the floor under it (3 millirem per hour maximum at the floor-wall junction at contact, .5 millirem per hour at one foot). Again, no removable contamination could be detected. The area, approximately 20 square feet of floor and wall, was covered to await analysis of the contaminant. On June 12, a water pipe valve on the other side of the room failed, and caused water to flood the room. EH&S again surveyed the room and the room below. Except for the original contaminated area, no contamination or radiation levels could be detected.

The water removed was not contaminated. The floor contamination on the bare concrete where the bench had been removed was now removable due to water contact (.2 millirem per hour on a swipe). Some alpha contamination on the concrete could now be detected (100-200 dpm). An open wooden box was built around the area to let the area dry and to isolate it.

Analysis of the contaminant by Lawrence Berkeley Laboratory ER&S indicated that it was natural uranium. A meeting was held with EH&S personnel from LBL and Chemistry Department officials. It was decided that a team from LBL would try to remove the contamination.

On June 19, LBL-EH&S removed the contaminated plaster from the wall and much of the concrete from the affected floor area. Some contamination could still be detected deep in the concrete (.2 millirem per hour at contact) when it was decided to proceed no further. Smear tests revealed that no loose contamination had been spread. The floor and wall were repaired and retiled/painted. A final survey showed no radiation levels above background and no removable contamination anywhere in the room.

CONCLUSIONS:

It is assumed that there was a spill of solution containing natural uranium by Manhattan Project researchers. The wall and floor were cleaned of removable contamination and repainted/tiled. The room was inadvertently left off the list of areas used in the project.

The residual radiation levels were well below regulatory limits for radiation levels in uncontrolled areas. Personnel working in that room subsequently, have not received in excess of non-occupational dose limits (.5 rem/year, whole-body). Since the contamination was non-removable prior to disturbing it, there could have been no personnel contamination or internal deposition to subsequent inhabitants of the room.

Although all the contaminant could not be removed, no removable contamination or radiation levels above background remain, and there is no possibility of dispersal of the residual contamination remaining deep in the concrete floor. The area will remain on file along with other areas in Gilman Hall requiring monitoring in case of repairs or demolition.

Michael R. Schoonover

Michael R. Schoonover

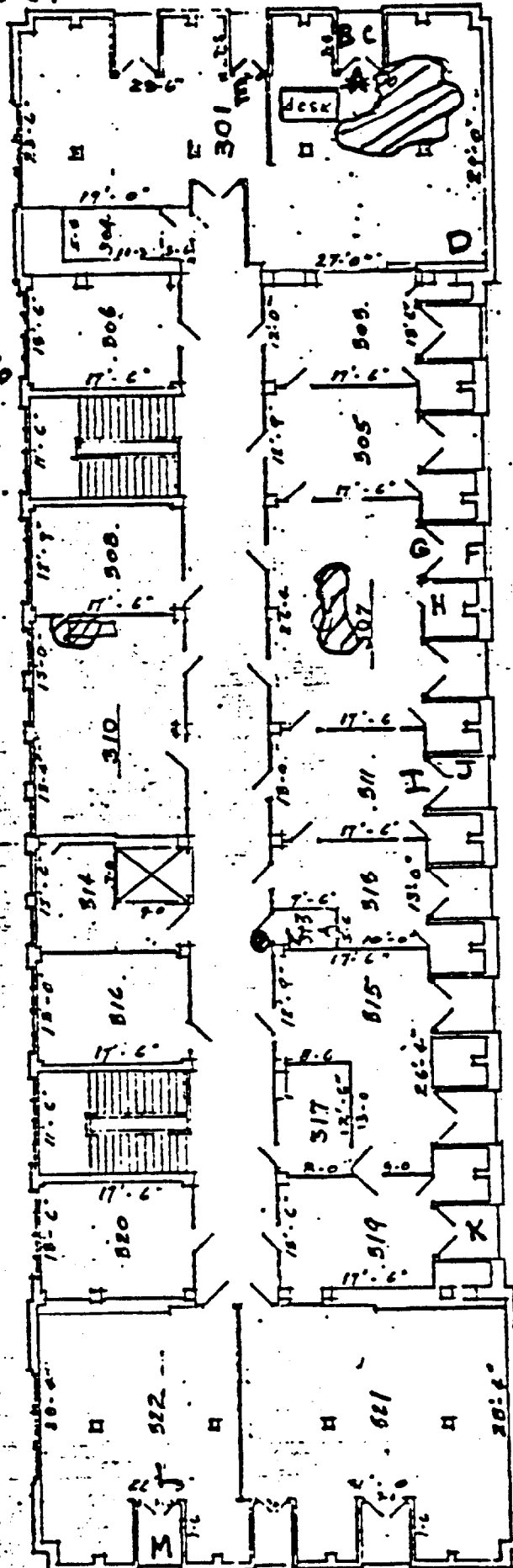
MS:fo

cc: A. T. Bell
E. S. Dutto
J. T. Haley
C. Jackson ✓
R. F. Kerley
C. J. King
G. J. Maslach
J. T. Nichols

On Ludlum 2
 with pancake probe
 taken at contact

CILRIN
FALL

- A. Wood sill - 0.9
- B. Wall - 9.0
- C. Wall - 9.0
- D. Baseboard - 0.6
- E. Wood sill - ~~0.3~~ 0.6
- F. Floor balc. - 0.9
- G. Wood sill - 0.3
- H. Closet floor - 0.6
- I. Wood sill - 0.3
- J. Floor balc. - 0.6
- K. Balc. floor - 0.15
- L. Wood sill - 0.3
- M. Drain - 0.6
- N. Floor under sink - 0.9
- O. Hall floor - 0.3



T.H.L.B.D. FLOOR

Previously
 Found

HEALTH CHEMISTRY
REPORT OF SPECIAL ANALYSIS

SUBJECT:

SAMPLE OF SCRAPINGS FROM A WALL OF GILMAN HOUSE
(PRESENTED IN A GLOVE) TAKEN BY J. HALEY
7/10/87

ANALYSIS:

γ PHA

SAMPLE CONTAINS ABOUT 20 μ CI. OF
URANIUM ISOTOPES (NATURAL URANIUM).

Distribution:

JTH -2
FILE

Analyst:

 GWS HPL

Approved:

Type:

Air

Water

Other

Date:

 8/5/87

File:

August 4, 1981

Attachment II

STATUS OF RESIDUAL RADIOACTIVITY IN GILMAN HALL

Summary

All rooms and hallways of Gilman Hall were surveyed to determine the presence of residual radioactivity. Areas of contamination were found in several rooms and some of the hallways on all floors of the four-story building. The contamination was all low-level and was not removable with one exception. The contamination discovered was in addition to contamination detected by a Department of Energy team in 1976. Most of the contaminated areas were in rooms not originally indicated as labs used for Manhattan Project Research. Since the Campus has not authorized other radioactive work in these areas and that all the contamination had a similar nature, it is assumed that Manhattan Project Research was responsible. The amount and nature of the contaminants should not have caused exposure over non-occupational limits to subsequent occupants of the building.

Background

At the request of Department of Energy (D.O.E.) and the U.C.B. Chemical Engineering Department, a complete radiation survey was done in Gilman Hall. The primary reason for the survey was the discovery of additional contamination apparently deposited during Manhattan Project Research during the 1940's.

In 1976 a D.O.E. team detected some fixed low-level contamination in rooms that had been listed as those used in the original research. It was decided not to remove the contamination at that time. In June, 1981, Environmental Health and Safety detected contamination in a room not on the original list (see attached report to the Radiation Safety Committee dated July 7, 1981). A follow-up survey of other rooms on that floor (third) resulted in detection of other contamination not previously found. It was then decided to survey all rooms in the building.

Survey Technique

All accessible floor and wall surfaces to four feet were surveyed by scanning with Ludlum Model 2 Geiger Counters equipped with thin-window (2 mg/cm² mica) "pancake" style detectors. Wet smears were taken at room entrances and the hallways. The smears were dried and counted on a windowless gas-flow Geiger counter. When contamination was detected, the area was marked and wet smears were taken and counted. Contamination causing G-M readings of more than 2 millirem per hour at contact was rechecked with a dose-rate instrument (Victoreen 470) and an alpha detector (Ludlum Model 2 with alpha scintillation probe).

Results

Contamination which had not previously been detected by Environmental Health and Safety or D.O.E. was found in the following rooms: 19, 21, ground floor hallway, 121, 221, second floor hallway, 301, 307, 311, 313A, 319, 322, and the third floor hallway. Contact readings obtained with the pancake probes ranged up to 40 millirem per hour (see attached building plans with contamination locations). Only one area with removable contamination was detected: A yellow stain on the wall of an outdoor alcove off room 301. A smear of this area gave 120 cpm (10 x background) on the counting system described.

Follow-up with the Victoreen 470 dose-rate instrument gave the following results:

Without equilibrium sleeve ($17\text{mg}/\text{cm}^2$ wall thickness): up to 3.5mrem/hour
With sleeve ($500\text{mg}/\text{cm}^2$ wall thickness): background

In general, the dose-rates obtained with the Victoreen 470 (without sleeve), were about 20% of the pancake probe G-M readings. Adding the sleeve reduced the readings to background.

Alpha contamination was detected in the hallway of the ground floor, room 121, 221, and 301. Readings up to "3 millirem/hour" were obtained.

Discussion/Conclusions

Since no radioactive material work has been authorized in the rooms in question through Environmental Health and Safety, it must be assumed that the contamination is from Manhattan Project Research in the 1940's. The radiation detected appears to be similar in nature to that discovered in room 310 and analysed as natural uranium. Apparently many more areas in the building than originally indicated were used for this project.

With the exception of the stain on the wall in room 301, the contaminant has been absorbed into concrete or wood and is not removable. The stain itself is removable to only a very small extent due to weathering. Some of the contaminant on the concrete appears to be very close to the surface however, since alpha radiation can be detected in those areas.

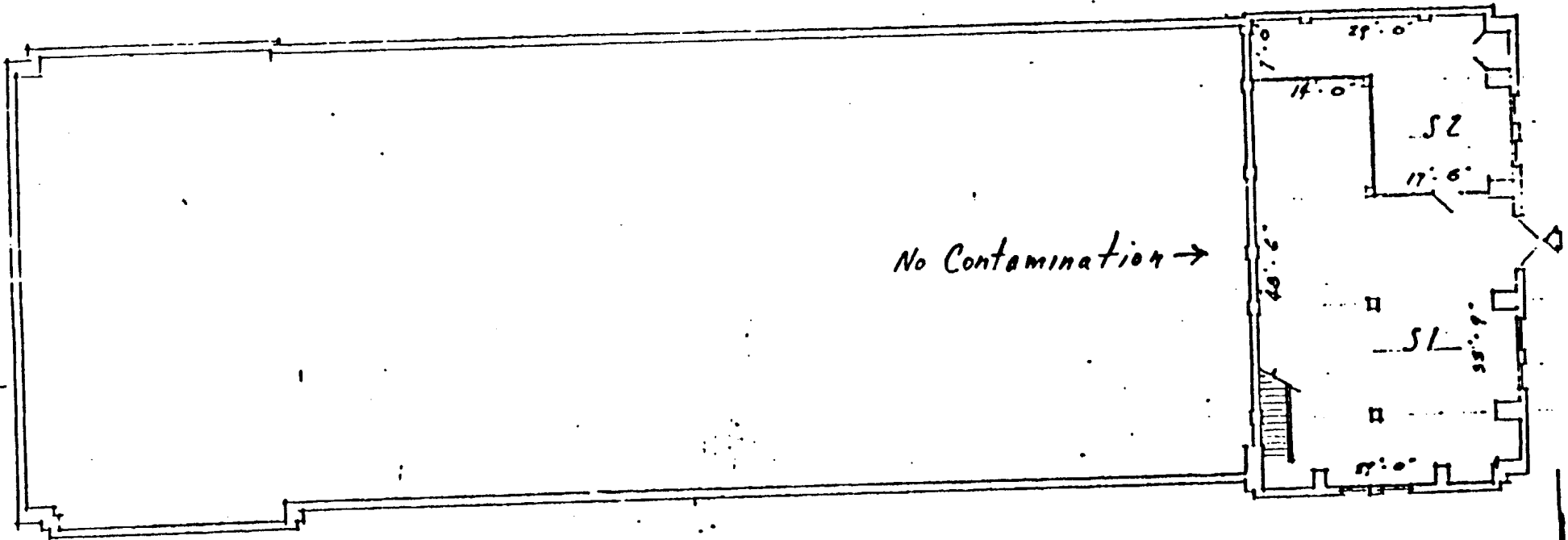
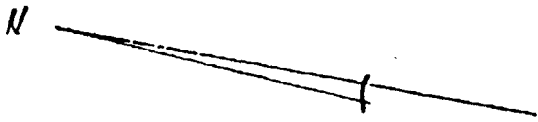
The relatively low dose-rates and the nature of the radiation emitted (very low energy x-rays) indicate a very low probability of personnel exposure over non-occupational limits to subsequent occupants of the building.


Michael Schocrover

MS/an

cc: Professor A.T. Bell

P10 - Mr. R.A. Colvig
Mr. E.S. Dutto
Mr. J. Haley
Mr. C. Jackson
Mr. J. Young
Vice Chancellor R.F. Kerley
Vice Chancellor G.J. Maslach
Dr. R.W. Wallace



No Contamination ->

SUB-BASEMENT FLOOR

1'-0" x 20'-0"

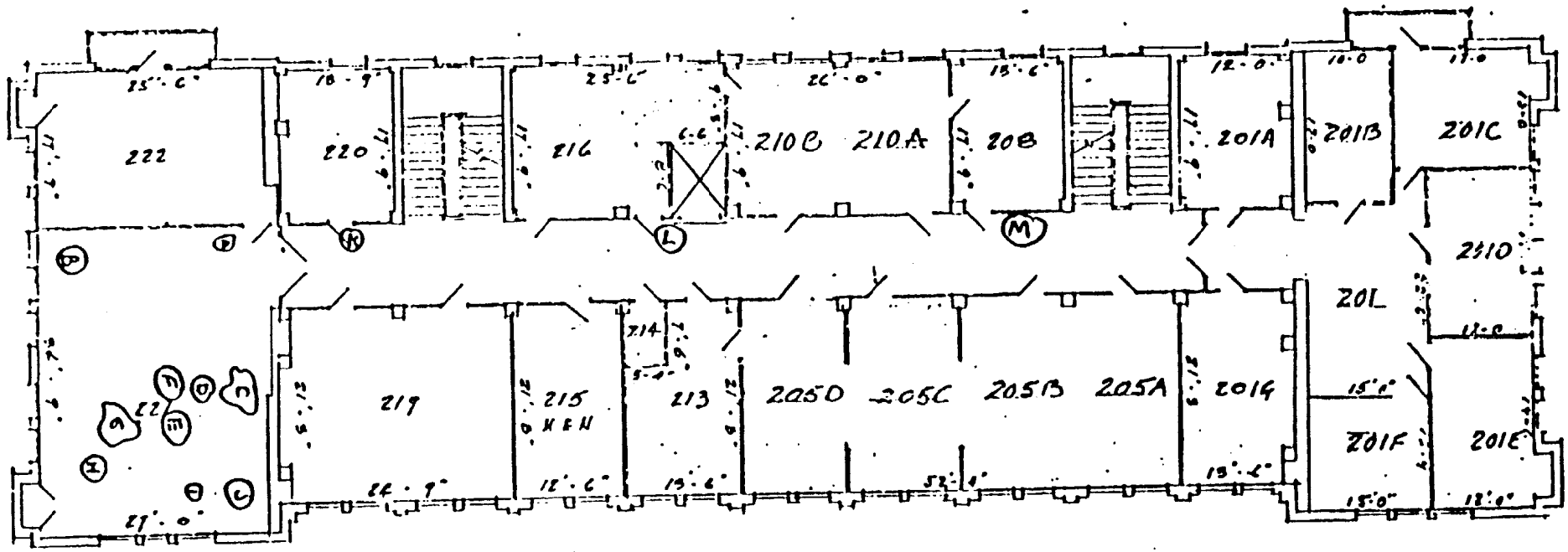
TITR.

7-15-80 C. H. G.

G-M Pancake Probe Readings

Alpha Particle Readings
unhabitated

| | | | | |
|--------------|--------------|-------------|------------|-------------|
| A, B, J, I : | 100r | .5 mrem/hr | | |
| C | Floor | 1-2 mrem/hr | | |
| D | Floor | 30 mrem/hr | 0 | 3.5 mrem/hr |
| E : | Floor | 40 mrem/hr | .5 mrem/hr | 5 mrem/hr |
| F : | Floor | 10 mrem/hr | .2 mrem/hr | 1.5 mrem/hr |
| G : | Floor | 1-2 mrem/hr | | |
| H : | Floor | 1 mrem/hr | | |
| K : | Floor (Hall) | .5 mrem/hr | | |
| L, M : | Floor (Hall) | .3 mrem/hr | | |



SECOND FLOOR

1-13-50

C.F.

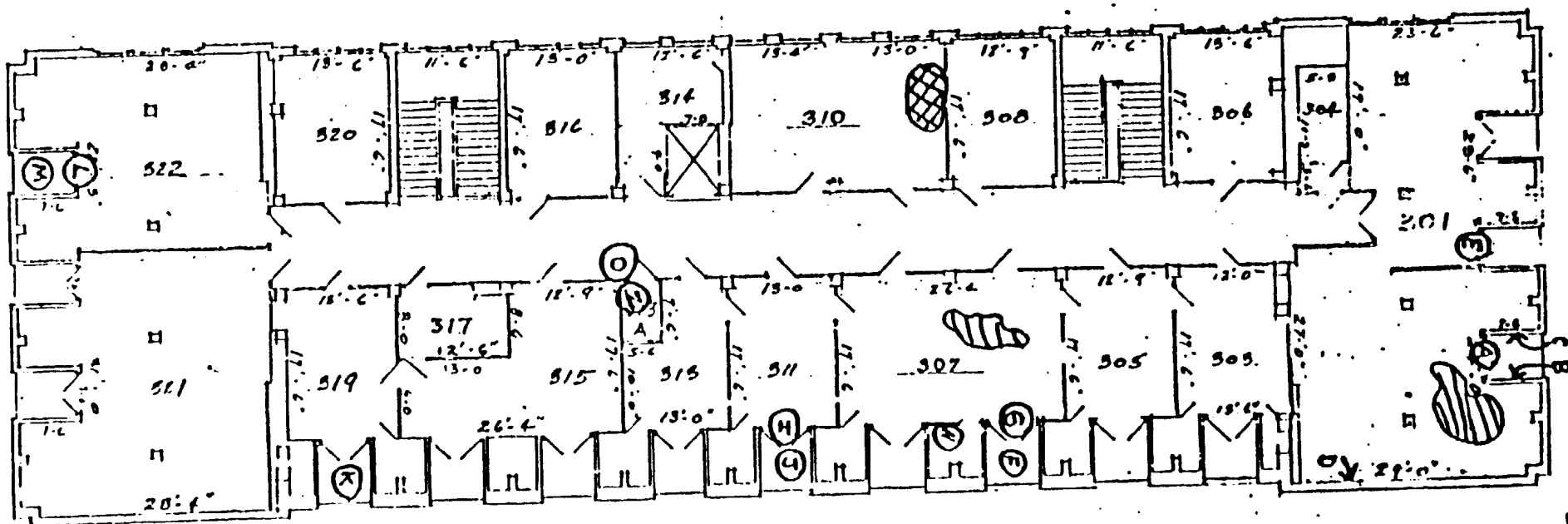
7-7-71
7-7-71
7-7-71



Readings with G-M Pancake Probe

| | |
|-------------------|------------|
| A: wood door sill | 1 mrem/hr |
| B: outside wall | 10 mrem/hr |
| C: outside wall | 10 mrem/hr |
| D: Baseboard | .6 mrem/hr |
| E: wood door sill | .6 mrem/hr |
| F: Floor outside | 1 mrem/hr |
| G: wood door sill | .3 mrem/hr |
| H: Floor closet | .6 mrem/hr |
| I: wood door sill | .3 mrem/hr |

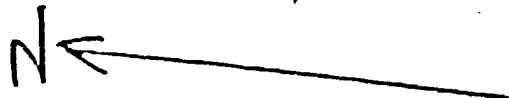
| | |
|---------------------|------------|
| J: Floor ducts | 16 mrem/hr |
| K: Floor outside | .2 mrem/hr |
| L: Wood door sill | .3 mrem/hr |
| M: Floor near drain | .6 mrem/hr |
| N: Floor under sink | 1 mrem/hr |
| O: Floor Hall | .3 mrem/hr |

| Victrolux 710 | sleeve off | sleeve on | Alpha (uncal.) |
|----------------|------------|-----------|----------------|
| B: 3.5 mrem/hr | | 0 | B: .9 mrem/hr |
| C: 3.5 mrem/hr | | 0 | C: .9 mrem/hr |
| | | | A: .1 mrem/hr |



 = contamination found in 1976 D.O.E Survey
 = contamination found June, 1981 by U.C. (mostly removed)

T.H.L.B.D. FLOOR



1-18-50

C I L L I N

1.18
2.4.3

B 2066

NOV 28 1979

EV-13

Notification of Need for Some Form of Remedial Action - A Portion of
Gillman Hall

S. Meyers, NE-90

EV/ECT has determined a portion of the building known as Gillman Hall at the University of California, Berkeley to be contaminated with radioactive residue as a result of activities conducted for the Manhattan Engineer District and Atomic Energy Commission. We consider this site to be low priority. Enclosed, in support of these findings, are (1) a survey report, and (2) a recommendation by San Francisco Operations Office for a possible remedial action.

The Office of General Counsel has made a preliminary determination that DOE has sufficient authority to conduct a remedial action at this site.

Please keep me informed of the status of this project, in order that EV may fulfill our overview responsibility for FUSRAP.

15/
Thomas G. Frangos, Director
Office of Environmental Compliance
and Overview

2 Enclosures

bcc: W. Mott
J. Counts
A. Whitman
S. Miller
Aerospace

EV-131
AJWhitman
11/21/79

GC
Miller
11/21/79

EX-112
WLMott
11/21/79

EV-10
TFrangos
11/27/79

MAR 26 1980

memorandum

NE-30

Removal of Gilman Hall, University of California, Berkeley, California, from the Formerly Utilized Sites Remedial Action Program (FUSRAP)

T. G. Frangos, EV-10

Discussions with the San Francisco Operations Office (SAN), Division of Environment, Safety and Program Support, and with the Campus Health and Safety Office, University of California, as well as consideration of the criteria for including sites in FUSRAP, have led me to conclude that Gilman Hall, which is part of the Chemistry Department at the University, should not be included in FUSRAP. We propose that the site be permanently deleted from the listing of FUSRAP locations, and I have deleted it from the drafts of the proposed legislation and the accompanying report.

The University of California currently has a broad license from the State of California for possession and use of radioactive materials on the Berkeley campus and plans to continue this license for the near future. Gilman Hall is covered by the broad license. The FUSRAP proposed legislation provides that sites under license as of the time of enactment of the legislation will not be included in the remedial action program. Furthermore, the University now has work with radioactive materials underway in the Chemistry Department. The University may at some future time wish to use Gilman Hall for radioactive work under the terms of their broad license.

As a condition of their license, the University must maintain adequate control and surveillance of all radioactive materials in its possession. The MED/AEC locations are included in the University's surveillance program. SAN has reviewed this situation with the University and has determined that an appropriate license arrangement exists to cover the former MED/AEC locations. Furthermore, SAN has informed that an occupancy agreement exists for DOE use of designated space in several campus facilities, including Gilman Hall, under the terms of Contract No. W-7405-Eng-48. Any necessary decontamination of these facilities would be an appropriate element of the settlement whenever this contract is terminated. Further details on this contract termination settlement can be obtained, if desired, by contacting C. Jackson, Director, Environment, Safety, and Program Support Division, SAN. Therefore, I believe that no further remedial action is required for Gilman Hall at this time and the site should be deleted from FUSRAP.

60712

MAR 26 1960

2

Please provide your comments and concurrence with this proposed action as soon as possible in order that we may finalize the drafts of the proposed FUSRAP legislation and the report accompanying it.

R. C. Romatowski
Sheldon Meyers
Deputy Assistant Secretary
for Nuclear Waste Management

cc: C. Jackson, SAN
E. L. Keller, OR



Department of Energy
Washington, D.C. 20545

2.4
2.4.2
2.4.4
1.11

B2361C

APR 4 1980

111111 (911) 307 3073

Mr. Joseph O. Ward, Chief
Radiological Health Section
Department of Health Services
744 P Street
Sacramento, California 95814

Dear Mr. Ward:

The Department of Energy is engaged in a program to ensure that sites formerly used for nuclear operations by the Manhattan Engineer District (MED) and Atomic Energy Commission (AEC) have been decontaminated and do not represent a potential radiological hazard to the public. The Environmental Control Technology Division is responsible for the identification of these sites and the characterization of their radiological condition. As part of this effort, a background report is being prepared to briefly summarize the history and radiological status of the former MED/AEC sites investigated to date.

I am enclosing a copy of the draft summaries describing activities at, and the status of, the following sites in your State;

- Dow Chemical Company, Walnut Creek, California
- University of California, Gillman Hall, Berkeley, California

These summaries will be included in the background report now scheduled for publication in April 1980. I would very much appreciate receiving any comments you may have regarding this site summary as soon as possible.

In addition, I would like to solicit any additional information you may now have or identify later regarding this site or other sites that may have been involved in MED/AEC activities relating to conduct of nuclear operations. I am especially interested in information concerning the disposition of equipment, materials, and residue that may have resulted from decontamination activities at such facilities.

Please contact A. J. Whitman at (301) 353-5439 or myself at (301) 353-3016 if you have any questions or additional information you wish to discuss.

Sincerely,

W. E. Mott

William E. Mott, Director
Environmental Control
Technology Division
Office of Environment

2 Enclosures

bcc: Aerospace
J. Counts
A. Whitman

JC

EV-131
AWhitman
4/ /80

EV-13
JCounts
4/4/80

EV-13 *MC*
WEMott
4/4/80 *L*

DEPARTMENT OF HEALTH SERVICES

141744 P STREET
ACRAMENTO, CA 95814

(916) 445-0931

C. Jackson, Director
Environment and Safety Division
San Francisco Operations Office



May 9, 1980

1.11
2.4

RS 2376

U. S. Department of Energy
Washington, D. C. 20545

Attn: William E. Mott, Director
Environmental Control Technology Div.
Office of Environment

Dear Sir:

This responds to your letter of April 4, 1980 concerning decontamination status of former sites of the Manhattan Engineering District (MED) Atomic Energy Division. (AEC)

The situation at Gilman Hall, University of California, Berkeley is as described in the summary status report. There appears no urgent need to decontaminate by removing and replacing the floor tiles and drains for such low, fixed activity. I believe option # 2 is the best solution, i.e., hold the area as is and develop control procedures for future demolition or renovation. Mr. Peterson, the Campus Radiation Safety Officer advised that he was notified that this site may be removed from the USDOE Remedial Action Program. I trust that the final notification will include as a condition the proviso for restrictions and control procedures.

The status of the Dow operation at Walnut Creek was verified by their radiation safety officer, Charles Levine. There are no contaminated equipment nor residual radiation levels above background. Further remedial action appears unnecessary.

At this time we know of no other sites which may fall within the guidelines of the MED operations involving Uranium or special nuclear material. If information on any such activity becomes known in the future, you will be advised.

Sincerely,

Kenneth B. Fess
Senior Health Physicist
Environmental Control Unit

KBF:hc

MAY 9 1980

2.4/3
1.18

B2377

EV-131

Removal of Gillman Hall, University of California, Berkeley, California from the Formerly Utilized Sites Remedial Action Program (FUSRAP)

S. Meyers, NE-30

This is in response to your memorandum of March 26, 1980, relative to the removal of Gillman Hall, University of California, Berkeley, California from the Formerly Utilized Sites Remedial Action Program. As we now understand the situation, SAN has indicated that the site in question is covered under an existing license and, consequently, you may decide not to conduct remedial action there at any time in the foreseeable future. In any event, Gillman Hall is a formerly utilized site and as such should retain that designation albeit in an inactive status. If you decided not to conduct remedial action, please inform us as promptly as possible so that the FUSRAP Background Report can be modified accordingly.

/s/

Thomas G. Frangos, Director
Office of Environmental
Compliance and Overview

bcc: Aerospace
A. Whitman, EV-131
T. Frangos, EV-10
R. W. Ramsey, NE-30

Dist: Subject
EV-1/RF
EV-10/RF
EV-13/ RF (2)
EV Mailroom
A. Whitman/RX RF

EV-131: AWhitman: cav: 353-5439: 5/6/80: EV-69742: DF-03

| | |
|---------------|--------------------|
| CONCURRENCES | |
| RTG. SYMBOL | EV-13 |
| INITIALS/SIG. | <i>[Signature]</i> |
| DATE | 5/7/80 |
| RTG. SYMBOL | EV-10 |
| INITIALS/SIG. | TGFrangos |
| DATE | 5/7/80 |
| RTG. SYMBOL | |
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UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



SANTA BARBARA • SANTA CRUZ

OFFICE OF ENVIRONMENTAL HEALTH

BERKELEY, CALIFORNIA 94720

October 28, 1981

Mr. Calvin D. Jackson, Director
Environment, Safety and Program
Support Division
1333 Broadway
Oakland, California 94612

Dear Mr. Jackson:

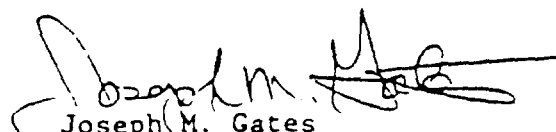
This letter is to confirm our earlier discussion regarding the status of residual radioactivity in Gilman Hall.

It is our understanding that correction by removal would be such a major undertaking that it does not appear to be a reasonable solution considering the small amounts of radioactivity involved. Covering the contamination with lead sheets on small floor areas of two rooms and linoleum on the other contaminated floors (outlined in the attached report dated August 4, 1981) would serve as a shield allowing no radiation levels above background to room users. This will also eliminate possibility of surface abrasement and spread of contamination.

It is our understanding that DOE will pay for proper containment as described above. As agreed, we are presenting this plan on October 30, 1981 to representatives of the Campus Radiation Safety Committee, Facilities Management, and School of Chemistry. If they concur, we will accept this solution and request correction to proceed in planned coordination with the School of Chemistry's operations.

Thank you for your assistance in this matter.

Sincerely,


Joseph M. Gates
Acting Environmental Health and Safety Office

JMG:fo

cc: Professor A. T. Bell
Dr. R. H. Thomas
Dr. R. W. Wallace
Vice Chancellor R. W. Wright
Mr. J. Young

UNIVERSITY OF CALIFORNIA, BERKELEY

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SANTA BARBARA · SANTA CRUZ

OFFICE OF ENVIRONMENTAL HEALTH

BERKELEY, CALIFORNIA 94720

November 3, 1981

Mr. Calvin D. Jackson, Director
Environment, Safety and Program
Support Division
1333 Broadway
Oakland, CA 94612

Dear Mr. Jackson:

In my letter to you dated October 28, 1981 I stated that there would be a meeting of various campus representatives to discuss a plan of action for the residual radioactivity in Gilman Hall.

The meeting took place as planned and agreement was reached on remedial action necessary to correct the problems noted in Gilman Hall. I will now propose specific steps which we feel are necessary in each of the areas known to have residual radioactivity. The same notations will be used as in the floor diagrams of the August 4, 1981 report. These diagrams are enclosed for ease of reference.

Room 301

1. Remove and replace outside walls of west alcove (Items B and C on diagram).
2. Remove and replace wood sills leading to both alcoves (A and E).
3. Remove and replace baseboard on west wall (D).

Room 307

1. Cover floor of south alcove (F).
2. Remove and replace wood sill leading to south alcove (G).
3. Cover floor of small closet between the two alcoves (H).

Room 311

1. Remove and replace wood sill leading to alcove (I).
2. Cover floor of alcove (J).

Room 313A

1. Cover floor (N).

Corridor near Room 313A

1. Remove spot on floor and replace floor (O).

Room 322

1. Remove and replace wood sill (L).
2. Cover floor (M).

Room 221

1. Cover floor (A-J).

Second floor corridor

1. Remove spots on floor and replace floor (K-M).

Room 121B

1. Cover floor (A).

Room 121

1. Remove and replace lab bench on north wall (H).
2. Cover floor (B-E).

Room 121C

1. Cover floor (F and G).

Basement corridor

1. Remove spot near Room 8 and replace floor (F).

Room 22

1. Cover floor (A-C).

Room 21

1. Remove contamination and replace floor at D and E.
2. Evaluate cross-hatched area near north wall (^{137}Cs) and decide whether to remove or shield.

Room 19

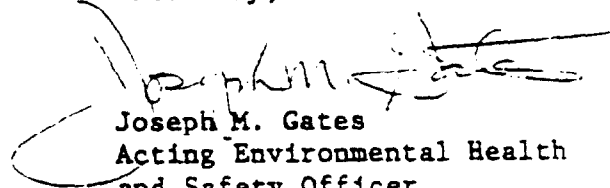
1. Remove spots on north and west wall and replace wall (G and H).
2. Evaluate cross-hatched area near north and east walls (^{137}Cs) and decide whether to remove or shield.

The College of Chemistry has plans to convert Room 19 into an office area by the start of the Winter Quarter which will start in January. Room 22 is also in transition and would be easy to work in. These two areas should be placed at the top of the priority list for remedial action.

We also feel that there should be long range plans made for the removal of any residual radioactivity in the event of major remodeling of any of the areas in question.

I look forward to working with you in this area of mutual concern and hope that steps may be taken in the very near future as far as Rooms 19 and 22 are concerned.

Sincerely,



Joseph M. Gates
Acting Environmental Health
and Safety Officer

cc A.T. Bell
J. King
R.H. Thomas
R.W. Wallace
R.W. Wright
J. Young

jm



OFFICE OF ENVIRONMENTAL HEALTH

BERKELEY, CALIFORNIA 94720

May 6, 1983

Mr. J. T. Davis
Director, Safety and Health Division
San Francisco Operations Office
U. S. Department of Energy
1333 Broadway
Oakland, CA 94612

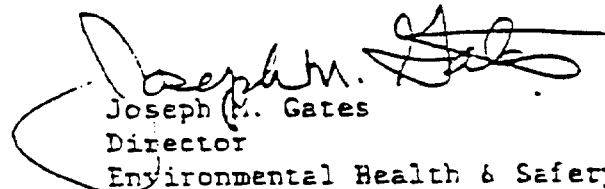
Dear Mr. Davis,

Remedial actions to correct contamination in Gilman Hall have been completed. All the work was done according to our agreements with the U. S. Department of Energy. The current status of the building is acceptable to the University.

Much of the contamination remains in place, although it has been covered and/or shielded to background levels. It is likely that additional contamination exists in inaccessible areas or other locations where the emissions are shielded by building materials or equipment. The Office of Environmental Health and Safety will continue to survey Gilman Hall and will monitor whenever remodeling or renovation takes place.

We extend our appreciation to personnel from the Department of Energy and Lawrence Berkeley Laboratory who worked with us. All those involved were extremely cooperative with the University and diligent in bringing the project to a successful completion.

Sincerely,


Joseph M. Gates
Director
Environmental Health & Safety

JMG/MS:lcc

RADIOLOGICAL SURVEY AND REMEDIAL ACTIONS

GILMAN HALL, UNIVERSITY OF CALIFORNIA, BERKELEY

REPORT DISTRIBUTION

Department of Energy

Mr. T. Carroll, Attorney, Office of Chief Counsel
Mr. E. Raheley, Chief, Environmental and Nuclear Safety Branch
Mr. W. Warner, Health Physicist, Environmental and Nuclear Safety Branch

Lawrence Berkeley Branch

Mr. W. D. Hartsough, Associate Director, Engineering and Technical Services
Division
Mr. I. Kirksey, Public Information Officer
Dr. R. E. Thomas, Deputy for Health and Safety, Engineering and Technical
Services Division
Mr. J. Young, Head, Environmental Health and Safety

University of California, Berkeley

Prof. A. I. Bell, Chairman, Chemical Engineering
Mr. R. A. Colvig, Public Information Manager
Mr. J. M. Gates, Director, Environmental Health and Safety
Prof. C. J. King, Dean, College of Chemistry
Mr. T. G. Nycum, Assistant Vice Chancellor, Facilities Management
Prof. R. B. Park, The Vice Chancellor
Mr. R. J. Rossi, Manager, Maintenance and Alterations
Mr. R. S. Sanchez, Manager, Custodial Services
Prof. C. L. Tien, Faculty Assistant to the Vice Chancellor
Dr. R. W. Wallace, Chairman, Radiation Safety Committee
Dr. R. W. Wright, Vice Chancellor, Business and Administrative Services

RADIOLOGICAL SURVEY AND REMEDIAL ACTIONS
GILMAN HALL, UNIVERSITY OF CALIFORNIA, BERKELEY

ABSTRACT

Research with radioactive materials during World War II was conducted in Gilman Hall at the University of California at Berkeley. U. S. Department of Energy and campus Environmental Health and Safety surveys of the site in 1976 and 1981 detected low-level contamination in several rooms and hallways. Nearly all the contamination consisted of uranium compounds spilled onto floors and walls. A few locations contained higher-energy gamma emitters. Some very low-level removable surface contamination was discovered. There was no spread of contamination. Dose rates did not exceed limits for non-occupational radiation exposure.

Remedial actions taken from 1981 through 1983 included removal of much contaminated material, and the remainder was shielded or sealed. There remains no detectable radiation levels above background and no removable contamination. Since some radioactive material was left in place, the building will remain under control and surveillance of campus Environmental Health and Safety. All renovation or demolition will be monitored.

It was concluded that the contamination posed no health hazard to occupants of the building prior to or during the remedial actions.

INTRODUCTION

Gilman Hall at the University of California at Berkeley was used in support of the Manhattan Engineering District activities in the early 1940's. Research was performed with small amounts of uranium which were bombarded with cyclotron-produced neutrons to produce minute quantities of plutonium. Plutonium was first isolated and the fissionability of Uranium-233 was first demonstrated by researchers here during this period. It is now known that small amounts of these elements, as well as other radioisotopes, such as ^{137}Cs , were present in various laboratories throughout the building.

In 1976, some rooms in Gilman Hall were identified and surveyed by the Department of Energy (DOE) as part of the FUSRAP program to evaluate such formerly-utilized sites. At that time, low-level alpha contamination was detected under the flooring in two locations on the third floor. Low-level ^{137}Cs contamination was detected in an unused sewer line under the

floor of the ground floor. It was decided at that time to take no immediate action, since the levels were low and there was no removable contamination. The campus' radioisotope licenses cover the materials involved, and controls were instituted so that any renovations of the areas which might affect the material would be monitored.

In June, 1981, additional contamination was discovered by EH&S in a room not originally surveyed by DOE. Since it was now evident that areas other than those originally identified by DOE were used, EH&S decided to survey the entire building.

This report covers surveys done by EH&S from June, 1981, through March, 1983. Surveys include preliminary identification of contaminated areas and follow-up inspections after remedial work by Lawrence Berkeley Laboratory (LBL) and contractors.

SURVEY AND ANALYTICAL TECHNIQUES

General

Portable survey instruments were used to conduct a radiological survey of accessible floor, wall and work surfaces of all rooms in the building. The instrument survey was backed up by surface contamination smears.

Instrumentation

The main instrumentation used consisted of Ludlum Model 2 survey meters equipped with 1.5" diameter "pancake" style alpha-beta-gamma Geiger probes (2 mg/cm² window thickness). Background on these meters averaged about .05 millirem per hour. A reading of 5x background at contact with a surface was considered to be positive. When contamination was detected, follow-up was made with other instrumentation. Dose rate levels were measured with a Victoreen Model 470 ion-chamber survey instrument (background less than .1 millirem per hour). Alpha contamination was detected with Ludlum Model 2 survey meters equipped with alpha scintillation probes. Smears were counted with a windowless gas flow Geiger plancher counter, Nuclear Chicago Model 470 (background less than 30 dpm).

SURVEY RESULTS

General

Contamination was found in a total of twelve rooms throughout all floors of the building and in the hallways. In all cases, the contamination was

low-level, with a dose rate of 5 millirem per hour or less at contact. When contamination was at or very near the surface, alpha emissions could be detected at levels up to 10,000 dpm. In every location except two, the contamination exhibited emissions similar to those of natural uranium. Two samples analyzed by LBL were identified as probable uranium. Covering this type of contamination with 1/8" vinyl-asbestos floor tile reduced the dose rate to below detection limits. In two cases, the contamination was a higher-energy gamma emitter, possibly ^{137}Cs .

Most of the contamination detected was embedded in bare concrete floors. Some was found to be on painted-over walls or cabinet faces, or embedded in bench tops. Contamination was also found on exterior alcoves on the stucco walls or in the tarred flooring. No contamination was detected on floors in rooms which had tiled floors. (Such covered contamination would typically not have been detected through the tile.)

Removable contamination was found in very few instances (e.g., on an exterior unpainted stucco wall, in mortar between concrete floor panels, under a removed bench). Typically, the contamination had been painted or tarred over, or had been absorbed into the concrete over the years. Removable contamination never exceeded 500 dpm/100 cm^2 .

Survey A - June 9, 1981

On June 8, 1981, EH&S received a request to survey an area after removal of a bench. (After the 1976 DOE survey, departmental and maintenance personnel had been requested to notify EH&S prior to any renovation or demolition in the building.) This room was not on the list surveyed in 1976.

Results:

Contamination was detected on the wall and bare concrete floor exposed after the bench was removed--about 20 square feet total. Dose rates up to three millirem per hour at contact were detected. Due to a small flood, the area became wet. After drying, some removable contamination was detected on the floor (about 500 dpm/100 cm^2). Alpha contamination could be detected on the surface, 4,000 dpm. See attached diagram in Appendix A.

Action Taken:

LBL personnel removed as much of the contamination as possible from the wall and floor. The floor and wall were rebuilt by a contractor, monitored by EH&S.

Follow-up Survey:

Contamination was completely removed from the wall. After the floor had been excavated to about 8 inches, residual contamination (about 1 millirem/hour) remained in the bottom of the hole. A sample, analyzed by LBL, was determined to be natural uranium. After the hole had been refilled with concrete, no radiation levels above background or removable contamination could be detected.

Survey E - July 15-19, 1981

Since contamination had been found in an area not on the list of rooms that DOE had surveyed in 1976, it was decided to survey all accessible surfaces in the building.

Results:

Contamination was detected in several areas in 12 rooms, 3 hallways, and 6 exterior alcoves. Dose rate levels ranged up to 5 millirem/hour at contact. See attached diagrams in Appendix A. Types of surfaces contaminated included concrete laboratory and hallway floors, plaster walls, bench tops, wooden sills leading to exterior alcoves, tarred alcove floors and exterior stucco walls.

Removable contamination was initially detected in only one location: on a stucco wall on an alcove outside Room 301 (200 dpm/100 cm²). A later follow-up survey revealed a similar level from the mortar between concrete floor panels in Room 221.

Direct alpha readings of up to 10,000 dpm were detected at the two areas with removable contamination. Similar levels of alpha contamination were detected on the floor of Room 121, the sill leading to the alcove off Room 301, and on the ground floor hallway.

In nearly all cases, the contamination appeared to be similar in nature to that found in Room 310, exhibiting alpha and beta emissions. A sample from the exterior alcove of Room 301 was analyzed by LBL and determined to be natural uranium. The dose rate dropped to undetectable levels at 3 feet and the contamination could be completely shielded by covering it with 1/8" vinyl asbestos tile.

In a later survey, one area of contamination exhibited higher energy gamma emissions, similar to those found by DOE in the ground floor.

Action Taken:

Agreement was made between DOE and the campus for decontamination or shielding of all contamination detected, including material found in the 1976 DOE survey. LBL personnel performed the decontamination, and contractors performed all work not involving direct contact with contaminated material. See the letter in Appendix B. This work took place from December, 1981, through February, 1983.

Follow-up Surveys:

During and after each phase of LBL decontamination work, EHS surveyed the areas involved. In some cases, additional fixed contamination was discovered during and after decontamination. In all cases, this was followed up with more decontamination or shielding until no further radiation levels or removable contamination could be detected. At no time was removable surface contamination produced by the clean-up work. The following gives a summary of these efforts:

- A. Hallways of ground, second and third floors: The contamination was completely removed.
- B. Concrete and piping in floors of Rooms 19 and 21: Some residual low-level contamination remained in the floor after the excavations went as deep as possible. Radiation levels at the bottom of the excavations were less than one millirem/hour. Some contaminated piping remains in the floor. After refilling with concrete, no radiation levels above background or removable contamination could be detected.
- C. Walls in Rooms 19 and 21: The contamination was completely removed.
- D. Floors in Rooms 22, 121, 121B, 121C, 221, 313A and 322: These areas were covered with flooring. No radiation levels above background and no removable contamination remains.
- E. Laboratory bench, Room 121: The contaminated bench top has been removed. Contamination later found on the baseboard, drawer fronts, and doors has been removed. No contamination remains on the bench. Some low-level contamination remains on the floor beneath the bench. It is covered by floor tiles or the bench itself. No detectable radiation levels above background or removable contamination remains.

- F. Wooden sills leading to exterior alcoves, Rooms 301, 307, 311 and 322: The contamination was completely removed.
- G. Door leading to west alcove, Room 301 (found to be contaminated in a follow-up survey): The contamination was completely removed.
- H. Exterior alcove floors, Rooms 301, 307, 311, 319: Tar and paper have been added to shield the contamination. No detectable radiation levels above background or removable contamination remains.
- I. Walls of west alcove, Room 301: Contamination has been completely removed.
- J. Baseboard, west wall, Room 301; and also the wall above (found to be contaminated on a follow-up survey): All contamination removed.
- K. Alcove, Room 307: walls, table, electrical piping (found to be contaminated on a follow-up survey): All contamination was removed.
- L. Closet, Room 307: The contaminated floor was covered with tile, and a follow-up survey showed radiation levels remaining up to 1 millirem/hour. (The contamination is a higher-energy gamma emitter such as ^{137}Cs .) One-inch lead plates were bolted down over the contaminated area. No radiation levels above background or removable contamination remains.

Summary of follow-up survey results: There are no radiation levels above background or removable contamination detectable with the instrumentation used.

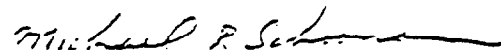
CONCLUSION

An undetermined amount of radioactive contamination remains in Gilman Hall. The building will remain under control and EH&S will monitor any renovation or demolition work performed there. There remains no detectable radiation levels or removable contamination in accessible areas.

The contamination that has remained in the building since the early 1940's exhibits low-level and mostly non-penetrating radiation emitted from uranium or similar compounds. The few discoveries of low-level, penetrating radiation were in low-occupation areas. In no case were the regulatory radiation dose limits for non-occupational exposure exceeded. Removable contamination was detected in a few isolated areas. There was no indication of contamination spread or of the existence of any airborne contaminants. It is concluded that there have been no deleterious effects to the health of those occupying the building prior to or during the clean-up.

The remedial actions agreed upon have been performed satisfactorily without causing contamination spread or any other hazard to the building occupants. We wish to thank LBL Environmental Health and Safety and our campus' Department of Facilities Management for their cooperation in this project.

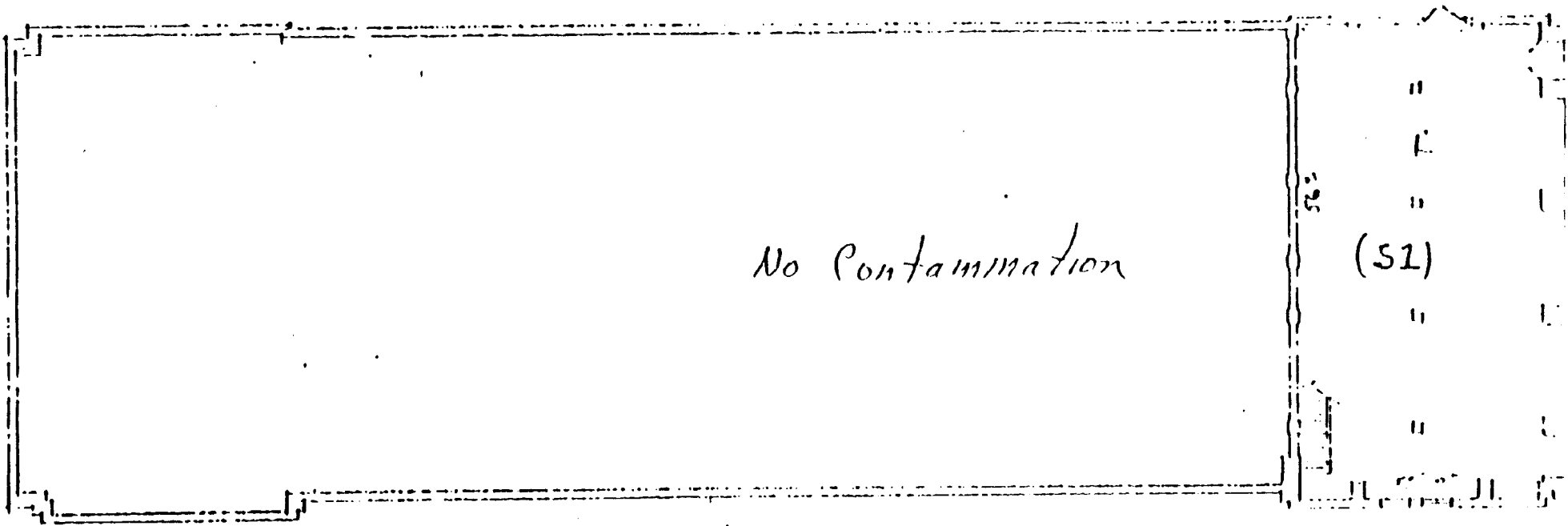
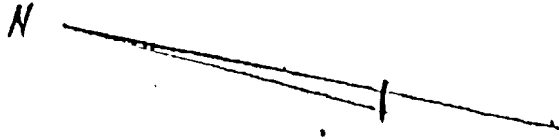
Michael R. Schoover



Health Physicist
Office of Environmental Health & Safety
University of California at Berkeley

| <u>Location</u> | <u>Contact Dose Rate (millirem/hour)</u> | <u>Alpha Rate (dpm)</u> | <u>Removable dpm/100 cm²</u> | <u>Comments</u> |
|-------------------------|--|-----------------------------|---|--|
| Sub-basement | (no contamination) | | | |
| Basement (ground floor) | | | | |
| A, floor, rm 22 | .2 | - | - | covered |
| B, floor, rm 22 | .2 | - | - | covered |
| C, floor, rm 22 | .2 | - | - | covered |
| D, floor, rm 21 | .2 | - | - | removed |
| E, floor, rm 21 | .4 | - | - | removed |
| F, floor, hall | .4 | 10,000 | - | removed |
| G, wall, rm 19 | .2 | - | - | removed |
| H, wall, rm 19 | .2 | - | - | removed |
| I, floor, wall, rm 21 | 2.6 | - | - | from DOE survey (1976), partially removed, refilled |
| J, floor, rm 19 | .2 | - | - | from DOE survey (1976), partially removed, refilled |
| K, floor, rm 19 | .4 | - | - | from DOE survey (1976), partially removed, refilled |
| First Floor | | | | |
| A, floor, rm 121 | .2 | - | - | covered |
| B, floor, rm 121 | .2 | - | - | covered |
| C, floor, rm 121 | .3 | 4,000 | - | covered by bench or flooring |
| D, floor, rm 121 | .2 | - | - | covered |
| E, floor, rm 121 | .2 | - | - | covered |
| F, floor, rm 120 | .2 | - | - | covered |
| G, floor, rm 120 | .2 to .3 | - | - | several spots, all covered |
| H, bench, rm 121 | .2 | - | - | bench top, doors, facing removed |
| Second Floor | | | | |
| A-C, G-J, floor, rm 221 | .2 to .4 | - | - | covered |
| D-F, floor, rm 22 | 1.5 to 5 | 5,000 to 10,000 | 200 | removable from joints between slabs; all covered |
| K-M, floor, hall | .2 | - | - | removed |

| <u>Action</u> | <u>Contact Dose Rate (millirem/hour)</u> | <u>Alpha Rate (dpm)</u> | <u>Removable dpm/100 cm²</u> | <u>Comments</u> |
|--|--|-----------------------------|---|---|
| rd Floor | | | | |
| A, sill & alcove door, rm 301 | .3 | 2,000 | - | removed |
| B, walls, alcove, rm 301 | 3.5 | 10,000 | 200 | removed |
| C, floor, alcove, rm 301 | .4 | - | - | covered |
| D, baseboard, wall, rm 301 | .2 | - | - | removed |
| E, sill to alcove, rm 301 | .2 | - | - | removed |
| E, floor, table, walls, piping, of alcove, rm 307 | .2 to .4 | - | - | floor covered; table, walls, piping removed |
| G, sill, alcove, rm 307 | .2 | - | - | removed |
| H, floor, closet, rm 307 | .3 | - | - | some gamma, covered with lead |
| I, sill, alcove, rm 311 | .2 | - | - | removed |
| J, floor, alcove, rm 311 | .3 | - | - | covered |
| K, floor, alcove, rm 319 | .2 | - | - | covered |
| L, sill, alcove, rm 322 | .2 | - | - | removed |
| M, floor, alcove, rm 322 | .2 | - | - | covered |
| N, floor, rm 313A | .3 | - | - | covered |
| O, floor, hall | .2 | - | - | removed |
| P, floor, rm 307 | - | - | - | DOE survey (1976), no action needed |
| Q, floor, rm 301 | - | - | - | DOE survey (1976), no action needed |
| R, wall, floor under removed bench, rm 310 | 3.0 | 4,000 | 500 | Survey A, wall removed, floor con- tamination partially removed, covered |

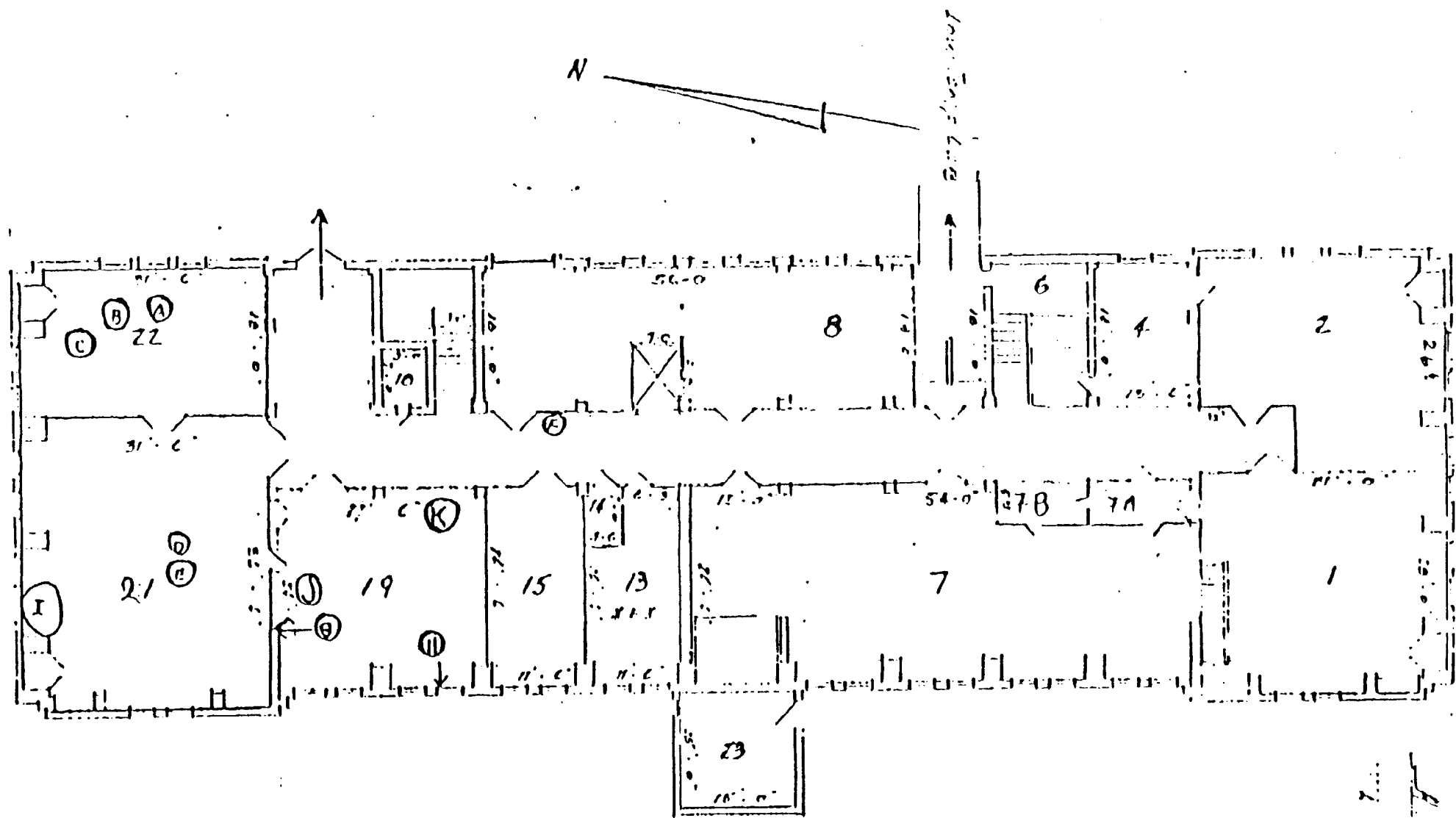


SUB-BASEMENT FLOOR

SCALE 1" = 20' 0"

1-13-50 C.L.C.

1-13-50

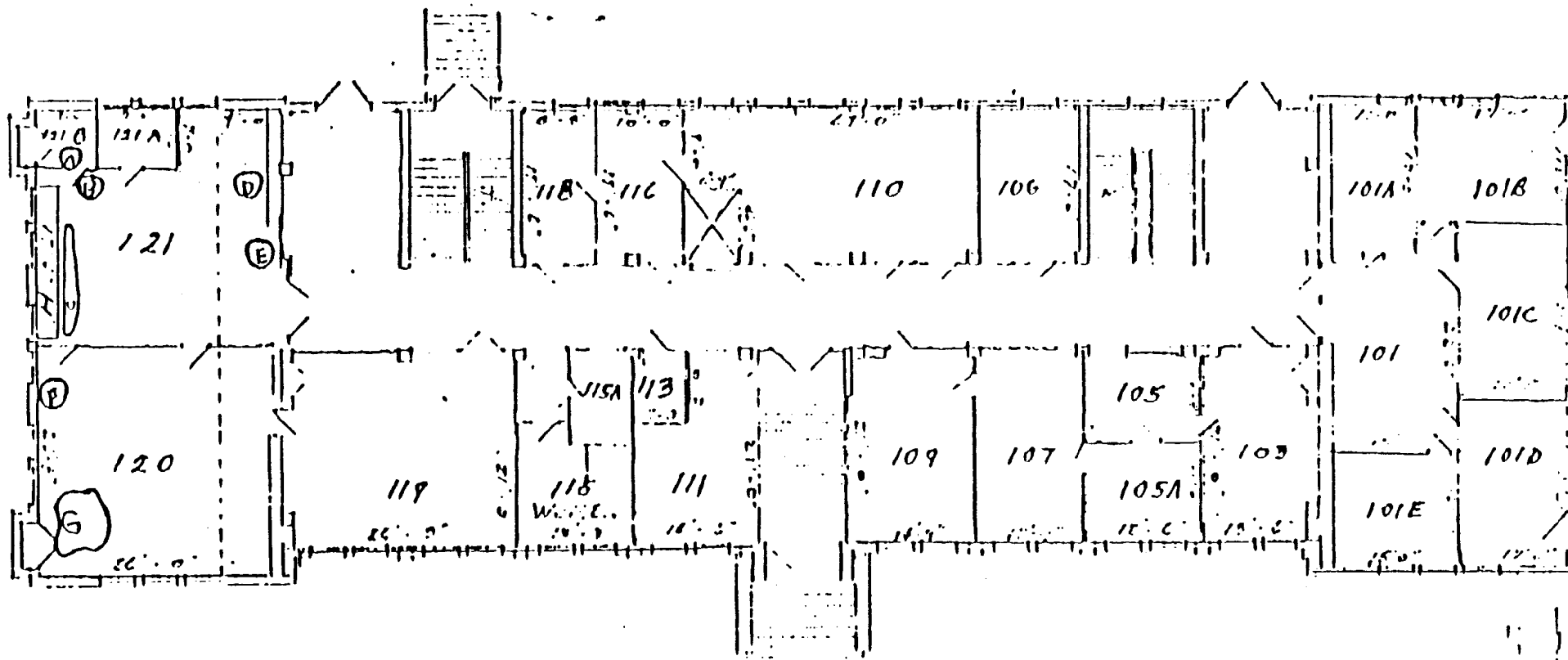
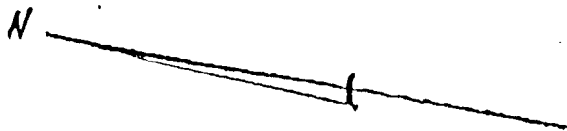


BASEMENT FLOOR

SCALE 1" = 20'-0"

4/63

ALL
SEE - 126

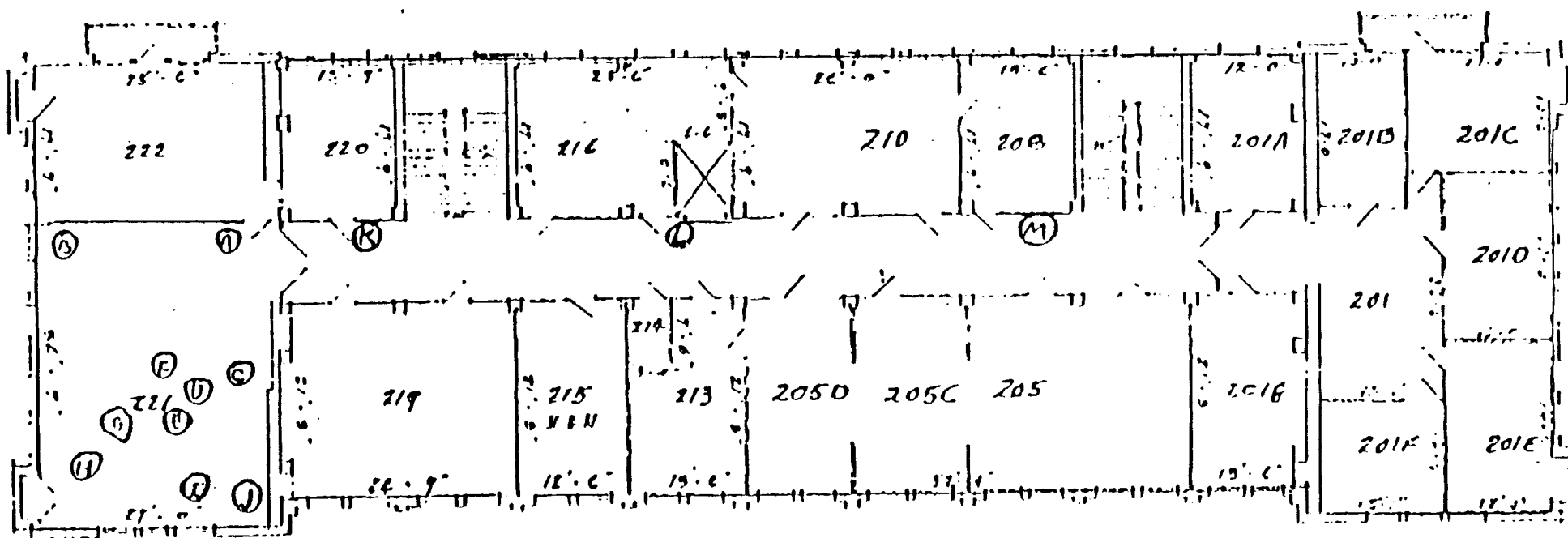
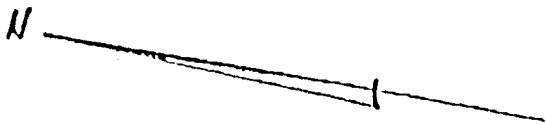


FIRST FLOOR

SCALE 1" = 20' 0"

1-13-50 S.P.C.

ASSET # 1000



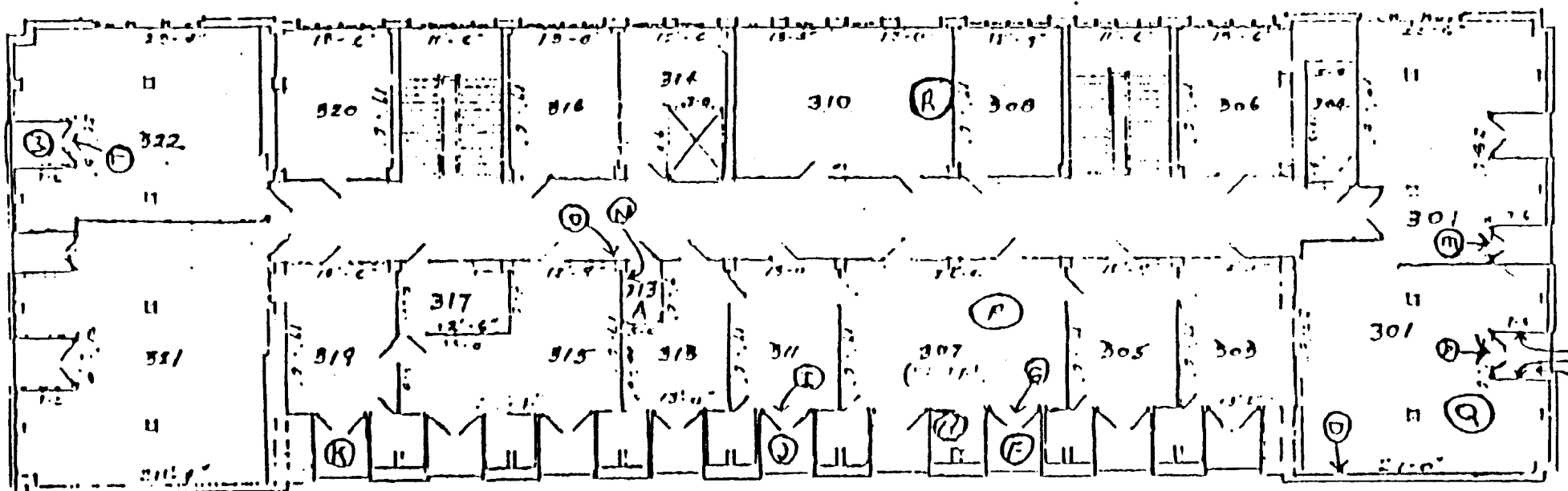
SECOND FLOOR

SCALE 1" = 20' - 0"

1-13-50 212

ASSET 1350

H. L. L.



THIRD FLOOR
SCALE 1" = 20' 0"

HALL
ASSIST 1950

1-12-50 C.S.C.

U.S. DEPARTMENT OF ENERGY
memorandum

DATE June 1, 1983

FILE TO
ATTN OF San Francisco Operations Office (ESQA)

SUBJECT Completion of Decontamination of Gilman Hall, University of California
at Berkeley

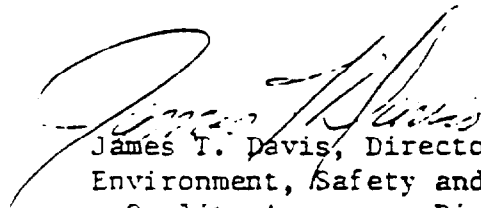
TO E. L. Keller, Director, Technical Services Division, OR

Remedial actions to remove or shield all known radioactive contamination in Gilman Hall, located on the campus of the University of California, Berkeley, have been completed. A copy of the final report, prepared by the University's Office of Environmental Health, is attached.

The work was accomplished in accordance with the agreement between SAN, the Lawrence Berkeley Laboratory, and the University of California at Berkeley. The total cost was \$68K which was the amount allocated for this work by OR/FUSRAP.

The current radiological status of the building is acceptable to both the University and to SAN. The University and SAN agree that when and if final decontamination of Gilman Hall is required it will be accomplished through the normal contract close-out process.

Completion of this work has fulfilled OR's obligation under the Formerly Utilized Sites Remedial Action Program (FUSRAP). No further involvement by OR/FUSRAP in this matter is required.


James T. Davis, Director
Environment, Safety and
Quality Assurance Division

Attachment

18363



CA.3

20294

(2200) p...

Department of Energy
Oak Ridge Operations
P.O. Box E
Oak Ridge, Tennessee 37830

JUN 15 1983

Transmittal
remedial action
radiological

OR

report
survey

E. G. DeLaney, DRAP, NE-24

COMPLETION OF DECONTAMINATION OF GILMAN HALL, UNIVERSITY OF CALIFORNIA AT
BERKELEY

Attached is a copy of the final report covering the remedial actions and associated radiological survey work on Gilman Hall. Your attention is called to the last paragraph of the attached letter from Mr. Davis (SAN) which states: "Completion of this work has fulfilled OR's obligation under the Formerly Utilized Sites Remedial Action Program (FUSRAP). No further involvement by OR/FUSRAP in this matter is required."

Lowell F. Campbell
for E. L. Keller, Director
Technical Services Division

CE-53:EHH

Attachment:
As Stated

UNIVERSITY OF CALIFORNIA, BERKELEY



BERKELEY · DAVIS · IRVINE · LOS ANGELES · RIVERSIDE · SAN DIEGO · SAN FRANCISCO

SANTA BARBARA · SANTA CRUZ

OFFICE OF ENVIRONMENTAL HEALTH

BERKELEY, CALIFORNIA 94720

July 11, 1983

Mr. Wes Warner
Environmental and Nuclear Safety Branch
San Francisco Operations Office
U. S. Department of Energy
1333 Broadway
Oakland, CA 94612

Dear Mr. Warner,

This letter is to confirm our telephone conversation of July 8, 1983.

As requested, I am enclosing a copy of our State of California Radioactive Materials License 1333-62. This license covers all buildings on the campus itself, subject to review and approval of our Radiation Safety Committee. It therefore also covers Gilman Hall and the small amounts of residual activity remaining in that building.

Please call me at 642-3073 if you need any further information.

Sincerely,

Andris Peterson
Radiation Safety Officer

Enclosure

AP:lcc

cc: R. W. Wallace

Page 378

455-20

State of California Department of Health Services

Department of Health Services
 Page 1 of 4
 RESTRICTED COPY
 C-1100
 C-2000

REF 76 - RFL
 Joe G. S. 5/2 J. K.

RADIOACTIVE MATERIAL LICENSE

Pursuant to the California Administrative Code, Title 17, Chapter 5, Subchapter 4, Group 2, Licensing of Radioactive Material, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, use, possess, transfer, or dispose of radioactive material as hereinafter and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations, and orders of the Department of Health Services now or hereafter in effect and to any conditions specified in this license.

| | | | |
|-------------|---|----------------------|---|
| 1. Licensee | University of California Berkeley | 3. License No. | 1233-62 is hereby amended in its entirety. |
| 2. Address | Office of Environmental Health Berkeley Campus Berkeley, CA 94720 | 4. Expiration date | December 31, 1985 |
| Attention: | Robert F. Kerley Vice Chancellor Administration | 5. Inspection agency | Radiologic Health Section - N |
| | | Amendment No. | 30 |

| Nuclide | Form | Possession limit |
|--|-------------------|------------------------------------|
| A. Hydrogen 3 | A. Any | A. Not to exceed 100 Curies |
| B. Any with atomic numbers 3-83 | B. Any | B. Not to exceed 25 Curies. |
| C. Any with atomic numbers 3-83 | C. Sealed sources | C. Not to exceed 100 Curies |
| D. Any with atomic numbers 84-105 except Source and SIM. | D. Any | D. Not to exceed 100 milli-curies. |
| E. Any with atomic numbers 84-105 except Source and SIM. | E. Sealed sources | E. Not to exceed 10 Curies. |
| F. Source material | F. Any | F. 5,620 pounds. |
| G. Special Nuclear Material (SIM) | G. Any | G. 200 grams. |

9. Authorized use
 A. G. - Research and development as defined in Section 30175 and instructional programs.

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

Page 2 of 4 pages

RADIOACTIVE MATERIAL LICENSE

License Number 1333-

Supplementary Sheet

Amendment Number 30

continued

10. Radioactive material may be used only at the following locations:

- (a) University of California, Berkeley Campus. (Except areas and activities administered by Lawrence Berkeley Laboratories under Department of Energy Contract Number W-7405-ENG-48).
- (b) Sodega Marine Laboratory, Sonoma County, University of California, Sodega Bay, California 94963.
- (c) Elodgett Forest Research Station, El Dorado County, University of California, Star Route, Georgetown 95634.
- (d) Gill Tract, University of California, 1050 San Pablo Avenue, Albany, CA 94706.
- (e) Hastings Natural History Reservations, University of California, Box 80, Carmel Valley, California 93924.
- (f) U. S. Forestry Banner Camp, Meadow Valley Forestry Camp, University of California, Plumas County, California 95956.
- (g) Hat Creek Observatory, Radio Astronomy Laboratory, University of California, Cassel, California 96016.
- (h) Richmond Field Station, University of California, 47th and Hoffman Blvd Richmond, CA 94804.
- (i) Richmond Service and Storage Facility, University of California, 1414 Harbour Way South, Richmond, CA 94804.
- (j) Russell Evergreen Tree Farm, 4927 Happy Valley Road, Lafayette, CA. 94549.
- (k) Sagehen Creek Research Station, University of California, P.O. Box 939 Truckee, CA 95734.

11. In accordance with Section 6103 of the California Government Code, this license is not subject to payment of an annual license fee.

12. All uses of radioactive material under this license shall be conducted in accordance with the user's application to and the findings requirements of the Radiation Safety Committee. The review of interrelated applications shall include findings with the manner specified in 17 CCR 10112 and, if human use is at issue, 17 CCR 10113. Documentation of these findings shall be maintained for review by the Department's authorized representatives.

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

Page 3 of 4 Page

RADIATION PROTECTION INSTRUMENTAL LICENSES

License Number 1333-6

Supplementary Sheet

Amendment Number 30

continued

13. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 7 and 8 of this license in accordance with statements, representations and procedures contained in the following documents:
- (a) application for renewal with attachments, dated November 23, 1978, signed by T. W. Chenoweth.
 - (b) letter dated December 10, 1979, signed by Robert F. Kerley and attachments thereto.
 - (c) letter with attachments dated October 27, 1980, signed by Robert F. Kerley.
 - (d) letter and attachments dated December 12, 1980, signed by Andris Peterson.
14. (a) The radiation safety officer in this program shall be Andris Peterson.
(b) The chairperson of the radiation safety committee shall be Roger W. Wallace.
15. The licensee is authorized to use a radioactive waste compactor for compacting radioactive waste under the following limitations:
- (a) Compacting of radioactive waste is prohibited if the radioactive waste contains:
 - (1) unsealed sources other than contaminated material,
 - (2) alpha emitters other than source material,
 - (3) Strontium 90, or
 - (4) radioactive material in liquid form.
 - (b) The radioactive waste compactor shall be used in accordance with statements representations and procedures as described in Condition 13(a) of this license except as specifically provided otherwise by this license.
 - (c) The licensee shall test areas near the compactor considered most likely to be contaminated for removable contamination at intervals not less frequently than weekly, after each use. Results of such tests shall be maintained available for inspection. If removable contamination exceeds 2,000 disintegrations per minute per 100 square centimeters, the licensee shall immediately decontaminate the area.

STATE OF CALIFORNIA
DEPARTMENT OF HEALTH SERVICES

Page 4 of 4 pages

101. HAZARDOUS MATERIALS REGULATION

Code Number 1333-6

Supplementary Sheet

Amendment Number 30

continued

16. The licensee shall, with respect to all radioactive waste generated and packaged for disposal at licensed land burial sites, establish and maintain a training program, written operating and radiation safety procedures and quality assurance inspection and testing procedures which assure that:
- (a) all waste is properly segregated and identified with respect to those classes of waste being accepted for burial at the intended burial sites.
 - (b) waste is properly packed to conform to DOT regulations and specific packaging instructions for the class of waste being packed which are supplied by the broker or intended burial site operator and which are particular to the intended burial site.
 - (c) all containers are properly closed, meet DOT specifications and are acceptable at the burial site for the class of waste contained.
 - (d) all containers are free of surface contamination per DOT regulations.
 - (e) radiation levels conform to DOT limits.
 - (f) all containers are properly labelled per DOT regulations and in addition, are labelled as to radionuclides and class of waste contained.
 - (g) all records, shipping papers and certificates are complete and accurate.
 - (h) all steel drums are tipped to the horizontal position to test against free liquid.
 - (i) Pel-E-Cel shall not be used for packaging scintillation vials, diatomaceous earth or other absorbent specifically approved by the burial site operator shall be used.

memorandum

DATE July 25, 1983

R. TO
A. IN OF San Francisco Operations Office (ESQA)

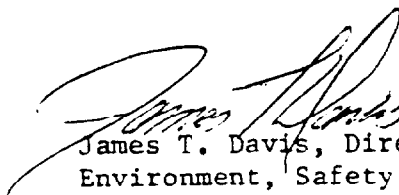
SUBJECT Completion of Decontamination of Gilman Hall, University of California at Berkeley

TO John E. Baublitz, Director, Remedial Action Projects (NE-24), HQ

As requested by Art Whitman of your staff, I am forwarding a copy of the State of California Radioactive Materials License issued to the University of California at Berkeley and a copy of the University's letter to SAN stipulating that Gilman Hall is covered by the license. Additionally, I have included a copy of my closeout memo to Lee Keller, OR, with a copy of the University's final report on Gilman Hall.

The current radiological status of the building is acceptable to both the University and to SAN. The University and SAN agree that when and if final decontamination of Gilman Hall is required it will be accomplished through the normal contract closeout process.

Should you have any further questions concerning this matter, please contact Warren Warner of my staff at FTS 536-6442.



James T. Davis, Director
Environment, Safety and
Quality Assurance Division

Attachments

cc: Art Whitman, DOE, HQ w/o atts
Dennis Neely, BSO, SAN w/atts

REPLY: NE-24

SUBJECT: Recommendation for Certification of Current Restricted Use and Termination of the Gilman Hall Site, University of California, Berkeley, California, from the Formerly Utilized Sites Remedial Action Program

TO: E.F. Coffman, Director
Office of Terminal Waste Disposal
and Remedial Action

I am attaching for your signature the Statement of Conditional Certification and the Federal Register Notice of Certification of the Gilman Hall Site, University of California, Berkeley, California.

The Gilman Hall site was used in support of the Manhattan Engineer District and early Atomic Energy Commission activities in the early 1940s. Research involved the production of minute quantities of plutonium by bombarding uranium with cyclotron-produced neutrons. During this research some areas of the building were contaminated from uranium spillage.

Radiological surveys conducted in 1976 by Lawrence Laboratories detected low-levels of alpha contamination and of cesium-137 contamination. Additional surveys began in 1981 to reveal the extent of the contamination and remedial action was initiated to decontaminate and to cover the affected areas. These activities were completed in February 1983.

Based on a review of the final remedial action project plan, the Director of the Division of Remedial Action Projects has concluded that the Gilman Hall site is radiologically acceptable under the controls provided by the University of California's State General License 1333-62 and is to be terminated from the Formerly Utilized Sites Remedial Action Program. I have provided the attached docket to effect this conditional certification, under the condition that the University of California accept the responsibility of the remaining

covered radioactive residues and agrees to clean up these remaining residues in accordance with appropriate guidelines and standards through normal contract closeout procedures prior to expiration of its General License.

Following your concurrence in the conditional certification, this office will notify interested state and local agencies, the public, local land records offices and the specific property owners of the certification actions by correspondence and local newspaper announcements, as appropriate. The documents transmitted with the Statement of Conditional Certification and the Federal Register Notice will be compiled in final docket form by the Division of Remedial Action Projects for retention in accordance with DOE Order 1324.2 (Disposal Schedule 25).

J.E. Baublitz, Director
Division of Remedial Action Projects

STATEMENT OF CONDITIONAL CERTIFICATION
GILMAN HALL, UNIVERSITY OF CALIFORNIA,
BERKELEY, CALIFORNIA

The Office of Terminal Waste Disposal and Remedial Action has reviewed and analyzed the final project report on the remedial actions and radiological surveys of Gilman Hall located on the campus of the University of California, Berkeley, California. Based on this review, the Department of Energy certifies that the condition of the Gilman Hall site is radiologically acceptable under the controls provided by the University of California's State General License 1333-62 and is terminated from the Formerly Utilized Sites Remedial Action Program under the condition that the University of California accept the responsibility of the remaining covered radioactive residues and agrees to clean up these remaining residues in accordance with appropriate standards and guidelines through normal contract closeout procedures prior to expiration of its General License.

By: _____
F.E. Coffman, Director
Office of Terminal Waste Disposal
and Remedial Action

Date: _____

DEPARTMENT OF ENERGY
OFFICE OF ENVIRONMENTAL PROTECTION, SAFETY,
AND EMERGENCY PREPAREDNESS
CERTIFICATION OF THE RADIOLOGICAL CONDITION
OF THE GILMAN HALL SITE, UNIVERSITY OF CALIFORNIA,
BERKELEY, CALIFORNIA

AGENCY: Office of Terminal Waste Disposal and Remedial Action
Department of Energy

ACTION: Notice of Conditional Certification

SUMMARY: The Department of Energy has completed the radiological surveys and has taken remedial action to decontaminate the areas of Gilman Hall, University of California, Berkeley, California, that were found to contain low levels of contamination resulting from research conducted in the building in support of the Manhattan Engineer District and early Atomic Energy Commission activities. The Department, through the Office of Terminal Waste Disposal and Remedial Action, has issued the following statement:

STATEMENT OF CONDITIONAL CERTIFICATION
GILMAN HALL, UNIVERSITY OF CALIFORNIA,
BERKELEY, CALIFORNIA

The Office of Terminal Waste Disposal and Remedial Action has reviewed the final remedial action and radiological survey report of the Gilman Hall site. Based on this review, the Department of Energy has certified that the condition of the site is radiologically acceptable under the controls provided by the University of California's State General License 1333-62 and is terminated from the Formerly Utilized Sites Remedial Action Program under the condition that the University has responsibility of the remaining covered radioactive residuals and agrees to clean up these residues in accordance to applicable standards and guidelines through normal contract closeout procedures prior to expiration of its General License.

For further information contact:

J.E. Baublitz, Director
Division of Remedial Action Projects
Office of Terminal Waste Disposal
and Remedial Action (NE-24)
U.S. Department of Energy
Washington, D.C. 20545
(301) 353-5272

SUPPLEMENTARY INFORMATION: The Department of Energy has established a program to characterize and, where necessary, correct the radiological conditions at sites formerly used by the Army Corps of Engineers' Manhattan Engineer District and the Atomic Energy Commission during the early years of nuclear research, development, and production. The ultimate objective of the program is to ensure that these formerly utilized sites, and any associated properties in their vicinity, are within the radiological guidelines established to protect the general public. Gilman Hall of the University of California, Berkeley, California, is one of the formerly utilized sites.

Gilman Hall was used in support of the Manhattan Engineer District and early Atomic Energy Commission activities in the early 1940s. Research involved the production of minute quantities of plutonium by bombarding uranium with cyclotron-produced neutrons. During this research, some areas of the building were contaminated from uranium spillage.

Radiological surveys conducted in 1976 detected low levels of alpha contamination and of cesium-137 contamination. Additional surveys began in 1981 to reveal the extent of the contamination and remedial action was initiated to decontaminate and to cover the effected areas. These activities were completed in February 1983.

Based on a review of the final remedial action project plan, the Director of the Division of Remedial Action Projects has concluded

that the Gilman Hall site is radiologically acceptable under the controls provided by the University of California's State General License 1333-62 and is terminated from the Formerly Utilized Sites Remedial Action Program, with the condition that the University of California accept the responsibility of the remaining covered radioactive residues and agrees to clean up these remaining residues in accordance with applicable standards and guidelines through normal contract closeout procedures prior to expiration of its General License.

These findings are supported by the Department of Energy "Certification Docket for Gilman Hall, University of California, Berkeley, California." The docket will be available for review between 8:00 a.m. and 4:00 p.m., Monday through Friday (except federal holidays), in the Department of Energy Public Document Room located in Room 1E-190 of the Forrestal Building, 1000 Independence Avenue, S.W., Washington, D.C.

Dated: _____

F.E. Coffman, Director
Office of Terminal Waste Disposal
and Remedial Action