GENERAL ATOMICS

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696/CAL-3852

Mr. Merritt N. Baker (In Duplicate)
Fuel Cycle Licensing Branch/Section 1
U.S. Nuclear Regulatory Commission
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Rockville, MD 20852-2746

Subject: **Docket No. 70-734; SNM-696: Request to Release a Certain Portion of General Atomics' Facility to Unrestricted Use and Delete it from License SNM-696: Namely, GA's "Non-Impacted Remaining Portion of GA's Building 41"**

and

Ms. Sudana Kwok (in Duplicate)
State of California
Department of Health Services
Radiologic Health Branch Mail Stop 7610
1500 Capitol
Sacramento, CA 95814-0208

Subject: **Radioactive Materials License No. 0145-37: Request to Release a Certain Portion of General Atomics' Facility to Unrestricted Use and Delete it from License 0145-37: Namely, GA's "Non-Impacted Remaining Portion of GA's Building 41"**

Dear Mr. Baker and Ms. Kwok:

As you are aware, General Atomics (GA) is continuing its efforts directed at obtaining the release to unrestricted use of selected facilities and land areas at General Atomics' site in San Diego. GA has recently completed the Final Radiological Survey of the "Non-Impacted Remaining Portion of GA's Building 41", which is located on GA's Sorrento Valley Site.

GA's Building 41 was comprised of two portions, a northern and a southern portion. A double wall separated (isolated) these two portions of the building from one another. Work involving the use of radioactive materials occurred in what used to be the southern portion of Building 41, which housed a portion of the Nuclear Waste Processing Facility. In 2003-2004, the southern portion of the building was decommissioned. This included the dismantlement of all NWPF areas within Building 41 including the removal and disposal of the walls, roof, and concrete floor (with the exception of a small concrete pad of the former NWPF office area), as radioactive waste. That decommissioning effort is the subject of a separate independent release request. This request covers only the remaining portion of Building 41, which is composed of various labs/rooms that have never been used for work involving the use of radioactive material (i.e., a non-impacted area).

Radiological surveys were performed within the remaining portion of Building 41, which occupies an area of ~ 5,176 ft^2 (~ 478 m^2), to verify that no cross-contamination occurred as a result of NWPF activities conducted in the southern portion of the building. No radioactive contamination was found.

The enclosed report titled "Final Radiological Survey Report for the Non-Impacted Remaining Portion of GA's Building 4" documents the results of radiological measurements and sampling and analyses completed during the final survey of Building 41. The results of these surveys demonstrate that GA's remaining Building 41meets the NRC- and State-approved criteria for release to unrestricted use.

GA hereby requests the NRC and the State to release Building 41, as described in the enclosed final survey report, to unrestricted use and delete it from GA's NRC and State of California special nuclear material and radioactive material licenses, respectively. Consistent with decisions made during joint NRC, State of California and GA decommissioning coordination meetings, GA has requested that the NRC take the regulatory lead for the release of Building 41 to unrestricted use.

At GA's request, the NRC performed a confirmatory survey of Building 41 on March 29-30, 2004. The results are documented in NRC Inspection Report 070-00734/04-001 dated June 4, 2004 that states:

> "The purpose of the inspection was to conduct a closeout inspection and surveys at the former Building 25 site and Building 41. The results of all surveys were less than the criteria established in the site decommissioning plan for unrestricted release and were consistent with the results that had been obtained by the licensee".

If you should have any questions regarding this request, or the enclosed report, please don't hesitate to contact Ms. Laura Q. Gonzales at (858) 455-2758, or me at (858) 455-2823.

Very truly yours,

Keith E. Asmussen

Keith E. Asmussen, Ph.D., Director
Licensing, Safety and Nuclear Compliance

Enclosure: GA report titled: "Final Radiological Survey Report for the "Non-Impacted Remaining Portion of GA's Building 41"

cc: Dr. D. Blair Spitzberg, Chief, NMSS Branch 3, Region IV
Mr. Rick Muñoz, Fuel Cycle Inspector, NRC Region IV
Mr. Jeff Wong, State of CA, Berkeley, CA
Ms. Barbara Hamrick, State of CA, Brea, CA

Final Radiological Survey Report for the Non-Impacted Remaining Portion of GA's Building 41

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Survey Technicians: Scott Cowan, and Joseph Sullivan

March 2005

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Introduction

General Atomics (GA) is continuing its efforts directed at decontaminating, as appropriate, and obtaining the release to unrestricted use of selected facilities and land areas at General Atomics. GA has recently completed the Final Radiological Survey of Building 41 which is located on GA's Sorrento Valley Site.

This report covers only the remaining portion of Building 41 which is composed of various labs/rooms which have never been used for work involving the use of radioactive material (i.e., a non-impacted area).

Work involving the use of radioactive materials occurred in what used to be the southern portion of Building 41 which housed a portion of the Nuclear Waste Processing Facility (specifically, the "NWPF-1 site"). In 2003-2004, the NWPF-1 site was decommissioned. This included the dismantlement of all NWPF-1 areas within Building 41 including the removal and disposal of the walls, roof, and concrete floor (with the exception of a small concrete pad of the former NWPF office area), as low level radioactive waste. The resultant land area and the small concrete pad were surveyed as a part of the "DTSC Permitted Area (NWPF-1 Site)" and is the subject of a separate independent Radiological Survey Report.

Radiological surveys were performed on the remaining portion of Building 41, which occupies an area of ~ 5,176 ft^2 (~ 478 m^2), to verify that no cross-contamination occurred as a result of NWPF-1 activities. No radioactive contamination was found.

GA is requesting both the Nuclear Regulatory Commission (NRC) and the State of California Department of Health Services' Radiologic Health Branch (DHS/RHB) (aka "State") to release the remaining portion of Building 41 to unrestricted use.

Site Description

A view of GA's Main Site and Sorrento Valley Site is shown in Figure 1. The Sorrento Valley Site was divided into various land areas to facilitate release of the site to unrestricted use. The land areas are shown on Figure 2. The Sorrento Valley South (SVS) Land Area was further subdivided into three sections: (1) The Remaining Portion of Building 41 (which is now the entire Building 41), (2) the DTSC Permitted Area (NWPF-1 Site), and (3) the rest of the SVS Land Area (see Figure 3). The DTSC Permitted Area (NWPF-1 Site) and the rest of the SVS Land Area are being addressed in separate independent Final Radiological Survey Reports.

Figure 4 shows a diagram of Building 41 prior to decommissioning of the NWPF-1 site. The dismantled portion of the building is shown in Figure 5. The remaining portion of Building 41, which is the subject of this report, is shown on Figure 6. The area to be released to unrestricted use is ~5,176 ft^2 (~478 m^2) (and excludes the former NWPF office area which is included in a separate release request).

History and Classification

History

The currently remaining portion of Building 41 to be released to unrestricted use is composed of labs/rooms and offices which have never been used for work involving the use of radioactive material. Surveys were performed in order to demonstrate that no cross contamination of these labs/rooms occurred because of work performed in the NWPF-1 portion of the building which was dismantled and disposed of as low level radioactive waste.

During demolition work on the southern (i.e., NWPF-1) portion of Building 41, it was discovered that rats had nested in the ceiling of the NWPF office area. Surveys of the rat droppings and nesting material showed trace quantities of radioactive material (specifically Cs-137). Radiological surveys were performed to determine if there was any cross contamination from this or other NWPF activities.

The southern external corrugated metal wall and southeastern portion of the eastern external corrugated metal wall were surveyed for contamination. No contamination was detected. Subsequently, the external walls were removed. The outermost drywall material from each wall in the former NWPF office areas was also removed. All removed construction material was disposed of as low level radioactive waste.

Following the removal of the external wall surfaces, and prior to refurbishment, a final survey was performed on the inner uncovered wall surfaces. No activity above natural background levels were detected. Therefore, the external walls were resurfaced to meet security requirements for the work being performed in the remaining portion of Building 41 (which is now the entire Building 41).

Classification

Because there were no know spills or releases of radioactive material the would have affected the northern (remaining) portion of Building 41, the walls and roof were classified as *Non-Impacted Areas* for radiological survey purposes. The remaining internal surfaces of Building 41 were also classified as *Non-Impacted Areas* because there is no history of use involving radioactive materials.

Criteria for Release to Unrestricted Use

As Low As Reasonably Achievable (ALARA)
During decommissioning efforts, GA attempts to decontaminate to levels as close to "background" and as far below the approved Release Criteria (as identified in the GA Site D&D Plan) as reasonably achievable.

Facilities and Equipment (and Asphalt or Concrete Surfaces)
The U.S. NRC's and the State of California's criteria for releasing facilities and equipment to unrestricted use are shown in Tables 1 and 2, respectively. The applicable guidelines for typical radionuclides of concern on the GA site are Cs-137 and Co-60 (and most beta/gamma emitters), and Uranium-235 and 238 (and their decay products), are as follows:

5,000 dpm/100 cm^2, averaged over a 1 m^2 area
15,000 dpm/100 cm^2, maximum in a 100 cm^2
1,000 dpm/100 cm^2, removable activity

The applicable guideline for Sr-90, Th-natural, and Th-232 is as follows:

1,000 dpm/100 cm^2, averaged over 1 m^2 area
3,000 dpm/100 cm^2, maximum in a 100 cm^2 area
200 dpm/100 cm^2, removable activity

Exposure Rate Guideline
Exposure rates measured at 1 m above the surface are not to exceed 10 μR/hr above natural background levels.

Instrumentation and Background Measurements

A list of instruments used during the radiological surveys is shown in Table 3. The table includes: (1) a description of the instrument, model number and its serial number, (2) a description of the detector (if applicable) and its serial number, (3) instrument ranges, (4) calibration due dates, (5) typical background readings and (6) calibration efficiencies (if applicable). All of the instruments used were calibrated semiannually and after repair, except for exposure rate meters which were calibrated quarterly.

Background Measurements for Instruments/Detectors
Building 13 on GA's main site was used for conducting background measurements with

instruments used for the final survey because: (1) there is no history involving radioactive materials or storage of radioactive materials in Building 13, and (2) the various surfaces and construction materials found at Building 31, Room 103A could also be found within and outside of Building 13. Background information, where appropriate, is included in Table 3.

Minimum detectable activities (MDA's) for instruments used for fixed measurements, for each type of surface (see Table 3), was calculated using equation (5-2) from the NUREG/CR-5849 as shown below:

Equation (5-2)

$$MDA = \frac{2.71 + 4.65\sqrt{B_R \times t}}{t \times E \times \frac{A}{100}} (dpm/100cm^2)$$

Where:

B_R =background rate (cpm)
t = count time (min)
E = efficiency
A = area of the detector (cm^2)

The MDA for scan surveys using the 434 cm^2 gas flow proportional detector (floor monitor) was calculated using equation 5-3 from the draft NUREG/CR-5849 (modified in accordance with the discussion on page 5.8 of the draft NUREG/CR-5849).

Equation (5-3):

$$MDA = \frac{X \times B_R}{E \times \frac{A}{100}} (dpm/100cm^2)$$

Where:

X = the multiple/portion of the background rate that can be discernable as an increase in instrument response by the surveyor (dependent on the type of instrument used).
B_R = background rate in (cpm)
E = efficiency
A = area of the detector (cm^2)

Exposure Rate Background

Typical exposure rate background for GA's site using a Ludlum Model 19 micro R meter is 12-18 μR/hr measured at 1 m from the surface of soil. This range of exposure rates can be measured south of Building 15 (an office building on the eastern portion of GA's Main Site). Measurements taken offsite in 10 different locations (9 offsite and 1 onsite at a non-impacted area

near Building 15) over a period of 15 months also averaged ~ 15 μR/hr (measured at 1 m from the surface). The range of 12-18 μR/hr is typical at the GA site for the external dose rates measured at 1 meter from the surface. Exposure rate backgrounds for other applicable surfaces are provided in Table 3.

Final Surveys Performed

Objectives and Responsibilities

The objectives of the final survey plans were: (1) to demonstrate that the average surface contamination levels for each survey unit were below the approved release criteria, (2) to show that the maximum residual activity did not exceed three times the approved release criteria for average surface contamination value in an area up to 100 cm^2, (3) that the exposure rate measurements taken in these areas, measured at 1 meter above the surface, were less than 10 μR/hr above background, and, (4) to demonstrate that no radioactive contamination was present in the remaining portion of Building 41 due to cross contamination caused by activities previously conducted in the now dismantled portion of Building 41 that had been part of the Nuclear Waste Processing Facility.

Survey Plans

Final Survey Plans were developed based on the previous history of use, the radionuclides of concern for this area, the potential for contamination, the various types of surfaces encountered and the classification of the various areas. Surveys were taken in accordance with an approved survey plan(s) by qualified Health Physics Technicians having a minimum of three years health physics experience. See Appendix A for Final Survey Plans.

Every survey taken was documented on a daily basis to a worksheet/drawing showing the approximate locations surveyed/sampled. The documentation included the results of the measurements (including units), the technician's signature, date, instrument(s) used (including the model and serial number of both the ratemeter and detector), calibration due date, % efficiency, background readings (if applicable) and any other pertinent information.

Survey Summary

Comparisons of the Site Decommissioning Plan requirements with the Final Surveys performed in relation to the percentage of surface area scanned, number of measurements (i.e., number of fixed radiation measurements), and exposure rate measurements (μR/hr) taken are provided as follows:

Comparisons of Site Decommissioning Plan Requirements with Final Surveys Performed for Building 41

Survey Area	Area Gridding	α, β Surface Scans	# of Direct Measurements Fixed α, β, or Wipes	# of Exposure Rate Measurements (μR/hr)
D- Plan* Requirements, Non-Impacted Area →	Not Required	Not Required	Not Required	Not Required
Final Surveys Performed, Non-Impacted Area →	Not Required	Ceiling 100% in room 107, 10% in rooms 108, 109, and 106A Roof 10% scan for α and β Exterior Walls** Wall A interior: 100% β scan below 18" Wall B interior: 100% β scan below 18" Wall C interior: 100% β scan below 18" Wall D: 100% α&β scan below 2m, 10% above 2m Wall E: 100% α&β scan below 2m 10% scan above 2m	Ceiling 21 large area wipe samples counted for β activity Roof none Exterior Walls** Wall A interior: none Wall B interior: none Wall C interior: none Wall D: None Wall E: 5 fixed 2 minute β measurements. 10 wipes analyzed for α and β activity	Ceiling 100% scan in room 107, 10% scan in rooms 108, 109 &106A Roof 16 fixed measurements, and a 10% surface scan Exterior Walls** Wall A interior: none Wall B interior: none Wall C interior: none Wall D: 100% scan below 2m 10% scan above 2m Wall E: 100% scan below 2m 10% scan above 2m

* D-Plan = GA Site Decommissioning Plan

** See Figure 2 for wall location.

Results of the Final Surveys

Ceiling

The void space between the upper surface of the ceiling and the underside of the roof in the uncontrolled portion of Building 41 was surveyed in the rooms adjacent to the former NWPF and any area where rats appeared to have traveled or nested. The results of the surveys performed are as follows:

Scanning

Approximately 100% of the accessible surfaces in room 107 (the room adjacent to the NWPF office area) were scanned for beta activity using 15 cm^2 GM "pancake" probe. All of the results were about 20-40 cpm (which is background for this instrument and surface). See Figure 7 for approximate locations and results.

Approximately 10% of accessible surfaces of rooms 108, 109 and 106A were scanned. An apparent rat nest was discovered in room 109, therefore 100% of this nest area was scanned. No contamination was found. All of the results (20-60 cpm) were not distinguishable from normal background levels. See Figure 7 for locations and results.

Removable Activity

A total of twenty-one (21) large area wipe samples (i.e., masslin surveys) were taken and analyzed using a GM detector for gross β activity to determine if there was any removable radioactivity present. No radioactive contamination was detected. See Figure 7 for approximate locations and results.

Exposure Rate Scans

Approximately 100% of room 107 and 10% of the rooms 108, 109 and 106A were scanned using a 2" x 2" NaI(Tl) detector held within 1" from the surface. The measurements ranged from 10-13 μR/hr which are normal background readings. The approximate locations and results are provided on Figure 7.

Exterior Walls

The remaining wall surfaces on the south and east sides of building 41 were surveyed following demolition of the NWPF facility. The final status of each external wall (Walls A-E) is provided below (See Figure 6 for wall location):

Wall A: Dry wall material remaining following the removal and disposal of the external corrugated metal skin. This wall surface was never exposed to the NWPF Facility. Re-surfaced following a survey performed by Health Physics.

Wall B: Drywall material remaining following the removal and disposal of the drywall material NWPF office area walls. This wall surface was never exposed to the NWPF Facility. Re-surfaced following the final survey performed by Health Physics.

Wall C: Drywall material remaining following the removal and disposal of the drywall material from the NWPF office area walls. This wall surface was never exposed to the NWPF Facility. Re-surfaced following the final survey performed by Health Physics.

Wall D: Corrugated metal remaining after removal of interior drywalls.

Wall E: Corrugated metal outer wall. This is the only remaining wall that was originally an external wall for Building 41. This wall was never inside of the Radiation Restricted Area boundary for the NWPF.

The results of the surveys performed for Walls A-E are provided below:

Scanning

Approximately 100% of the bottom 18" of Walls A, B and C - all inside walls- were scanned for β activity with a 434 cm^2 gas flow proportional detector. See Figure 8 for locations and results for Wall A, and Figure 9 for locations and results for Walls B and C.

About 100% of Wall D and 100% of Wall E below 2 m and about 10% of Wall D and 10% of Wall E above 2 m were scanned for α and β activity using a 434 cm^2 gas flow proportional detector. α activity readings ranged from 0-40 cpm (normal background levels) for the instrument used and type of surface. β activity readings ranged from 400-1000 cpm (normal background levels). See Figure 10 for locations and results for Wall D and Figure 11 for locations and results for Wall E.

Fixed Measurements

Five (5) fixed 2 minute beta measurements were taken on Wall E using a 100 cm^2 gas flow proportional detector. See Figure 11 for approximate locations and results. The highest measurement was 511 cp2m, which is not distinguishable from normal background readings on metal of about 435 cp2m, and is below the minimum detectable activity (MDA) of 160 dpm/100 cm^2.

Removable Activity

Ten (10) wipe samples were taken on Wall E and analyzed for α and β activity. No detectable radioactivity was measured. See Figure 11 for locations and Table 4 for results.

Exposure Rate Scans

Approximately 100% of Walls D and E below 2m and 10% of Walls D and E above 2m were scanned with a 2" x 2" NaI(Tl) detector held within 1" of the surface. All results were 10-17 μR/hr (at or near normal background levels). See Figure10 (Wall D) and Figure 11 (Wall E) for approximate locations and results.

Roof

The external surfaces of the roof were surveyed with the exception of the outer 2m (which were not surveyed due to safety concerns). The results of the surveys performed are as follows:

Scanning

Approximately 10% of the roof (to within 2 m from the outer edge) was scanned for α and β activity. The α scan results ranged from 0-40 cpm, which is typical of normal background readings for this type of instrument. The β scan results ranged from 800-1050 cpm which is also typical of normal background levels for the type of instrument used. See Figure 12 for locations and results.

Exposure Rate Scans

About 10% of the roof surface (to within 2m from the outer edge) was scanned with a 2" x 2" NaI(Tl) detector held within 1" from the surface. The measurements ranged from 8 -12 μR/hr. This is natural background. See Figure 12 for locations and results.

Fixed Exposure Rate Measurements

Sixteen (16) fixed exposure rate measurements were taken with a 2" x 2" NaI(Tl) detector (microR meter) at 1m from the surface. The results ranged from 11-15 μR/hr, which is not discernable from normal background levels. See Figure 12 for locations and results.

NRC Confirmatory Survey

GA did not perform an internal confirmatory survey because the area was non-impacted and no contamination was found during any of the surveys. GA requested the NRC to perform a confirmatory survey of Building 41 which was completed March 29-30, 2004. The results are documented in NRC Inspection Report 070-00734/04-001 dated June 4, 2004. The report (provided in Appendix B) stated "The purpose of the inspection was to conduct a closeout inspection and surveys at the former Building 25 site and Building 41. The results of all surveys

were less than the criteria established in the site decommissioning plan for unrestricted release and were consistent with the results that had been obtained by the licensee".

Conclusion

Final contamination and radiation surveys, as documented in this report, demonstrate that the radiation levels in the remaining portion of Building 41 (which is now all of Building 41) were not discernable from natural background levels and well below the NRC- and State- approved criteria for release to unrestricted use.

Table 1: USNRC'S ACCEPTABLE SURFACE CONTAMINATION LEVELS [a]

Nuclides	Average[b,c,f] (dpm/100cm²)	Maximum[b,d,f] (dpm/100 cm²)	Removable[b,e,f] (dpm/100cm²)
U-nat, ^{235}U, ^{238}U, & associated decay products	5,000 α	15,000 α	1,000 α
Transuranics, ^{226}Ra, ^{228}Ra, ^{230}Th, ^{228}Th, ^{231}Pa, ^{227}Ac, ^{125}I, ^{129}I	100	300	20
Th-nat, ^{232}Th, ^{90}Sr, ^{223}Ra, ^{224}Ra, ^{232}U, ^{126}I, ^{133}I, ^{131}I	1,000	3,000	200
Beta/gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except ^{90}Sr and other noted above.	5,000	15,000	1,000

a Where surface contamination by both alpha- and beta/gamma-emitting nuclides exists, the limits established for alpha- and beta/gamma-emitting nuclides should apply independently.

b As used in this table dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, an geometric factors associated with the instrumentation.

c Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

d The maximum contamination level applies to an area of not more than 100 cm^2.

e The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, then pertinent levels should be reduced proportionally and the entire surface should be wiped.

f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mRad/hr at 1 cm^2 and 1.0 mRad/hr at 1 cm^2, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

Table 2: STATE OF CA ACCEPTABLE SURFACE CONTAMINATION LEVELS [1]			
Nuclides[a]	Average[b,c,f] (dpm/100cm²)	Maximum[b,d,f] (dpm/100cm²)	Removable[b,e,f] (dpm/100cm²)
U-nat, ^{235}U, ^{238}U, & associated decay products	5,000	15,000	1,000
Transuranics, ^{226}Ra, ^{228}Ra, ^{230}Th, ^{228}Th, ^{231}Pa, ^{227}Ac, ^{125}I, ^{129}I	100	300	20
Th-nat, ^{232}Th, ^{90}Sr, ^{223}Ra, ^{224}Ra, ^{232}U, ^{126}I, ^{133}I, ^{131}I	1,000	3,000	200
Beta/gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except ^{90}Sr and other noted above	5,000	15,000	1,000

a Where surface contamination by both alpha- and beta/gamma-emitting nuclides exists, the limits established for alpha- and beta/gamma-emitting nuclides should apply independently.

b As used in this table dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, an geometric factors associated with the instrumentation.

c Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

d The maximum contamination level applies to an area of not more than 100 cm^2.

e The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, then pertinent levels should be reduced proportionally and the entire surface should be wiped.

f The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm^2 and 1.0 mrad/hr at 1 cm^2, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

[1] Guidelines For Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses For byproduct, Source, or Special Nuclear Material, also known as "Decon-1" incorporated into GA's State of CA Radioactive Materials License.

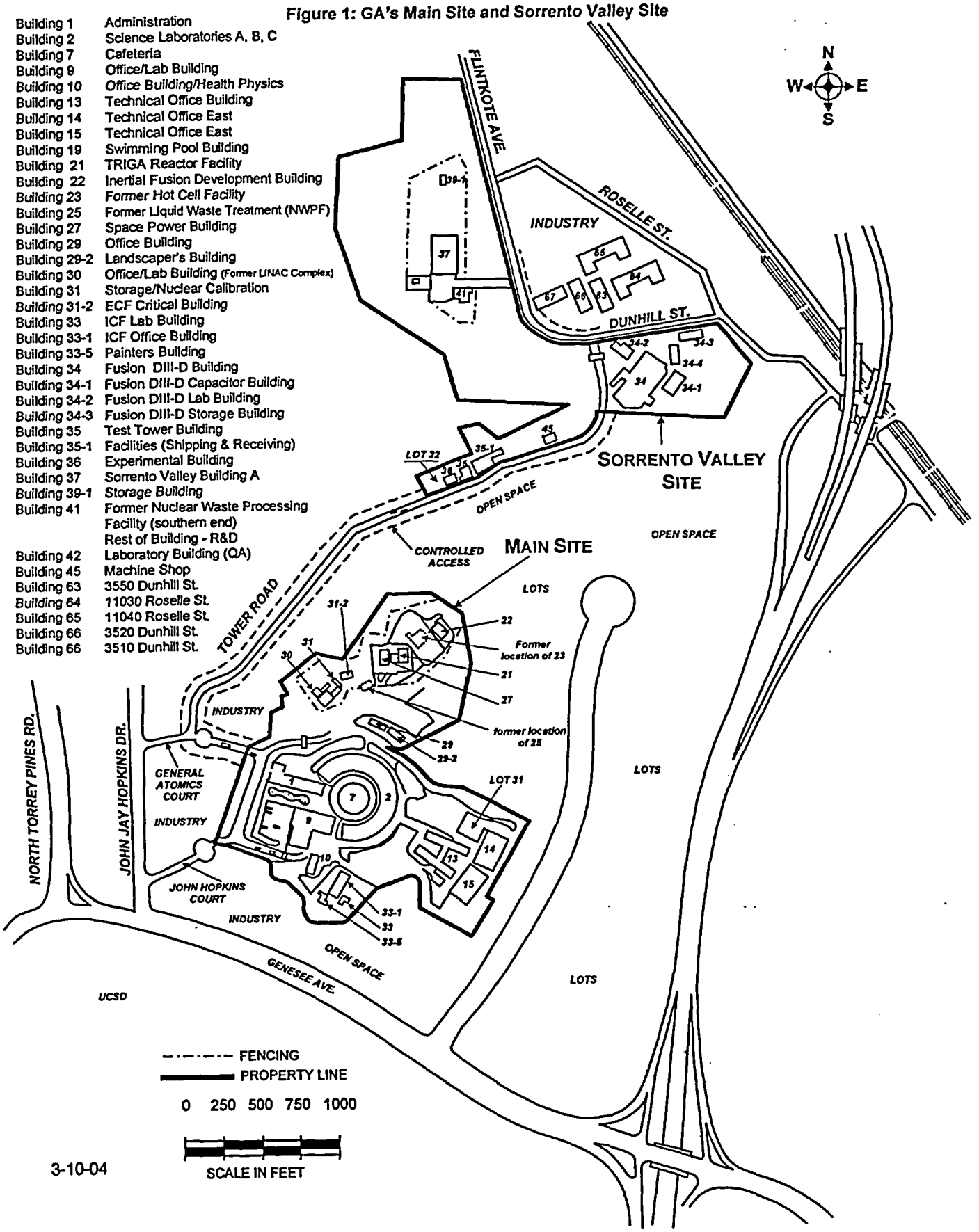
Table 3: List of Instruments for Building 41

Instrument	Detector	Range (cpm, µR/hr)	Calibration Due Date	Efficiency	Background MDA (434 cm^2, 100cm^2 β & 50cm^2 α detectors only)	Description
Ludlum Model 2221 S/N 84459	Ludlum Model 43-37 gas (434cm^2) proportional Alpha detector S/N 086215	Four Linear Ranges 0-500,000 & one Log 50-500,000 (CPM)	07/19/04	22.14%	0-40 cpm (Metal) Scan MDA = 62 dpm/100 cm^2 10-60 cpm (concrete) Scan MDA = 109 dpm/100 cm^2 0-40 cpm (Drywall) Scan MDA = 62 dpm/100 cm^2	Active Probe Area = 434 cm^2. The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick connects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
Ludlum Model 2221 S/N 154202	Ludlum Model 43-37 gas (434cm^2) proportional Beta detector S/N 149017	Four Linear Ranges 0-500,000 & one Log 50-500,000 (CPM)	09/06/04	30.39%	1200-1500 cpm (metal) Scan MDA =307 dpm/100 cm^2 1655-1830 cpm (concrete) Scan MDA =396 dpm/100 cm^2 650-951 cpm (Drywall) Scan MDA =184 cpm/100 cm^2	Active Probe Area = 434 cm^2. The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick connects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
Ludlum Model 2221 S/N 86302	Ludlum Model 43-68 100 cm^2 proportional Beta detector S/N 142547	Four Linear Ranges 0-500,000 & one Log 50-500,000 (CPM)	05/04/04	31.20%	435 ± 170 cp2m (metal) MDA= 160 dpm/100cm^2 822 ±344 cp2m (Concrete) MDA= 213 dpm/100cm^2 455 ± 48 cp2m (Drywall) MDA= 163 dpm/100cm^2	100 cm^2 gas flow proportional counter. The detector and rate meter are combined and mounted on a roll around cart. The instrument features a static-flow system, quick connects, a portable gas bottle and a means to adjust the height of the detector from the floor for optimum performance.
Ludlum Model 3 S/N 151348	Ludlum Model 44-10 NaI (Tl) Scintillator Gamma Detector S/N 163169	Four Ranges 0-500 µR/hr	06/29/04	N/A	10-18 µR/hr(Metal) 10-18 µR/hr(Concrete) 10-18 µR/hr(Drywall)	2 inch x 2 inch NaI (Tl) scintillator. Used for measuring external dose rates on the surface and at one meter.
Ludlum Model 3 S/N 153551	Ludlum Model 44-10 NaI (Tl) Scintillator Gamma Detector S/N 155109	Four Ranges 0-500 µR/hr	03/11/04	N/A	10-18 µR/hr(Metal) 10-18 µR/hr(Concrete) 10-18 µR/hr(Drywall)	2 inch x 2 inch NaI (Tl) scintillator. Used for measuring external dose rates on the surface and at one meter.
Ludlum Model 3 S/N 138880	Ludlum Model 44-9 15cm^2 beta/gamma probe S/N 117851	Four Ranges 0-500,000 cpm	03/11/04	26.14%	40-100 cpm (Metal) 80-100 cpm (Drywall)	Active Probe Area = 15cm^2 Used for beta/gamma surveying
Ludlum Model 3 S/N 143349	Ludlum Model 44-9 15cm^2 beta/gamma probe S/N 145967	Four Ranges 0-500,000 cpm	02/03/04	29.18%	40-100 cpm (Metal) 60-100 cpm (Drywall)	Active Probe Area = 15cm^2 Used for beta/gamma surveying
Canberra Low Level α/β Counter Model 2404	Gas Flow Proportional Detector	N/A	As needed	~26-30%	Varies with Sample	Canberra Model 2404 Low Level α/β gas flow proportional counting system used to count wipes for removable contamination. Results are usually reported as dpm/100cm^2.

Table 4: Building 41, Wall E, Wipe Survey Results		
Sample Number	α Activity in dpm/100cm^2	β Activity in dpm/100cm^2
See Figure 7 for approximate locations		
1	<20	<20
2	<20	<20
3	<20	<20
4	<20	<20
5	<20	<20
6	<20	<20
7	<20	<20
8	<20	<20
9	<20	<20
10	<20	<20

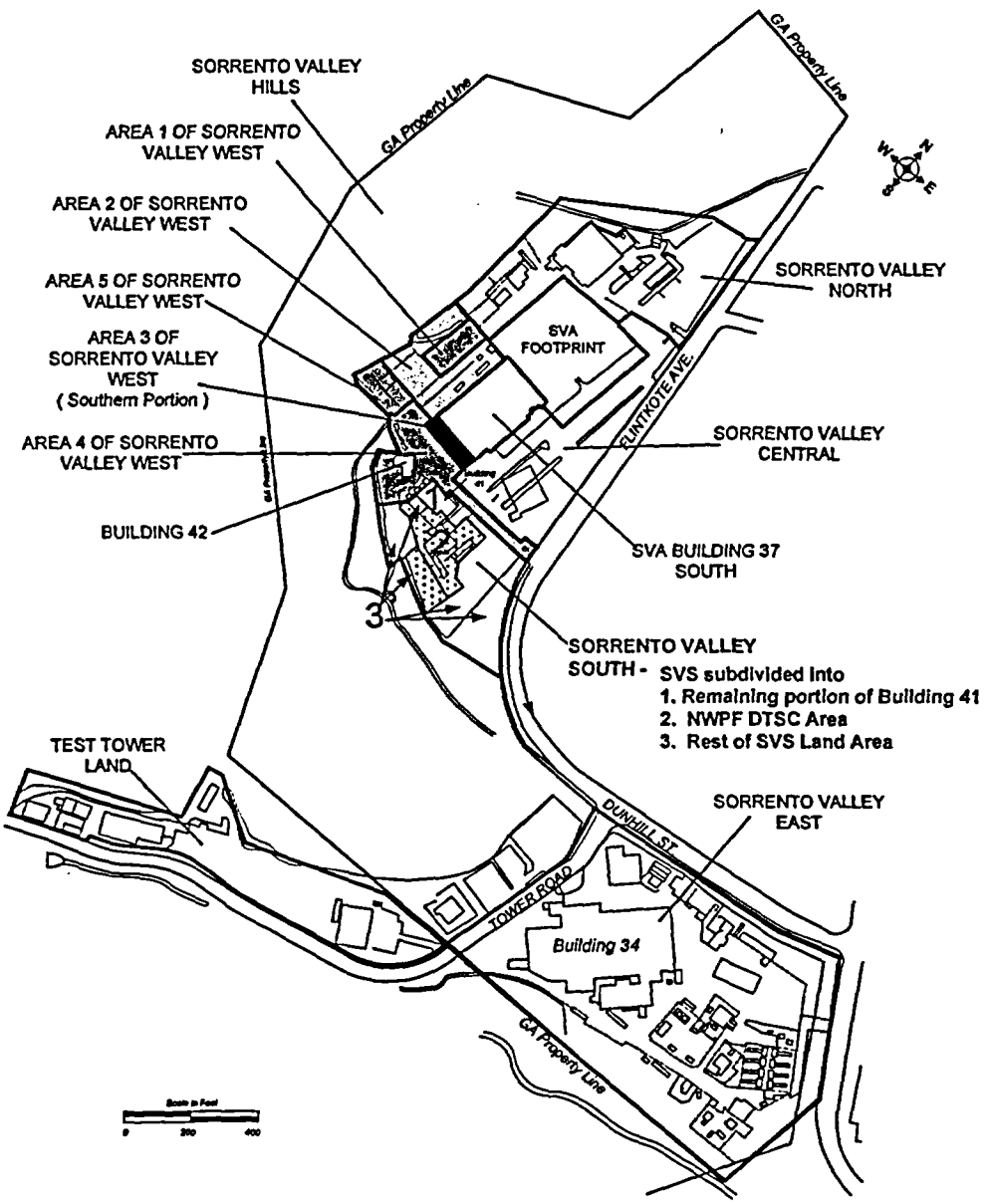
Building Numbers	Names
Building 1	Administration
Building 2	Science Laboratories A, B, C
Building 7	Cafeteria
Building 9	Office/Lab Building
Building 10	Office Building/Health Physics
Building 13	Technical Office Building
Building 14	Technical Office East
Building 15	Technical Office East
Building 19	Swimming Pool Building
Building 21	TRIGA Reactor Facility
Building 22	Inertial Fusion Development Building
Building 23	Former Hot Cell Facility
Building 25	Former Liquid Waste Treatment (NWPF)
Building 27	Space Power Building
Building 29	Office Building
Building 29-2	Landscaper's Building
Building 30	Office/Lab Building (Former LINAC Complex)
Building 31	Storage/Nuclear Calibration
Building 31-2	ECF Critical Building
Building 33	ICF Lab Building
Building 33-1	ICF Office Building
Building 33-5	Painters Building
Building 34	Fusion DIII-D Building
Building 34-1	Fusion DIII-D Capacitor Building
Building 34-2	Fusion DIII-D Lab Building
Building 34-3	Fusion DIII-D Storage Building
Building 35	Test Tower Building
Building 35-1	Facilities (Shipping & Receiving)
Building 36	Experimental Building
Building 37	Sorrento Valley Building A
Building 39-1	Storage Building
Building 41	Former Nuclear Waste Processing Facility (southern end) Rest of Building - R&D
Building 42	Laboratory Building (QA)
Building 45	Machine Shop
Building 63	3550 Dunhill St.
Building 64	11030 Roselle St.
Building 65	11040 Roselle St.
Building 66	3520 Dunhill St.
Building 66	3510 Dunhill St.

Figure 1: GA's Main Site and Sorrento Valley Site



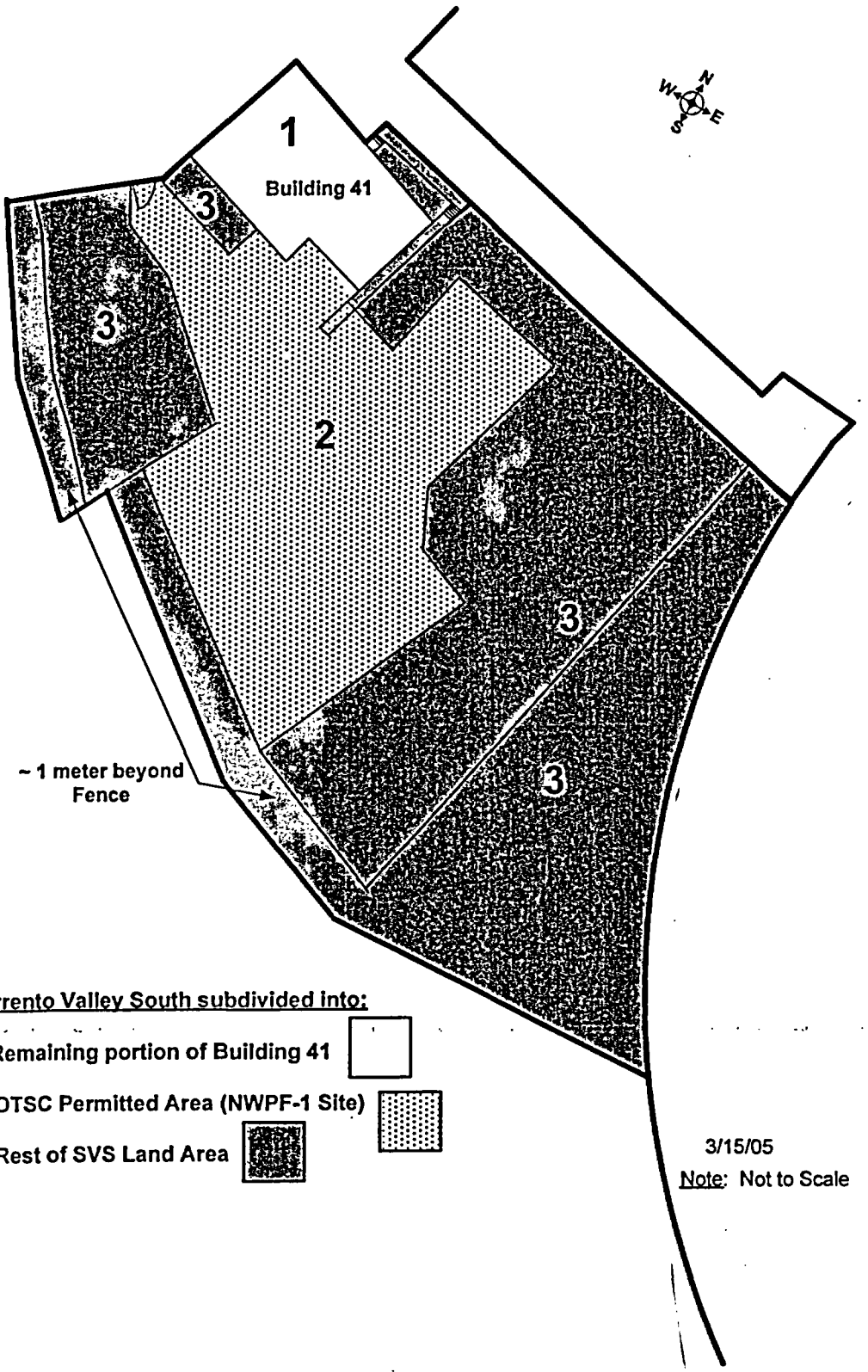
3-10-04

Figure 2: Sorrento Valley Site Land Areas



3/15/05

Figure 3: Sorrento Valley South Land Area



Sorrento Valley South subdivided into:

1. Remaining portion of Building 41
2. DTSC Permitted Area (NWPF-1 Site)
3. Rest of SVS Land Area

3/15/05

Note: Not to Scale

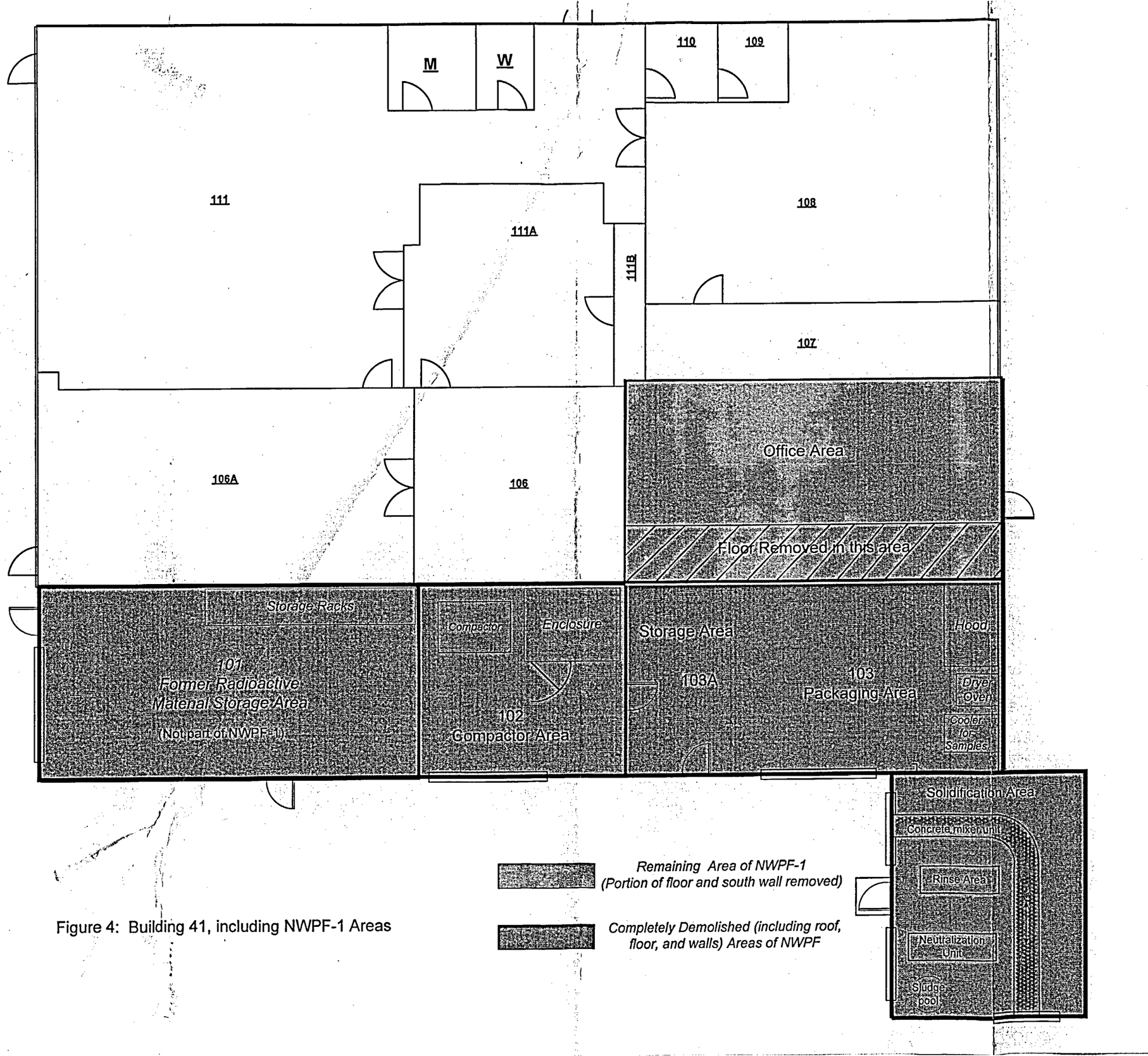


Figure 4: Building 41, including NWPF-1 Areas

Figure 5: Building 41 showing Demolished Portions

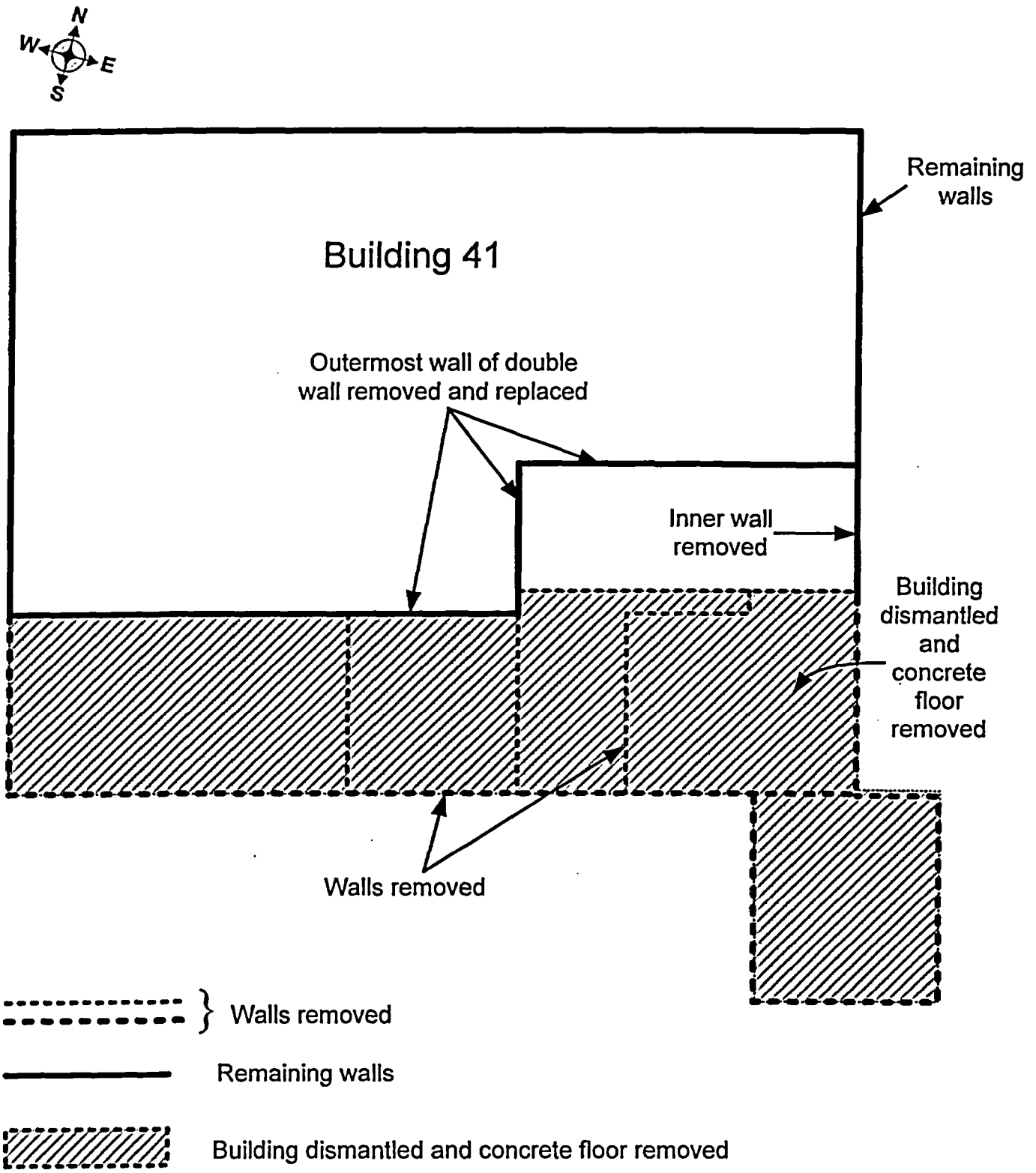


Figure 6: Building 41 Dimensions and Layout

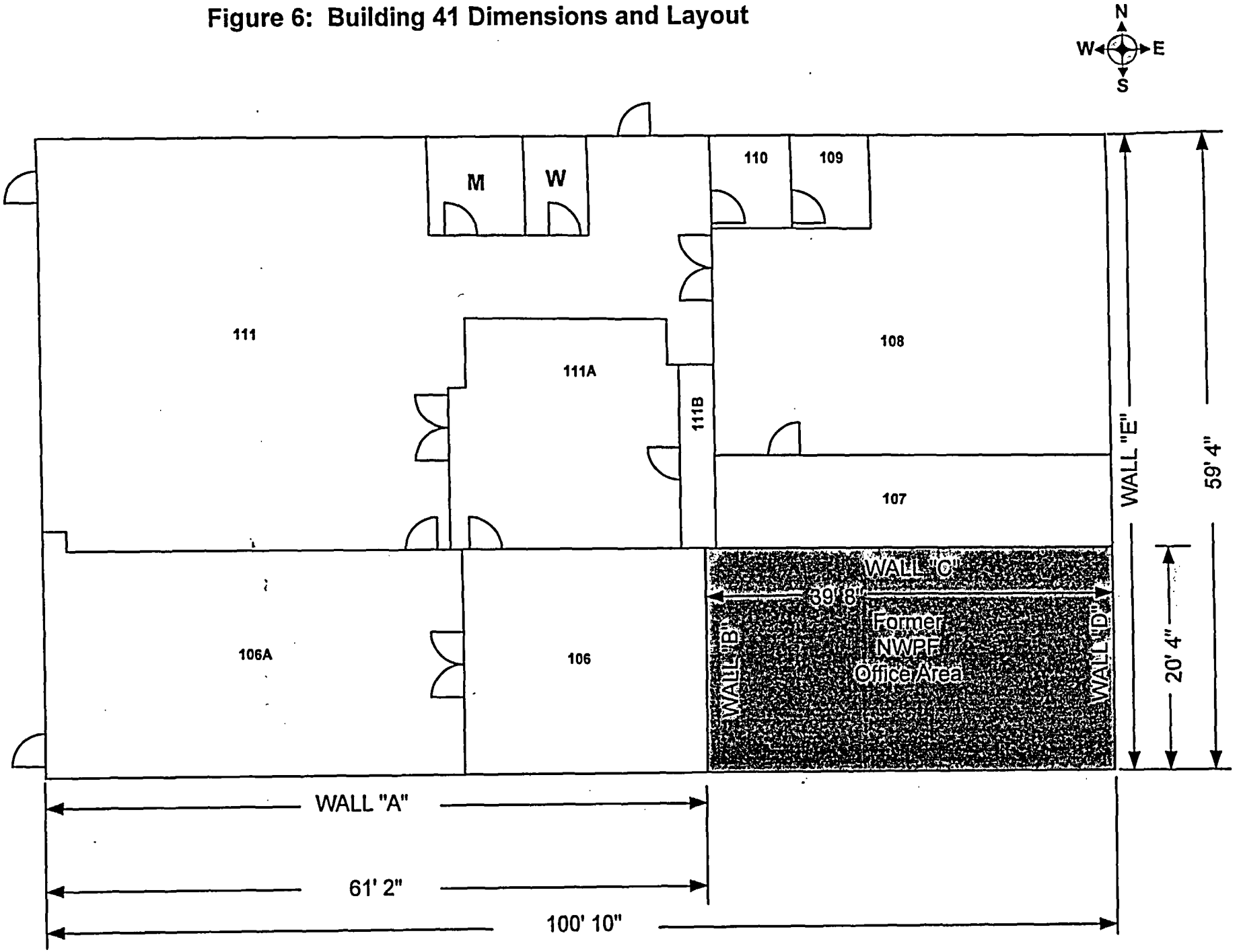
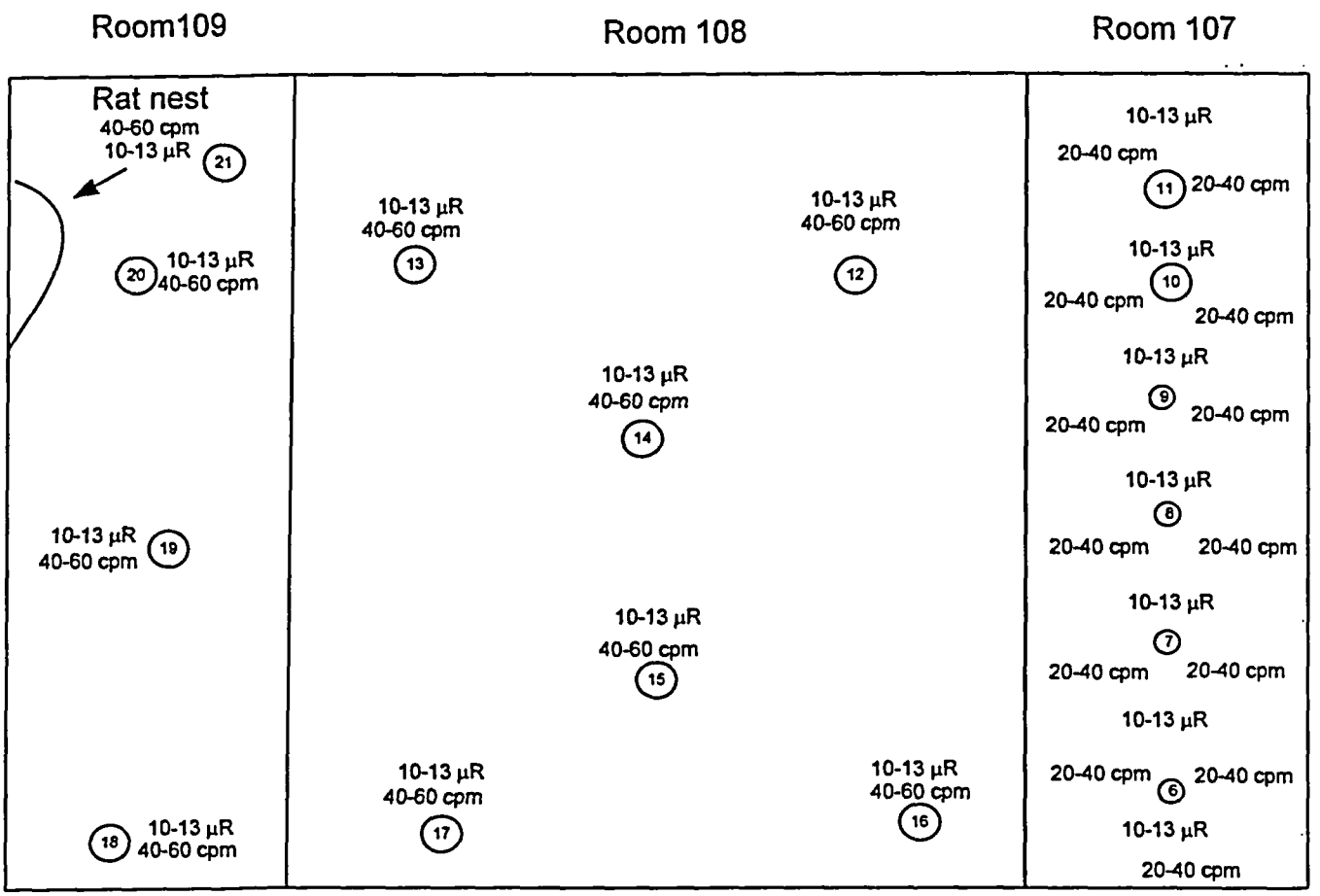
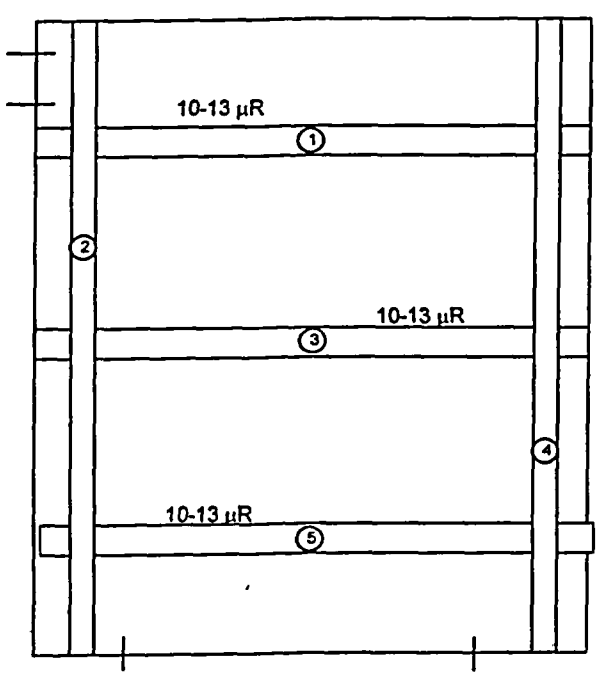


Figure 7: Building 41 Ceiling Survey Locations and Results

Room 107 surveyed 100% accessible areas
All other areas surveyed 10%



Room 106A



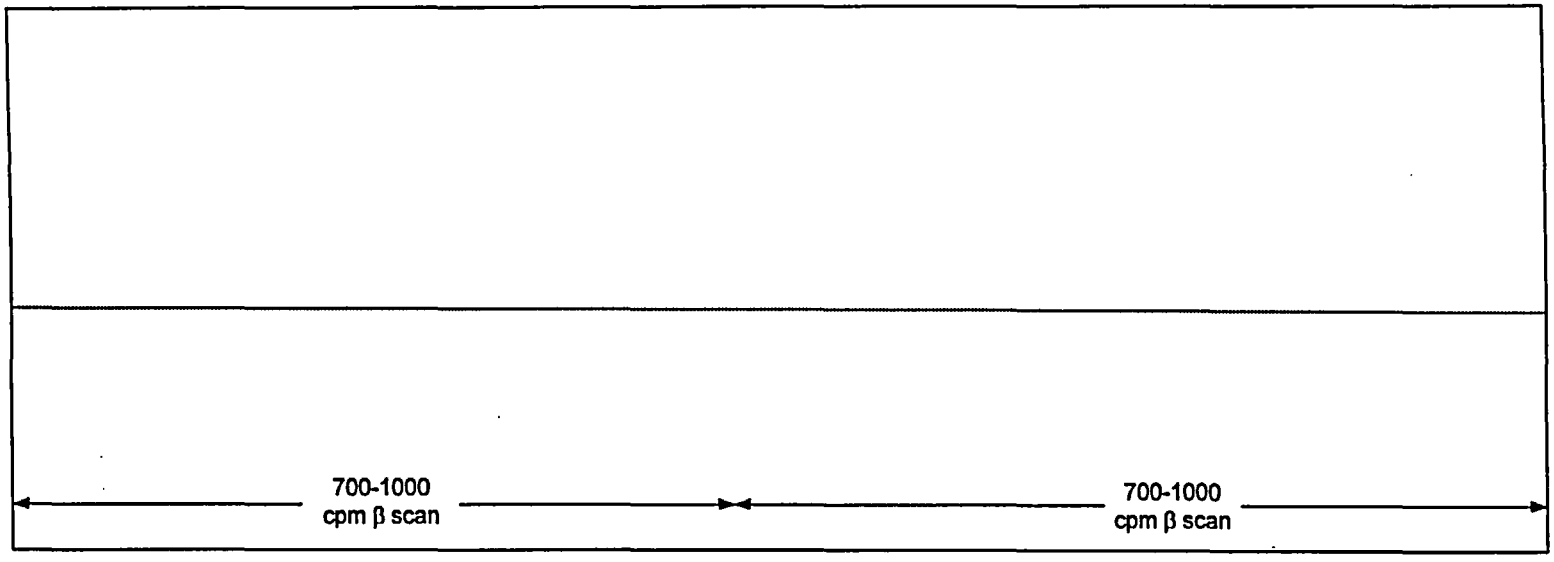
106A, 108, 109 surveyed with 138880

107 surveyed with 143349

(1) Gross masslin survey
No activity detected

Location:	Bldg 41			
Instrument:	Model 3	Model 3	Model 3	N/A
Serial Number:	143349	153551	138880	N/A
Calibration Due:	02/03/04	03/11/04	03/11/04	N/A
Efficiency:	29.18%	N/A	26.14%	N/A
Scaler:	β	γ	β	N/A
Probe Number:	145967	155109	117851	N/A
Probe Size cm²:	15cm²	2X2	15cm²	N/A
Comments:				
Technician: William Schuck			Date: 10/09/03	

Figure 8: Building 41, Scan Results of the bottom 18" of Inside Wall A

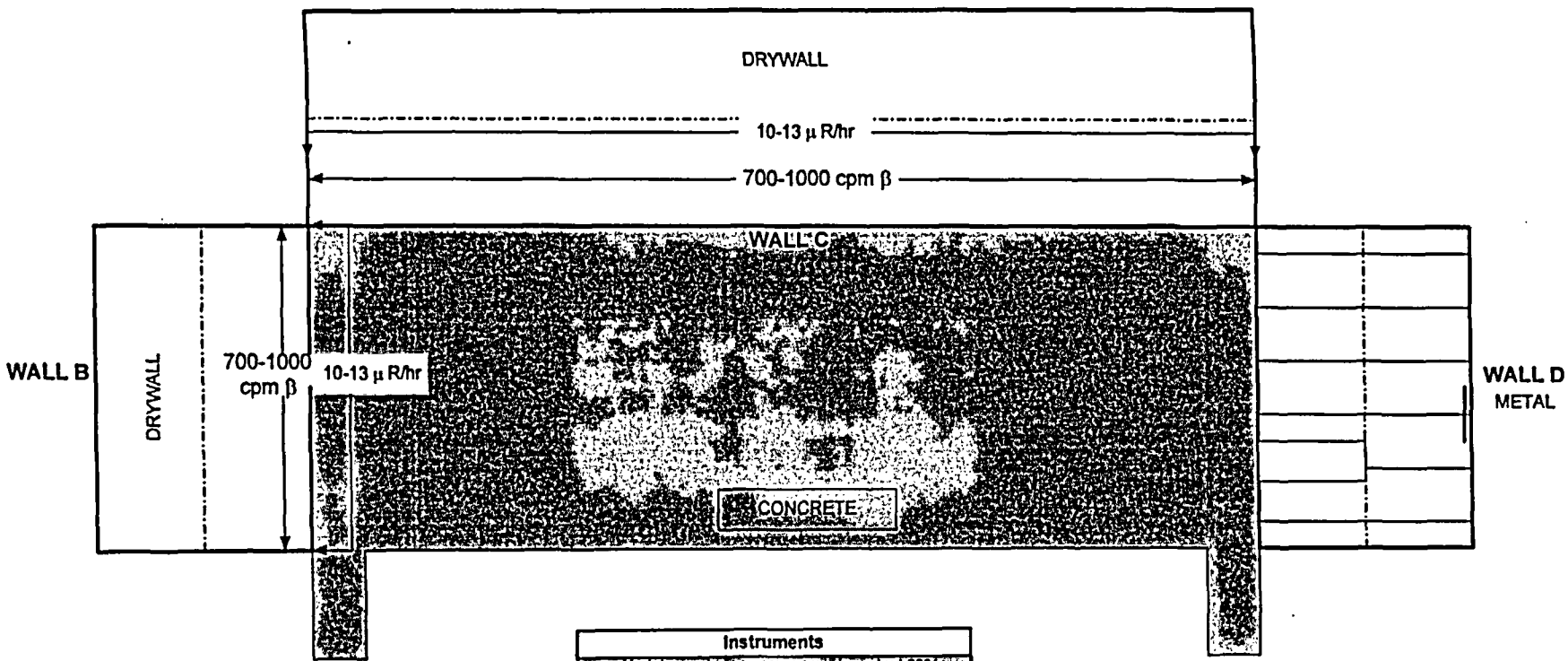


Instrument	
Model	Ludlum 222
Serial #	154202
Cal Due	09/06/04
Probe	434 cm² β
Probe #	149017
Efficiency	30.39%
[illegible]	1200 - 1500 cpm
[illegible]	1655 - 1830 cpm
[illegible]	650 - 951 cpm

Scan measurement = 

Surveyed by: JT SULLIVAN AND S. COWAN
Date: 02/08/04

Figure 9: Building 41, Survey of the Bottom 18" of Inside Walls B & C

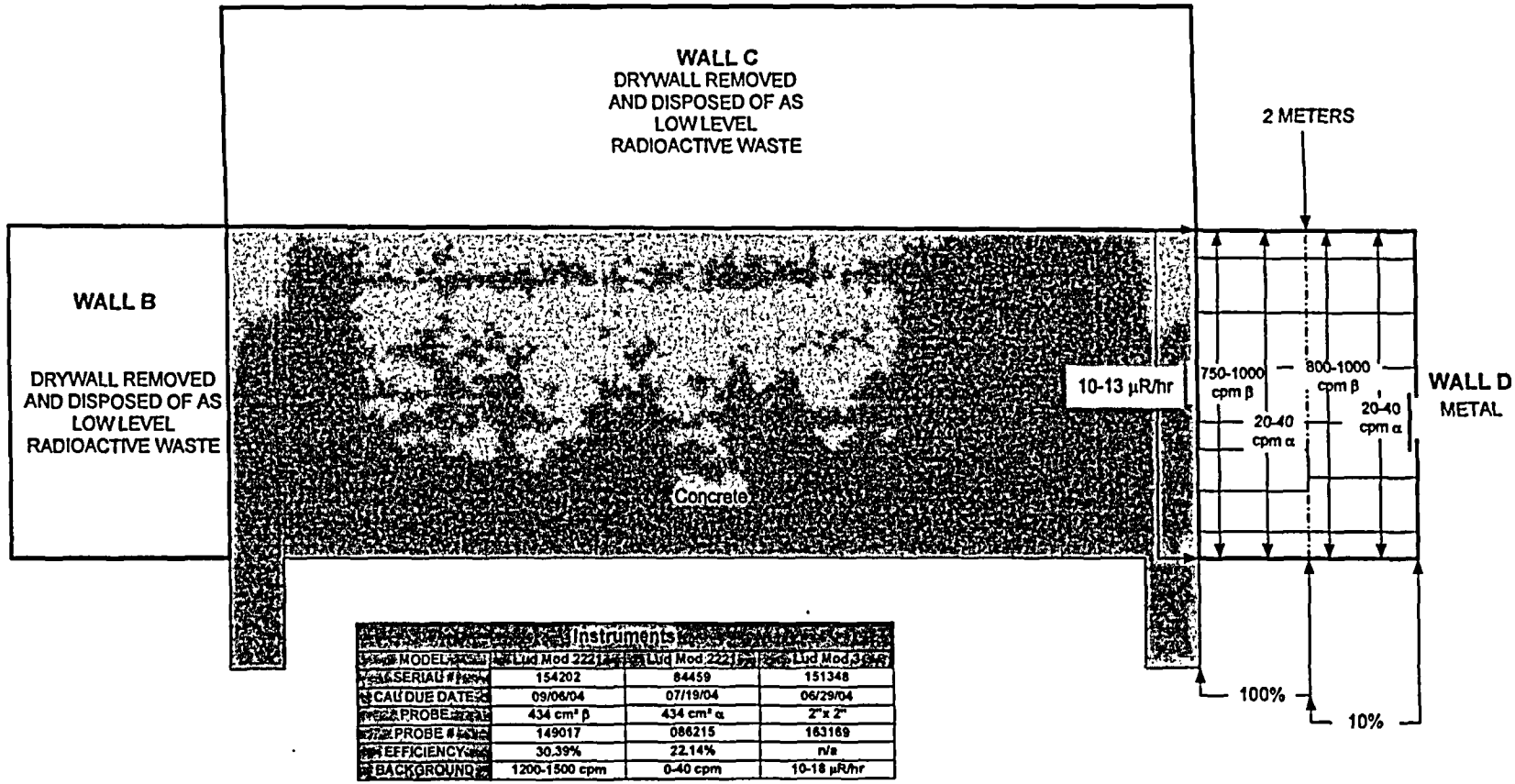


Instruments		
Model	Lud Mod 3	Lud 2221
Serial #	151348	154202
Cal Due Date	06/29/04	09/06/04
Probe	2"x 2"	434 cm² β
Probe #	163169	149017
Efficiency	n/a	30.39%
Bkg Metal	10-18 µR/hr	1200-1500 cpm
Bkg concrete	10-18 µR/hr	1655-1830 cpm
Bkg Drywall	10-18 µR/hr	650-951 cpm
MDA Metal	n/a	307 dpm/100 cm²
MDA Concrete	n/a	396 dpm/100 cm²
MDA Drywall	n/a	184 dpm/100 cm²

Scan measurement= ← # →

Technicians :
J. Sullivan / S. Cowan
Date : 02/08/04

Figure 10: Survey Results for Building 41 WALL D

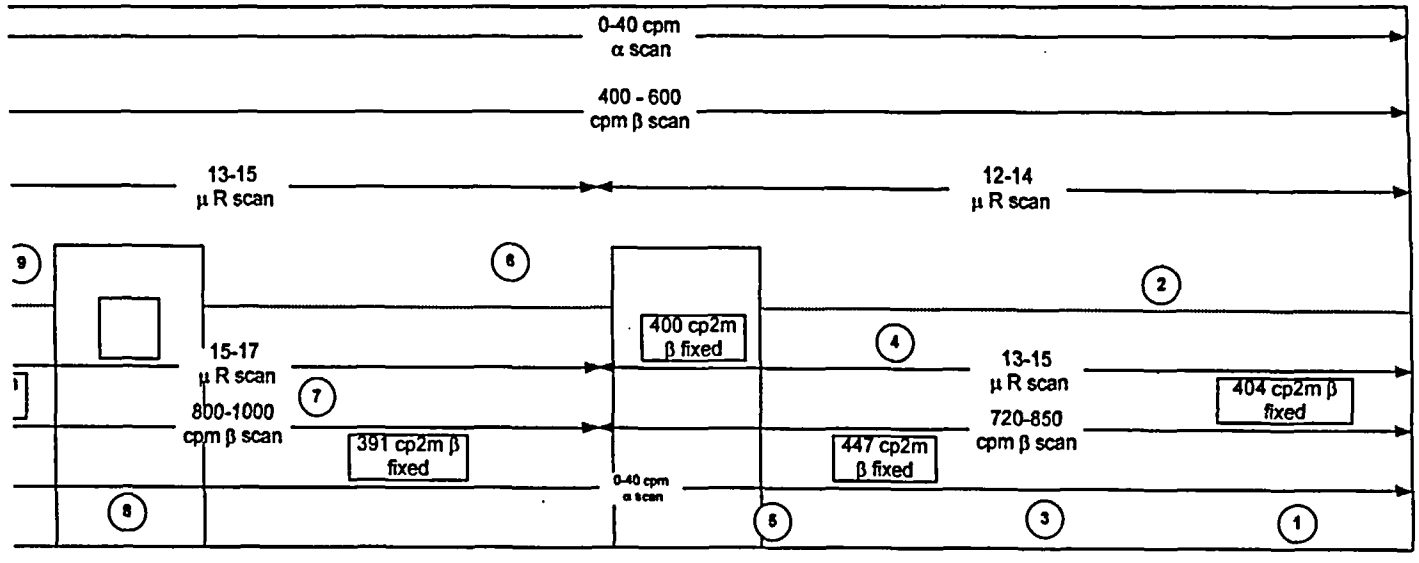


Instruments			
MODEL #	Ludlum Mod 2221	Ludlum Mod 2221	Ludlum Mod 3
SERIAL #	154202	84459	151348
CAL DUE DATE	09/06/04	07/19/04	06/29/04
PROBE	434 cm² β	434 cm² α	2"x 2"
PROBE #	149017	086215	163169
EFFICIENCY	30.39%	22.14%	n/a
BACKGROUND	1200-1500 cpm	0-40 cpm	10-18 µR/hr

Technicians :
J. Sullivan / S. Cowan
Date : 01/24/04 - 01/25/04

Scan measurement= ← # →

Figure 11: Survey Results for Building 41 Wall E



	Instruments			
Model	Lud 2221	Lud 2221	Lud 2221	Lud Mod 3
Serial #	86302	154202	84459	151348
Cal Due Date	05/04/04	09/06/4	07/19/04	06/29/04
Probe	100 cm² β	434 cm² β	434 cm² α	2"x 2"
Probe #	142547	149017	086215	163169
Efficiency	31.20%	30.39%	22.14%	n/a
Bkg Metal	435 ± 170cp2m	1200-1500 cpm	0-40 cpm	10-18 μR/hr
Bkgd concrete	822 ± 344cp2m	1655-1830 cpm	10-60 cpm	10-18 μR/hr
MDA Concrete	218 dpm/100cm²	396 dpm/100cm²	109 dpm/100cm²	n/a
MDA Metal	160 dpm/100cm²	307 dpm/100cm²	62 dpm/100cm²	n/a

Comments:
Same instruments as used for inside walls.

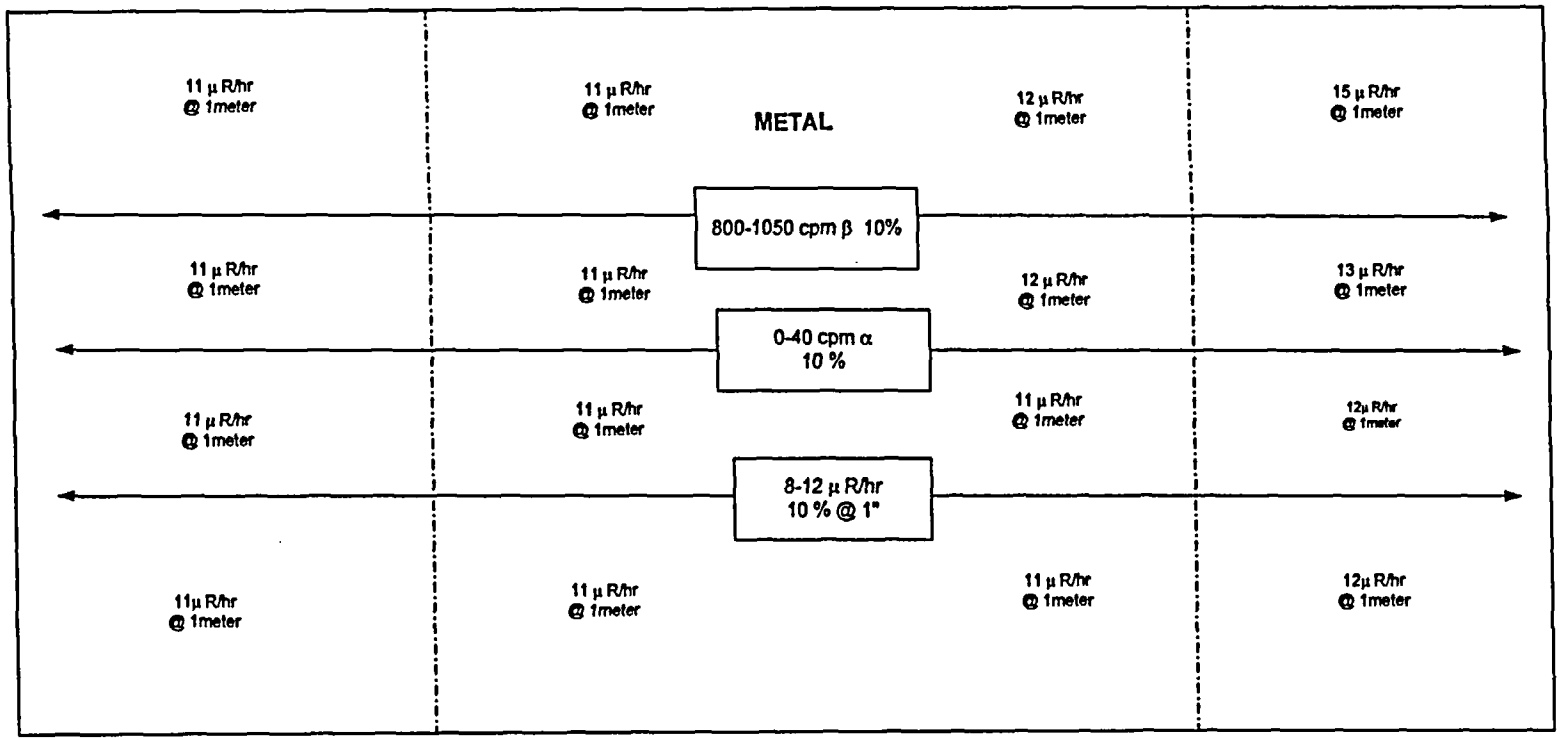
01/31/04
JT SULLIVAN AND S COWAN

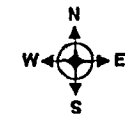
Scan measurement= ← # →

Wipe Location= (#)

Fixed measurement= [#]

Figure 12: Survey Results for the Building 41 Roof





Instruments			
MODEL	Lud Mod 2221	Lud Mod 2221	Lud Mod 3
SERIAL #	154202	84459	151348
CAL DUE DATE	09/06/04	07/19/04	06/29/04
PROBE	434 cm^2 β	434 cm^2 α	2"x 2"
PROBE #	149017	086215	163169
EFFICIENCY	30.39%	22.14%	n/a
BACKGROUND	1200-1500 cpm	0-40 cpm	10-18 µR/hr
CALIBRATION	307 dpm/100 cm^2	62 dpm/100cm^2	na

Scan measurement= ← # →

Fixed measurement= 15 µ R/hr @ 1 meter

Technicians :
J. Sullivan / S. Cowan
Date : 01/24/04 - 01/25/04

Appendix A

Building 41 Final Survey Plans

to

General Atomics'

Final Radiological Survey Report

For the Non-Impacted (Remaining Portion) of Building 41

October, 2003 W. T. LaBonte
Prepared By: W. T. LaBonte

Approved By: Laura Q. Gonzales
L. Q. Gonzales

Final Radiological Survey Plan for the Unaffected Areas in Building 41 (Rooms 106A, 107, 108, and 109)

This Final Survey Plan is for the unaffected areas of Building 41, specifically Rooms 106A, 107, 108, and 109.

This Final Radiological Survey Plan covers ***only*** the ceiling areas in rooms 106A, 107, 108, and 109. If elevated activity areas are detected, contact Health Physics management as soon as practical. The area will have to be re-classified to a higher classification and additional surveying will be required.

History and Classification

During decommissioning activities in the Rad Waste portion of Building 41, elevated activity areas were discovered in the ceiling above the Rad Waste office area. Apparently rats had made nests from contaminated materials from the Controlled Area side of the Rad Waste facility. This survey is being performed to ensure that rats did not cross contaminated the Unaffected Area adjacent to the former Rad Waste office area.

Conversations with personnel remodeling the office and laboratory areas adjacent to the former Rad Waste office indicated that they did not observe rat nests while performing work in the ceiling areas did observe some rat droppings near a sink in room 109.

This remaining portion of Building 41 has no history of radioactive material processing, packaging, or storage. Therefore it is classified as an **Unaffected Area.**

Survey Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions within the remaining portions of Building 41 satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm^2, (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10 μR/hr above background measured at 1 meter above the surface. Surveys will be taken only by qualified Health Physics Technicians having a

minimum of 3 years Health Physics Technician experience. The survey and final report documenting the survey will be included in the final survey report for the Rad Waste Facility.

Release Criteria (per GA Site Decommissioning Plan)

Surface Release Criteria
The NRC release criteria for most beta/gamma emitters is:

1,000 dpm /100 cm^2, averaged over a 1 m^2 area
3,000 dpm /100 cm^2, total, maximum in a 100 cm^2 area
200 dpm/100 cm^2, removable activity

Exposure Rate Measurements
The guideline value for exposure rates measured at 1 m above the surface, is 10 µR/hr above background.

Alert Levels

Beta Monitoring
>40 cpm above background using a portable GM detector. **(Note: this meter will be used because the 434cm^2 or 100 cm^2 probes will not fit).**

Exposure Rate Measurements
> 25 µR/hr at surface
> 20 µR/hr at 1 m

Documentation
Every survey conducted must be documented *on a daily basis* on a drawing showing the approximate locations surveyed. Include the results (including units), the technicians signature, date, instrument(s) used (including model and serial number of both the ratemeter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

Final Radiological Surveys Planned for the Unaffected Portions of Building 41

Type of Survey/Activity	Unaffected Area
Gridding Required?	No
Ceiling Surfaces (Scan with a GM detector)	100 % of accessible affected areas ceiling (the attic side) in room 107, 10% of accessible ceiling surface(the attic side) in room 108, 10% of accessible ceiling surface(the attic side) in room 109 when made available for surveying.
Ceiling Surface, Large Area Wipes	10% of structural beams in the overhead.
µR/hr Readings (Scan Survey)	100% scan on all accessible surfaces, detector held ~1" from surface, in room 107, and 10% scan on all accessible surfaces in rooms 108, 109, and 106A.

January 14, 2004 W T LaBonte
Prepared By: W. T. LaBonte

Approved By: Laura Q Gonzales
L. Q. Gonzales

Final Radiological Survey Plan for the Remaining Walls and Floor Portions of the NWPF (Building 41)

This Final Survey Plan is for the portions of the NWPF facility areas remaining after demolition.

This Final Radiological Survey Plan covers ***only*** the remaining portions of Building 41 that formerly housed the NWPF office area and the adjacent external metal walls. See Figure 1 for location, Figure 2 for an illustration of the areas requiring surveys and the dimensions of the survey area.

History and Classification

The southern and easterly portions of Building 41 formerly housed the Nuclear Waste Processing Facility(NWPF). All of the NWPF, with the exception of a small portion of the office area, was demolished during decommissioning efforts and disposed of as low level radioactive waste. The remaining portions of the NWPF are the external walls for the remainder of Building 41 which is used for non-nuclear related work.

There were no known spills of radioactive material in the portion of the NWPF facility that remains, however, due to its close proximity to the areas used to process radioactive waste, it is classified as a **Non-Suspect Affected Area** for final radiological survey purposes.

Survey Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions on the remaining portions of the NWPF satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm^2, (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates in occupiable locations are less than 10 µR/hr above background measured at 1 meter from any surface. Samples will be counted in the Health Physics laboratory (onsite). Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience. The survey and final report documenting the survey will be performed by GA's Health Physics group.

Release Criteria (per GA Site Decommissioning Plan)

Concrete/Asphalt/building surface Release Criteria
The NRC release criteria for Sr-90, which is conservatively selected for beta measurements due to the potential exposure of this area to Sr-90, is:

1,000 dpm /100 cm^2, averaged over a 1 m^2 area
3,000 dpm /100 cm^2, total, maximum in a 100 cm^2 area
200 dpm/100 cm^2, removable activity

The NRC release criteria for Alpha activity is:

5,000 dpm /100 cm^2, averaged over a 1 m^2 area
15,000 dpm /100 cm^2, total, maximum in a 100 cm^2 area
1,000 dpm/100 cm^2, removable activity

Exposure Rate Measurements
The guideline value for exposure rates measured at 1 m above the surface, is 10 µR/hr above background.

Alert Levels

Alpha Alert Values
If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

> 100 cpm alpha using the large area (434 cm^2) probe (check area with a hand-held alpha meter).
> 60 cpm using a 50 cm^2 hand-held alpha probe (~ 600 dpm/100 cm^2)

Beta Monitoring
>250 cpm above the appropriate background using the 434 cm^2 probe.
>100 cpm above the appropriate background using the 100 cm^2 probe.
>40 cpm above background using a portable GM detector. **(Note: this meter should ONLY be used in areas the 434cm^2 or 100 cm^2 probes will not fit).**

Exposure Rate Measurements
> 25 µR/hr at surface
> 20 µR/hr at 1 m

Background Measurements
Background measurements must be made with each instrument used on each type of surface (i.e., concrete, metal, dry wall, etc.,) prior to using the instrument.
Instrument Response Checks

Instrument response checks must be made on a daily basis for each instrument in use, prior to use, to

assure the instrument is properly responding to the type of applicable radiation.

Documentation

Every survey conducted must be documented **on a *daily basis*** on a drawing showing the approximate locations surveyed. Include the results (including units), the technicians signature, date, instrument(s) used (including model and serial number of both the ratemeter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

Final Radiological Surveys Planned for the Former NWPF Facility (Building 41)

Type of Survey/Activity	Non-Suspect Affected Area
Gridding Required?	No, Not Required
Concrete Floor and building wall (dry wall, metal) Surfaces (1) (Scan w/ 434 cm^2 alpha probe).	100 % below 2m, 10% above 2m
Concrete Floor and, Building wall (dry wall, metal) surfaces (1). (Scan w/ 434 cm^2 beta probe).	100 % below 2m, 10% above 2m.
Minimum number of Fixed α & β Measurements (2) (3)	1 measurement per 20 m^2, or, 1 measurement every ~4.5 m Minimum number of measurements : Floor = 4 Based on ~ 63 m^2. Walls = 19 based on ~374 m^2. Alternate between (1) a wipe, (2) an alpha fixed measurement and (3) a beta fixed measurement on , concrete floor and building walls surfaces.
µR/hr Readings (Scan Survey)	100 % of concrete floor, 10% of walls, with detector held ~1" from surface
µR/hr Readings (Fixed Measurements @ 1m from surface)	1 per 10 m^2, or 1 every 3. on concrete floor. Minimum number of measurements =7 Based on ~ 63 m^2.

(1) Clean surfaces, debris or dirt removed.

(2) For the fixed measurements:

- For α measurements; use either the hand held alpha counter (*minimum* of ~6 second count). Document all readings in cpm.
- For β measurements; take a 2 minute count using the 100 cm^2 gas flow proportional detector (beta) with the Model 2221 ratemeter. Document all readings and mark on a drawing the locations the readings were taken.
- For wipes, analyze each 100 cm^2 wipe for α and β activity.

(3) A "measurement" is either (1) a "fixed" radiation measurement representing total activity or (2) a wipe (removable activity).

Figure 1: Main Site and Sorrento Valley Site

Building Numbers	Names
Building 1	Administration
Building 2	Science Laboratories A, B, C.
Building 7	Cafeteria
Building 9	Experimental Building
Building 10	Maintenance Building
Building 13	Technical Office Building
Building 14	Technical Office East
Building 15	Technical Office East
Building 19	Swimming Pool Building
Building 21	TRIGA Building
Building 22	TRIGA Fuel Lab Building
Building 23	Hot Cell
Building 25	Waste Yard Building
Building 27	Experimental Area
Building 27-7	Experimental Area
Building 29	Experimental Area
Building 29-2	Emergency Vehicle Storage Building
Building 30	LINAC Complex
Building 31	TRIGA Storage Building
Building 31-1	Neutron Radiography Building
Building 31-2	ECF Critical Building
Building 31-3	Storage Building
Building 33	Fusion Building
Building 33-1	Fusion Lab Building
Building 33-5	Fusion Building Annex 5
Building 34	Fusion Doublet III Building
Building 34-1	Fusion Doublet III Capacitor Building
Building 34-2	Fusion Doublet III Lab Building
Building 34-3	Fusion Doublet III Storage Building
Building 35	Test Tower Building
Building 35-1	Facilities (Shipping & Receiving) Building
Building 36	Blower Assembly Building
Building 37	Sorrento Valley Building
Building 39	Sorrento Valley Building
Building 39-1	Storage Building
Building 41	Raw Stock Facility
Building 42	NDT Facility
Building 45	Helium Circulator Test Facility
Building 63	3550 Dunhill St.
Building 64	11030 Roselle St.
Building 65	11040 Roselle St.
Building 66	3520 Dunhill St.
Building 66	3510 Dunhill St.

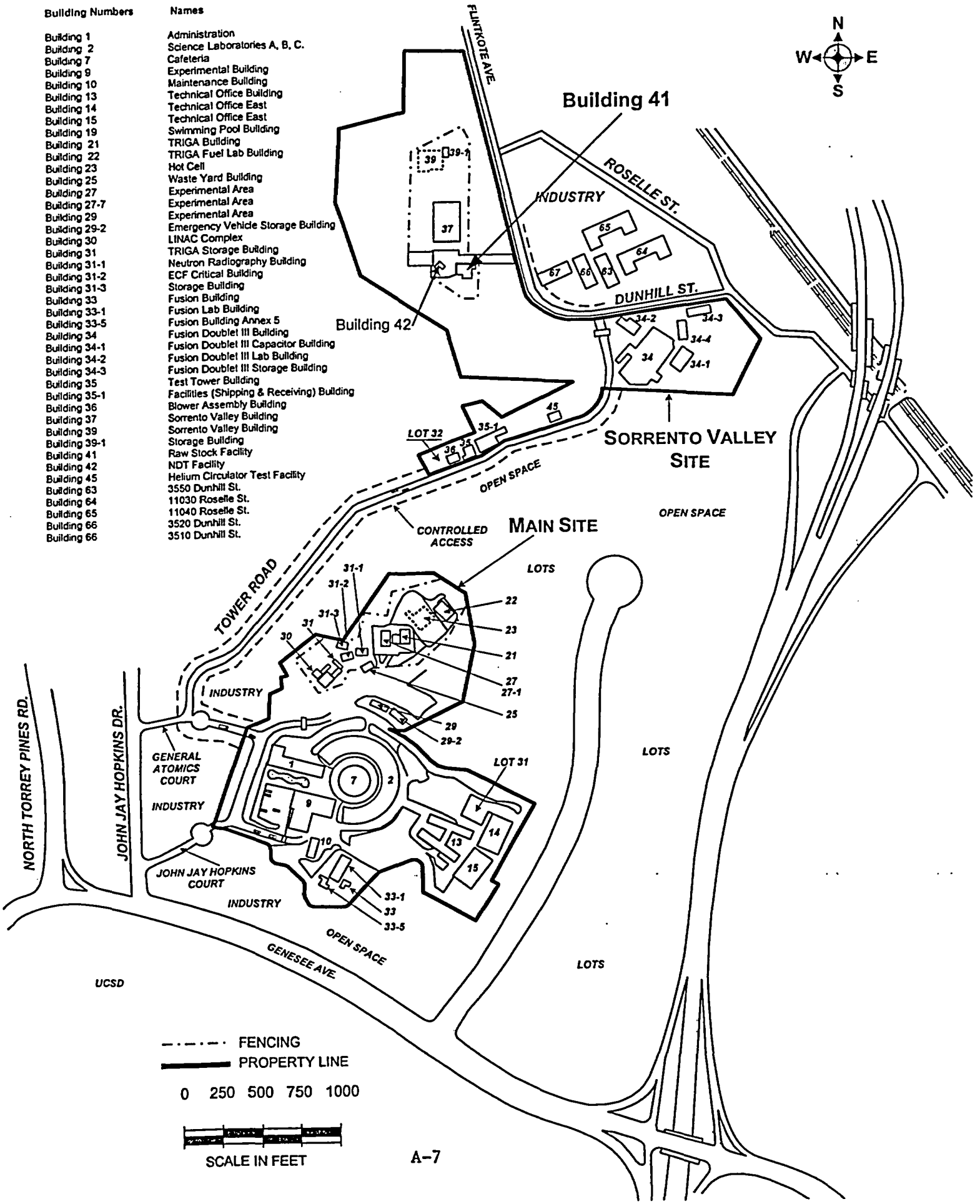
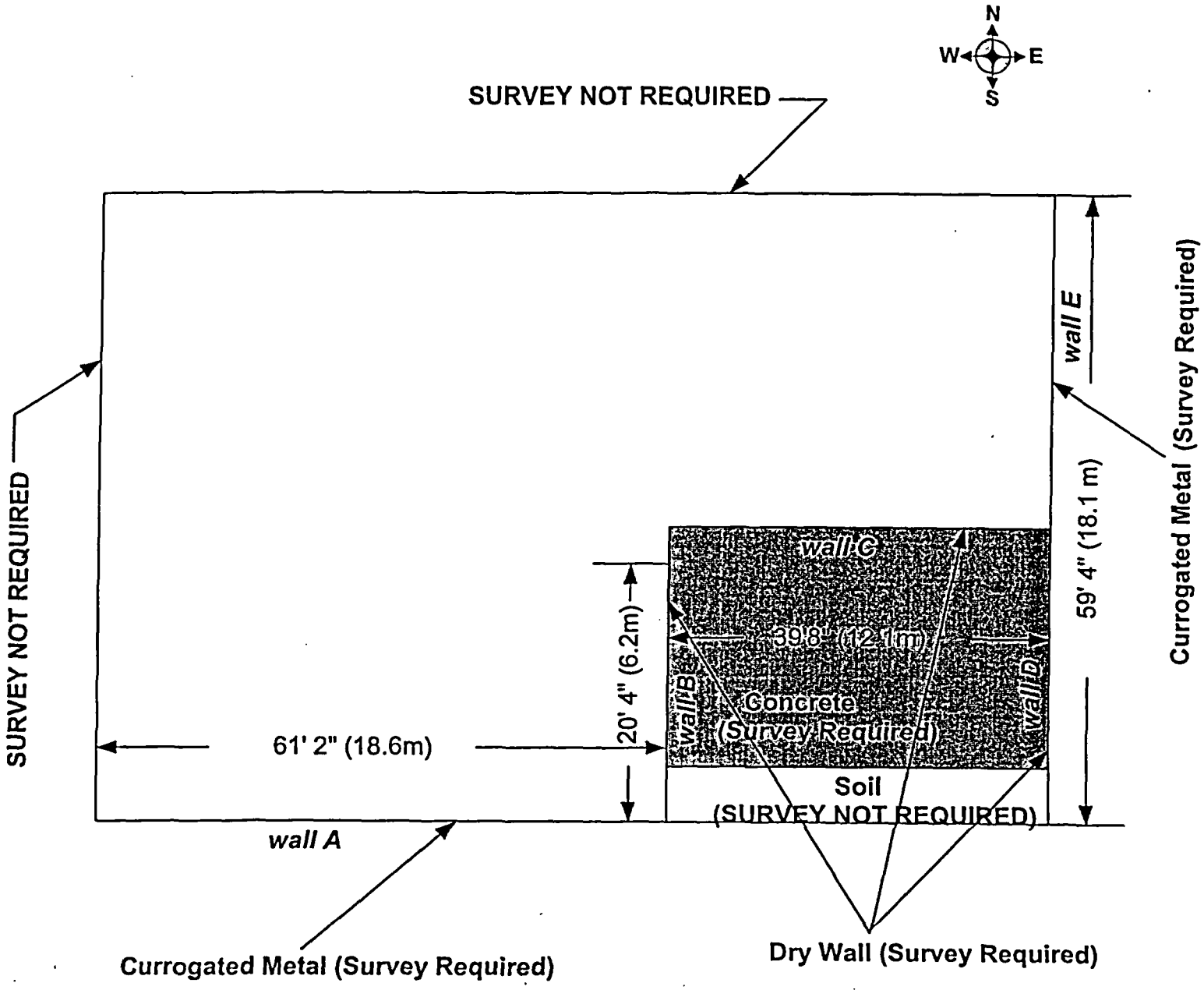


Figure 2: Building 41 Survey Areas and Dimensions



Note: walls are 20' (6.1 m) High

February 5, 2004
Prepared By: W. T. LaBonte

Approved By: L. Q. Gonzales

Final Radiological Survey Plan for the Interior Portions of the Remaining Walls for the Former NWPF (Building 41)

This Final Survey Plan is for the interior portions of the walls for the former NWPF facility after removal of the corrugated metal covering (on the South and East walls of Building 41) and after removal of the exterior dry wall in the former office area for the former NWPF facility.

This Final Radiological Survey Plan covers *only* the remaining internal portions of Building 41 walls that abutted the NWPF facility, and the inside portions of the corrugated metal and dry wall material removed. See Figure 1 for location, Figure 2 for an illustration of the areas requiring surveys and the dimensions of the survey area.

History and Classification

The southern and easterly portions of Building 41 formerly housed the Nuclear Waste Processing Facility(NWPF). All of the NWPF, with the exception of a small portion of the office area, was demolished during decommissioning efforts and disposed of as low level radioactive waste. The remaining portions of the NWPF are the external walls for the remainder of Building 41 which is used for non-nuclear related work. Following a Final survey on the standing external walls, which found no radioactivity above natural background levels, the external corrugated metal was removed from the South wall of Building 41 and the outer most dry wall in the former NWPF office area was removed.

There were no known spills of radioactive material at the NWPF facility which would have introduced radioactive material into the inner portions of the walls, and, the final survey performed on the external portions of the remaining walls found no activity above natural background levels. Therefore, the internal portions of the remaining walls, including the construction materials, are classified as a **Non-Impacted Area** for final radiological survey purposes.

Survey Objectives and Responsibility

The purpose of performing a final survey is to demonstrate that the radiological conditions on the remaining portions of the NWPF satisfy the NRC and State of CA guidelines for release to unrestricted use. The objectives include (1) to show that the average surface contamination levels for each survey unit are within the authorized value, (2) to show that the maximum residual activity ("hot spot" area) do not exceed three times the average value in an area up to 100 cm^2, (3) that a reasonable effort has been made to clean removable contamination and fixed contamination and (4) that the exposure rates

in occupiable locations are less than 10 μR/hr above background measured at 1 meter from any surface. Samples will be counted in the Health Physics laboratory (onsite). Surveys will be taken only by qualified Health Physics Technicians having a minimum of 3 years Health Physics Technician experience. The survey and final report documenting the survey will be performed by GA's Health Physics group.

Release Criteria (per GA Site Decommissioning Plan)

Concrete/Asphalt/building surface Release Criteria
The NRC release criteria for Sr-90, which is conservatively selected for beta measurements due to the potential exposure of this area to Sr-90, is:

1,000 dpm /100 cm^2, averaged over a 1 m^2 area
3,000 dpm /100 cm^2, total, maximum in a 100 cm^2 area
200 dpm/100 cm^2, removable activity

The NRC release criteria for Alpha activity is:

5,000 dpm /100 cm^2, averaged over a 1 m^2 area
15,000 dpm /100 cm^2, total, maximum in a 100 cm^2 area
1,000 dpm/100 cm^2, removable activity

Exposure Rate Measurements
The guideline value for exposure rates measured at 1 m above the surface, is 10 μR/hr above background.

Alert Levels

Alpha Alert Values
If the following "alert levels" are exceeded, notify HP Management so an evaluation can be performed and to evaluate if decontamination is required.

> 100 cpm alpha using the large area (434 cm^2) probe (check area with a hand-held alpha meter).
> 60 cpm using a 50 cm^2 hand-held alpha probe (~ 600 dpm/100 cm^2)

Beta Monitoring
>250 cpm above the appropriate background using the 434 cm^2 probe.
>100 cpm above the appropriate background using the 100 cm^2 probe.
>40 cpm above background using a portable GM detector. **(Note: this meter should ONLY be used in areas the 434cm^2 or 100 cm^2 probes will not fit).**

Exposure Rate Measurements
> 25 μR/hr at surface
> 20 μR/hr at 1 m

Background Measurements

Background measurements must be made with each instrument used on each type of surface (i.e., concrete, metal, dry wall, etc.,) prior to using the instrument.

Instrument Response Checks

Instrument response checks must be made on a daily basis for each instrument in use, prior to use, to assure the instrument is properly responding to the type of applicable radiation.

Documentation

Every survey conducted must be documented on a ***daily basis*** on a drawing showing the approximate locations surveyed. Include the results (including units), the technicians signature, date, instrument(s) used (including model and serial number of both the ratemeter and the detector), calibration due date, % efficiency, background readings (if applicable) and any other applicable information.

Final Radiological Surveys Planned for the Internal portions of the walls for the Former NWPF Facility (Building 41)

Type of Survey/Activity	Non-Impacted Area
Gridding Required?	No, Not Required
Building wall (dry wall) and previously removed material (corrugated metal/ Dry Wall) Surfaces (Scan w/ 434 cm^2 beta probe).	**Standing Wall:** 100% of the lowest ~18" (~the length of the 434 cm^2 probe), 10 % of the remaining below 2m. **Removed Corrugated Metal:** 100% of the lowest ~18", the portion that abutted the floor, (~the length of the 434 cm^2 probe), 10 % of the remaining portions.
µR/hr Readings	**Removed Dry Wall:** Perform a scan on 10% of the removed material with a 2" x 2" NaI detector held within 1" of the surface.

Figure 1: Main Site and Sorrento Valley Site

Building Numbers	Names
Building 1	Administration
Building 2	Science Laboratories A, B, C.
Building 7	Cafeteria
Building 9	Experimental Building
Building 10	Maintenance Building
Building 13	Technical Office Building
Building 14	Technical Office East
Building 15	Technical Office East
Building 19	Swimming Pool Building
Building 21	TRIGA Building
Building 22	TRIGA Fuel Lab Building
Building 23	Hot Cell
Building 25	Waste Yard Building
Building 27	Experimental Area
Building 27-7	Experimental Area
Building 29	Experimental Area
Building 29-2	Emergency Vehicle Storage Building
Building 30	LINAC Complex
Building 31	TRIGA Storage Building
Building 31-1	Neutron Radiography Building
Building 31-2	ECF Critical Building
Building 31-3	Storage Building
Building 33	Fusion Building
Building 33-1	Fusion Lab Building
Building 33-5	Fusion Building Annex 5
Building 34	Fusion Doublet III Building
Building 34-1	Fusion Doublet III Capacitor Building
Building 34-2	Fusion Doublet III Lab Building
Building 34-3	Fusion Doublet III Storage Building
Building 35	Test Tower Building
Building 35-1	Facilities (Shipping & Receiving) Building
Building 36	Blower Assembly Building
Building 37	Sorrento Valley Building
Building 39	Sorrento Valley Building
Building 39-1	Storage Building
Building 41	Raw Stock Facility
Building 42	NDT Facility
Building 45	Helium Circulator Test Facility
Building 63	3550 Dunhill St.
Building 64	11030 Roselle St.
Building 65	11040 Roselle St.
Building 66	3520 Dunhill St.
Building 66	3510 Dunhill St.

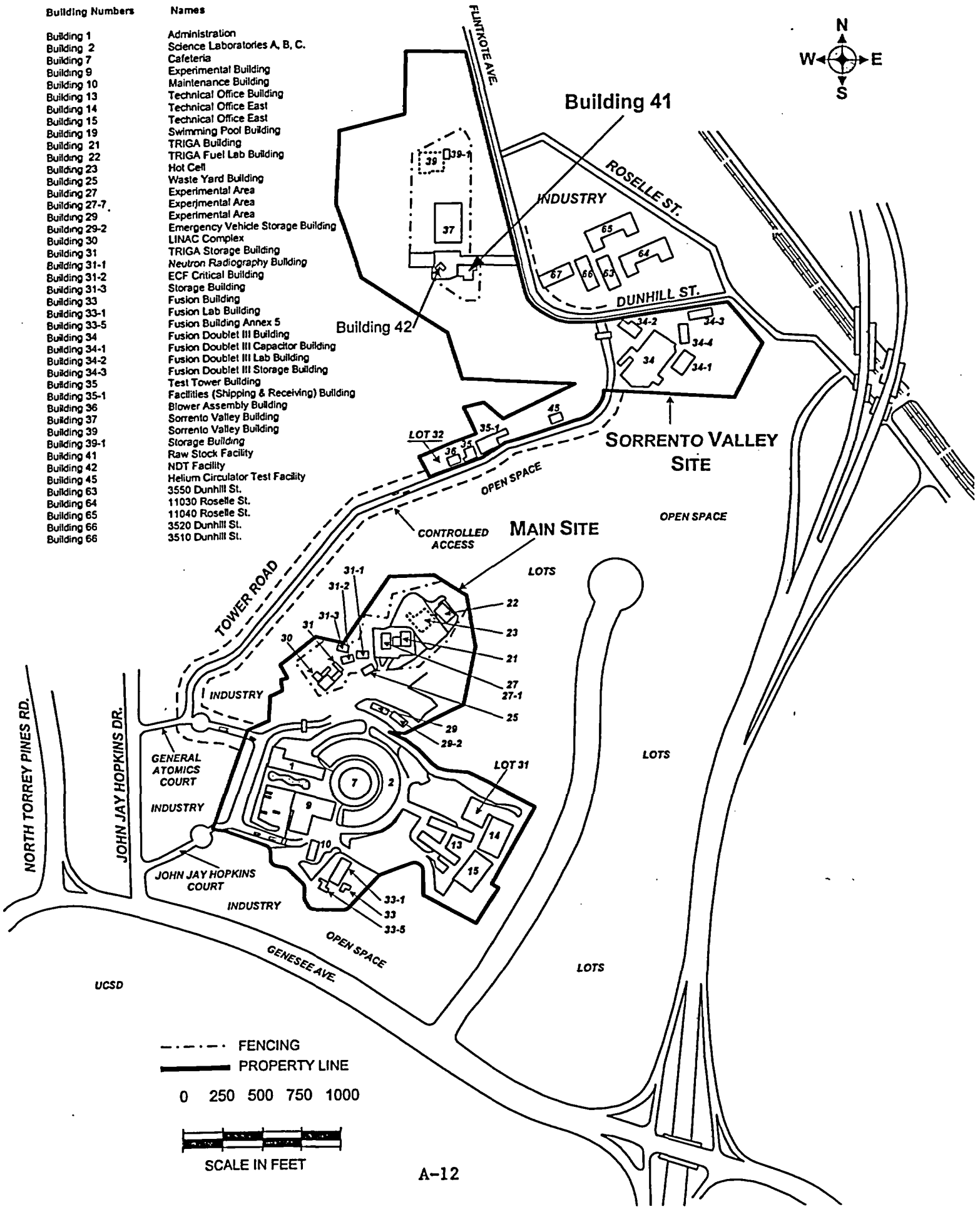
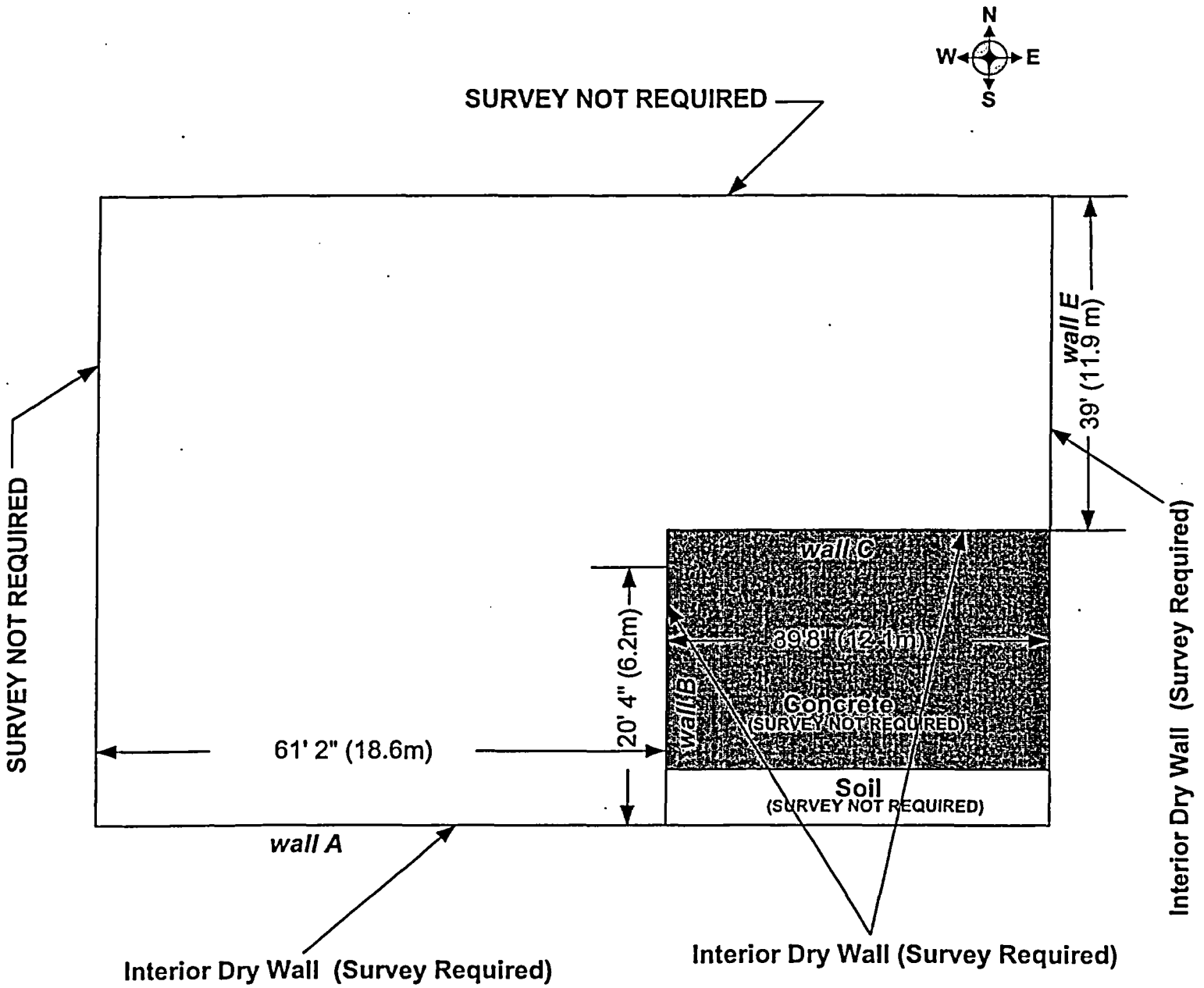


Figure 2: Building 41 Survey Areas and Dimensions



Note: Construction Materials Removed from Walls, A, B, C, D, and E Must be surveyed, See the survey plan for details.

Appendix B

NRC Inspection Report 070-00734/04-001

to

General Atomics'

Final Radiological Survey Report

For the Non-Impacted (Remaining Portion) of Building 41

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

June 4, 2004

Mr. James Randall Walti
Vice President and General Counsel
General Atomics
P.O. Box 85608
San Diego, California 92186-9784

SUBJECT: NRC INSPECTION REPORT 070-00734/04-001

Dear Mr. Walti:

An NRC inspection was conducted March 29-30, 2004, at your Torrey Pines Mesa facility. An exit briefing was conducted onsite at the conclusion of the inspection and a final telephonic exit was conducted with the radiation safety officer on May 18, 2004, discussing the results of confirmatory measurements performed by the NRC inspector. The enclosed report presents the scope and results of that inspection.

The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The purpose of this inspection was to conduct a closeout inspection and surveys of your decommissioning efforts of the former building 25 site and building 41 housing a portion of the nuclear waste processing facility. Confirmatory radiological surveys were performed on the waste treatment building and soils under the building 25 site. As part of the NRC's confirmatory sampling program, the results of the soil samples were compared with General Atomic's laboratory sample results. No violations of NRC regulations or regulatory requirements were identified during the inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Rick Muñoz at (817) 860-8220 or the undersigned at (817) 860-8191.

Sincerely,

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle & Decommissioning Branch

Docket No.: 070-00734
License No.: SNM-696

Enclosure:
NRC Inspection Report
070-00734/04-001

cc w/enclosure:
Dr. K. E. Asmussen, Director
Licensing, Safety and Nuclear Compliance
P.O. Box 85608
San Diego, California 92186-9784

California Radiation Control Program Director

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	070-00734
License No.:	SNM-696
Report No.:	070-00734/04-001
Licensee:	General Atomics
Facility:	General Atomics
Location:	San Diego, California
Dates:	March 29-30 & May 18, 2004
Inspector:	Rick Muñoz, Health Physicist
Approved By:	D. Blair Spitzberg, Ph.D., Chief Fuel Cycle/Decommissioning Branch
Attachment:	Supplemental Inspection Information

EXECUTIVE SUMMARY

General Atomics (GA)
NRC Inspection Report 070-00734/04-001

General Atomics has been conducting site remediation activities at its Torrey Pines Mesa facility near San Diego in preparation for the termination of Special Nuclear Materials License SNM-696. This announced inspection focused on confirmatory radiological surveys of the former building 25 site and building 41 formerly housing a portion of the nuclear waste processing facility.

Closeout Inspection and Survey (83890)

- The decontamination and decommissioning activities completed at the former building 25 site and building 41 of the nuclear waste processing facility were in compliance with the site decommissioning plan (Section 1).

- Independent confirmatory radiological surveys were performed by the inspector. Results of confirmatory surveys of the former building 25 site and building 41 of the nuclear waste processing facility performed by the NRC were consistent with measurements taken by the licensee. The NRC's confirmatory measurements supported the licensee's determination that these areas met the criteria for unrestricted release (Section 1).

- Six soil samples were collected at biased locations from the former building 25 site and analyzed by both the licensee's and NRC's laboratories for confirmatory analysis and comparison of results. A statistical comparison of the licensee's and NRC's soil sample results determined that all but 2 of the 29 comparisons were in statistical agreement. Although two of the soil sample results provided by the licensee's laboratory failed the NRC's analytical comparison test for thorium-228 and uranium-238, these samples were determined by the NRC to be below the release criteria levels. Therefore, the disagreements between the licensee's laboratory results and those of the NRC's were not a significant concern (Section 1).

- The NRC's confirmatory measurements supported the licensee's determination that cobalt-60, cesium-137, total uranium and total thorium concentrations in soils met the criteria for unrestricted release. Results of confirmatory surveys and statistical comparison of soil sample analytical results performed by the NRC were consistent with measurements taken by the licensee (Section 1).

Report Details

Summary of Facility Status

All activities at the General Atomics facility involving the use of special nuclear material (SNM) had been discontinued. Decontamination and decommissioning of buildings and structures was underway. The waste treatment facility and the remaining land areas were expected to be decontaminated and decommissioned by the end of 2004. The only remaining SNM facilities to be decommissioned after that time will be the TRIGA Mark III reactor facility and the nuclear materials storage areas. Facilities were being decommissioned according to the Site Decommissioning Plan dated September 1996. Site characterization and radiological surveys for release of several areas from the SNM license had been completed. Decommissioning was also proceeding for radioactive byproduct materials licensed by the State of California.

1 Closeout Inspection and Survey (83890)

1.1 Scope

The licensee's preparations, final survey plan, conduct of the final survey, and analysis of data for the former building 25 site and a draft report for building 41 were reviewed to verify compliance with the methodologies in NUREG/CR 5849, the licensee's site decommissioning plan, and the requirements of 10 CFR 70.38(j).

NRC confirmatory surveys for surface alpha, beta and ambient gamma radiation exposure rates of selected areas within the former building 25 and building 41 were conducted by the NRC inspector. Soil samples were obtained for laboratory analysis at biased locations within the former building 25 site.

1.2 Observations and Findings

a. NRC Confirmatory Survey Instruments and Unrestricted Release Criteria Used

During the confirmatory surveys, the NRC inspector used the following radiation detection instruments:

- Eberline Model E-600 to measure for alpha and beta radiation with an alpha/beta dual phosphor scintillation probe; and
- Ludlum Model 18 survey meter coupled with a 2-inch NaI scintillation probe and a micro-roentgen (micro-R) survey meter to measure gamma exposure rates.

Model	Serial #	NRC #	Calibration Due
Ludlum-18	15504	012778	11/05/04
Eberline SPA-3	00283	20795G	N/A
Eberline E-600	00763	063472	03/24/05
Eberline SHP 380AB	01108	079976	03/24/05
Ludlum-19	015525	015525	03/25/05

Criteria for unrestricted release, as approved in the licensee's site decommissioning plan, are shown below:

Soil Release Criteria in picoCuries/gram (pCi/g) above background

cobalt-60	8 pCi/g
cesium-137	15 pCi/g
thorium (Th-232 & Th-228)	10 pCi/g
enriched uranium (U-234 & U-235)	30 pCi/g

Alpha and Beta/Gamma Emitters

5,000 dpm/100cm^2	Fixed and removable natural uranium, U-235, U-238, and associated decay products and beta/gamma emitters
1,000 dpm/100cm^2	Removable natural uranium, U-235, U-238, and associated decay products and beta/gamma emitters

b. Background Measurements

To determine applicable background values for the surfaces of building materials, the inspector obtained alpha and beta contact measurements from unaffected areas within the General Atomics' property. Selected locations on asphalt roofing paper, steel support bracing, metal flashing, sheet rock and concrete were selected and surveyed.

General Area Gamma Exposure Rate Limit

The gamma exposure rate limit from the approved decommissioning plan should be less than 10 microRoentgen per hour (μR/hr) above background when measured at approximately 1-meter (~3 feet) above surfaces/floors. The average background for ambient gamma exposure at 1-meter was 10 μR/hr using the micro-R survey meter.

c. Final Radiological Survey of Building 41 (former nuclear waste processing facility)

The inspector performed a confirmatory survey of selected areas of building 41 including the roof top using a micro-R and alpha/beta meter. Fifteen selected sample locations of building materials on the roof consisting of asphalt paper, metal flashing, and angle iron support structures were surveyed. The gamma readings at 1 meter above the ground were all less than 10μR/hr above background. The alpha readings ranged from background to 51 dpm/100 cm^2 above background. The beta readings ranged from background to 523 dpm/100 cm^2 above background. The results of all surveys were less than the criteria established in the site decommissioning plan for unrestricted release and were consistent with results that had been obtained by the licensee. Survey results for alpha and beta surveys are included in Table 1 and Table 2:

Table 1
General Atomics Building 41 Roof

Measurement	Alpha dpm/100cm²	Beta dpm/100cm²
1	0	14
2	20	95
3	51	334
4	10	101
5	-5	76
6	5	-63
7	31	210
8	10	119
9	20	46
10	-5	244
11	-10	104
12	-15	180
13	15	206
14	15	-20
15	0	206

background: alpha=9; beta=180. All values are corrected for background

Table 2
General Atomics Building 41

Measurement	Alpha dpm/100cm²	Beta dpm/100cm²
1	15	523
2	31	346
3	0	334
4	-15	209
5	-5	281
6	-10	267
7	5	340
8	15	302
9	15	378
10	-5	177
11	5	305
12	-5	247
13	21	392
14	5	363
15	-5	104
16	-5	218
17	41	374
18	-15	305
19	5	220
20	-15	334
21	10	134
22	36	302
23	21	235
24	15	235
25	21	290

background: alpha=5; beta=240. All values are corrected for background

d. Final Radiological Survey of the former building 25 area

The licensee's "Final Radiological Survey Report for the former building 25 site, was reviewed and found to be complete. The inspector obtained background measurements from offsite and unaffected areas within the site boundary. A site background of 10,000 counts per minute (cpm) was established using the NaI scintillation detector. The inspector performed a confirmatory survey of selected areas within the building 25 area using a 2 inch sodium iodide detector and a micro-R meter. The gamma readings at 1-meter above the ground ranged from background to 6μR/hr above background. The inspector performed gamma scans, using a 2-inch sodium iodide scintillation detector of the excavated areas in and around the former building 25 site to mark biased sample locations for soil sampling based on the higher readings. Elevated areas selected for scanning ranged from 6,000 cpm to 8,000 cpm above background. The results of all radiological scan surveys were less than the criteria established in the site decommissioning plan for unrestricted release and were consistent with results that had been obtained by the licensee. No soil surface area scanned exceeded twice background.

The inspector obtained six soil samples from biased locations within the area that had been remediated. The samples were first processed by the onsite General Atomics radioanalytical laboratory, then transferred through chain-of-custody to the NRC and sent to the NRC's contract laboratory (Oak Ridge Institute for Science and Education) for analysis. The results and comparison of the six soil samples taken by the NRC inspector are listed in the Tables 3 through 8 below:

TABLE 3
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total Th-232 by Ac-228

Former Building 25 Site Sample Locations	NRC Analysis [a,b] pCi/g	GA Analysis [a,b] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	1.55 ± 0.21	1.14 ± 0.23	yes
NRC-25-2	1.56 ± 0.22	2.11 ± 0.49	yes
NRC-25-3	1.53 ± 0.22	1.79 ± 0.36	yes
NRC-25-4	1.48 ± 0.25	2.26 ± 0.49	yes
NRC-25-5	1.47 ± 0.26	1.61 ± 0.35	yes
NRC-25-6	1.55 ± 0.24	2.10 ± 0.48	yes

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.

TABLE 4
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total Th-228 by Pb-212

Sorrento Valley West Land Area 5 Sample Locations	NRC Analysis [a,b] pCi/g	GA Analysis [a,b] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	1.57 ± 0.11	0.63 ± 0.22	no
NRC-25-2	1.62 ± 0.12	1.33 ± 0.24	yes
NRC-25-3	1.55 ± 0.12	1.49 ± 0.23	yes
NRC-25-4	1.51 ± 0.12	1.13 ± 0.23	yes
NRC-25-5	1.60 ± 0.13	1.54 ± 0.26	yes
NRC-25-6	1.56 ± 0.12	1.23 ± 0.24	yes

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.

TABLE 5
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total U-235

Sorrento Valley West Land Area 5 Sample Locations	NRC Analysis [a,b] pCi/g	GA Analysis [a,b] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	0.14 ± 0.09	0.05 ± 0.03	yes
NRC-25-2	0.04 ± 0.10	0.29 ± 0.15	yes
NRC-25-3	0.04 ± 0.11	0.16 ± 0.07	yes
NRC-25-4	0.01 ± 0.11	0.28 ± 0.14	yes
NRC-25-5	0.22 ± 0.13	0.19 ± 0.08	yes
NRC-25-6	0.16 ± 0.13	0.21 ± 0.10	yes

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.

TABLE 6
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total U-238 by Th-234

Sorrento Valley West Land Area 5 Sample Locations	NRC Analysis [a,b] pCi/g	GA Analysis [a,b,d,e] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	1.06 ± 0.59	ND	n/a
NRC-25-2	1.74 ± 0.59	ND	n/a
NRC-25-3	1.39 ± 0.73	1.46 ± 1.25	yes
NRC-25-4	1.72 ± 0.80	0.88 ± 1.10	yes
NRC-25-5	2.57 ± 0.88	1.27 ± 1.21	yes
NRC-25-6	2.21 ± 0.87	0.30 ± 0.83	no

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.
[d] ND means not detected
[e] GA Average Minimum Detectable Activity (MDA) for U-238 is 1.37 pCi/g (63 keV peak).

TABLE 7
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total Cs-137

Sorrento Valley West Land Area 5 Sample Locations	NRC Analysis [a, b] pCi/g	GA Analysis [a, b] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	0.29 ± 0.04	0.19 ± 0.08	yes
NRC-25-2	0.29 ± 0.04	0.24 ± 0.09	yes
NRC-25-3	0.50 ± 0.06	0.41 ± 0.09	yes
NRC-25-4	0.33 ± 0.05	0.30 ± 0.10	yes
NRC-25-5	0.16 ± 0.05	0.13 ± 0.06	yes
NRC-25-6	1.07 ± 0.08	1.00 ± 0.16	yes

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.

TABLE 8
Soil Sample Comparison - Gamma Spectroscopy Analysis
Total Co-60

Sorrento Valley West Land Area 5 Sample Locations	NRC Analysis [a, b, d] pCi/g	GA Analysis [b, e, f] pCi/g	NRC/Licensee Agreement [c]
NRC-25-1	0.03 ± 0.02	ND	n/a
NRC-25-2	0.01 ± 0.03	ND	n/a
NRC-25-3	0.04 ± 0.03	ND	n/a
NRC-25-4	0.00 ± 0.04	ND	n/a
NRC-25-5	0.02 ± 0.04	ND	n/a
NRC-25-6	0.11 ± 0.05	0.14 ± 0.10	yes

[a] Background was not subtracted from these values.
[b] Uncertainty represents the 95 percent confidence level, based on total propagated uncertainties.
[c] Agreement status was determined using NRC Inspection Procedure 84525.
[d] Zero value is due to rounding.
[e] GA Average Minimum Detectable Activity (MDA) for Co-60 is 0.13 pCi/g (1173 keV peak)
[f] ND means not detected

The results of all surveys and soil samples were less than the criteria established in the site decommissioning plan for unrestricted release and were consistent with results that had been obtained by the licensee. The statistical comparison method defined in the NRC Inspection Procedure 84525 could not be applied to all sample results since some radionuclides were below the detection levels. Twenty-nine analytical comparisons were made. Twenty-seven of the 29 results were found to be within the statistical agreement criteria defined in the NRC Inspection Manual. The occurrence of two comparison results for Cs-137 and U-238, falling outside the agreement criteria is not significant, considering that both analytical results were below the site cleanup criteria.

1.3 Conclusion

The decontamination and decommissioning activities completed at the former building 25 site and building 41 of the nuclear waste processing facility were in compliance with the site decommissioning plan. Independent confirmatory radiological surveys were performed by the inspector. Results of confirmatory surveys of the former building 25 site and building 41 of the nuclear waste processing facility performed by the NRC were consistent with measurements taken by the licensee. The NRC's confirmatory measurements supported the licensee's determination that these areas met the criteria for unrestricted release.

Six soil samples were collected at biased locations from the former building 25 site and analyzed by both the licensee's and NRC's laboratories for confirmatory analysis and comparison of results. A statistical comparison of the licensee's and NRC's soil sample results determined that all but two of the 29 comparisons were in statistical agreement. Although two of the soil sample results provided by the licensee's laboratory failed the NRC's analytical comparison test for thorium-228 and uranium-238, these samples were determined by the NRC to be below the release criteria levels. Therefore, the disagreements between the licensee's laboratory results and those of the NRC's were not a significant concern.

The NRC's confirmatory measurements supported the licensee's determination that cobalt-60, cesium-137, total uranium and total thorium concentrations in soils met the criteria for unrestricted release. Results of confirmatory surveys and statistical comparison of soil sample analytical results performed by the NRC were consistent with measurements taken by the licensee.

2 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection period on March 30, 2004, and a final telephonic exit was conducted with the radiation safety officer on May 18, 2004, with the results of soil sample analysis confirmatory measurements performed by the NRC inspector. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.

ATTACHMENT

SUPPLEMENTAL INSPECTION INFORMATION
PARTIAL LIST OF PERSONS CONTACTED

Licensee

Keith Asmussen, Director, Licensing, Safety and Nuclear Compliance
Laura Gonzales, GA Radiation Safety Officer/Health Physics Manager
Karen Schultz, Administration
Ruben DeValasco, Manager Decommissioning Projects
Mario Monreal, Calibration Lab Manager

Bartlett

Dick Stowell, Senior Health Physicist

INSPECTION PROCEDURES USED

IP 83890	Closeout Inspection and Survey

ITEMS OPENED, CLOSED AND DISCUSSED

None

LIST OF ACRONYMS USED

cm^2	square centimeters
cpm	counts per minute
dpm	disintegrations per minute
D&D	decontamination and decommissioning
GA	General Atomics
MDA	Minimum Detectable Activity
NMSS	Nuclear Material Safety and Safeguards
pCi/g	picoCuries per gram
PDR	Public Document Room
SDP	Site Decommissioning Plan
SNM	special nuclear material
μR/hr	microRoentgen per hour