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GENERAL RADIOACTIVE MATERIAL (G-RAM) RADIOLOGICAL FINAL REPORT FOR
DECOMMISSIONING CHARLESTON NAVAL BASE VOLUME II CNC CHARLESTON SC
4/1/1996
RADIOLOGICAL ENGINEERING DIVISION

**GENERAL RADIOACTIVE MATERIAL (G-RAM)
RADIOLOGICAL FINAL REPORT
FOR THE DECOMMISSIONING OF
NAVAL BASE CHARLESTON
(VOLUME II)**

**Prepared by
Radiological Engineering Division
Charleston Naval Shipyard
Charleston, South Carolina
April 1, 1996**

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Section 1. Building 191

a. Introduction:

Constructed in 1961, Building 191 is a climate-controlled warehouse used for the storage of photo-chemical supplies and computer software supplies.

(1) Description:

The building is constructed of brick with a concrete floor and flat, tar-covered roof and occupies 6,058 square feet. It is fenced on three sides (east, west, and south) and equipped with an electronic gate opener. A concrete loading dock is located on the south side.

(2) Brief History:

(a) **Use:** Building 191 has one area that has been identified as having been potentially exposed to G-RAM. It is suspected that in the early 1980s, the storage cage contained diver's compasses, watches and other radioluminous commodities.

(b) **Radiological History:** Radiological history indicates that no known spills of radioactivity have occurred, and no loose surface contamination above the limits has been detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 191 consisted of one grid approximately 20' by 20'. This grid was subdivided into approximately 5' by 5' subgrids. The size and configuration of Building 191 only allowed for nine sub-grids.

The grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over three pre-determined 5' by 5' sub-grids to represent 25% of the total grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over three pre-determined sub-grids to represent 25% of the total grid surface.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

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Section 1. Building 191

A minimum of two swipes/smears were taken from the grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

One solid material sample was taken from the grid. The solid material sample was removed from the grid location having the highest potential for radioactivity.

Background levels used in Building 191 were determined from similar materials in adjacent areas of Building 191.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were less than 0.65 pCi/100 cm².

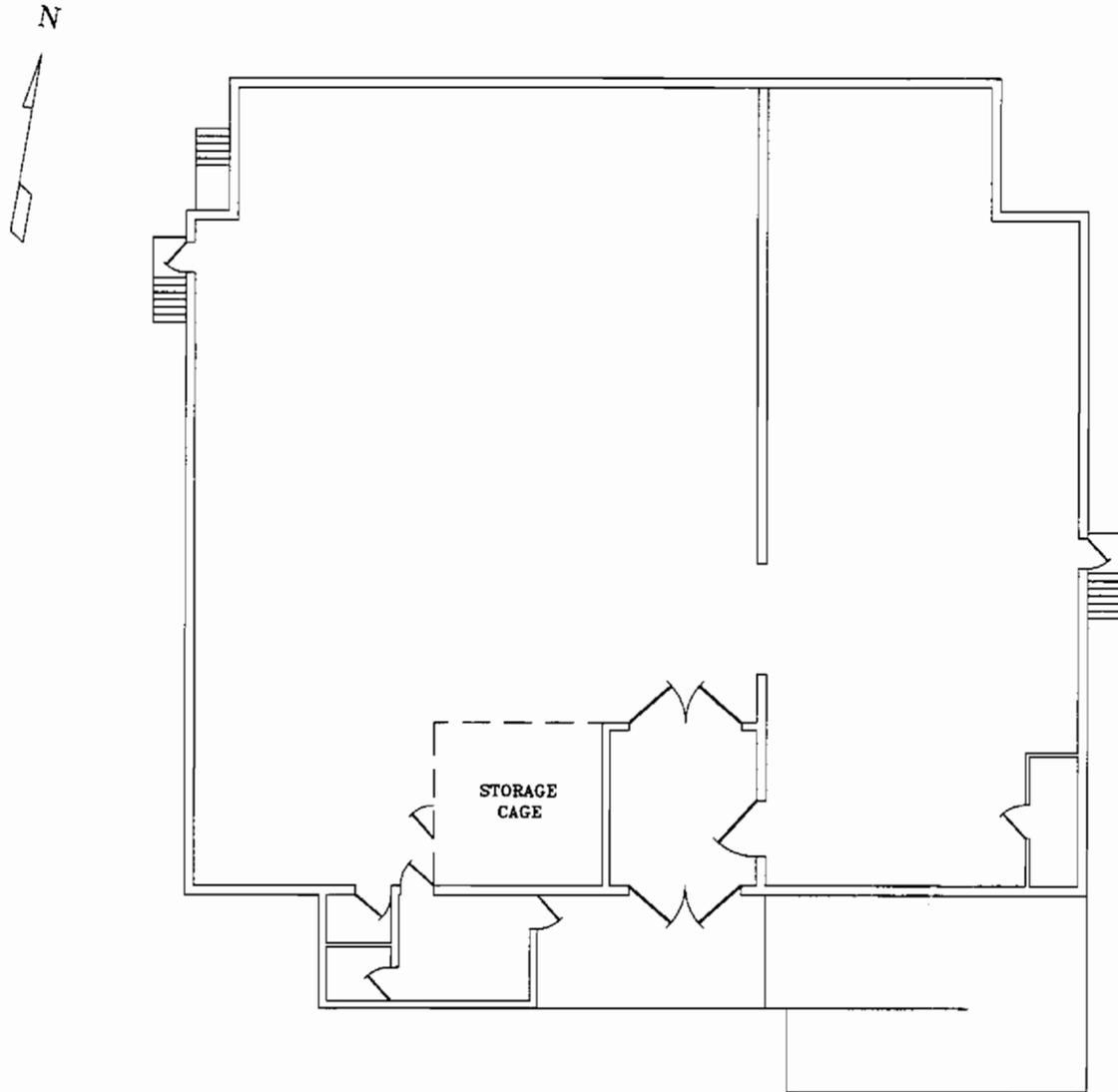
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples were less than 0.45 pCi/g and Th-232 solid material samples were less than 0.80 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels were less than 26.60 pCi/100 cm² and Th-232 levels were less than 47.00 pCi/100 cm².

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Section 1. Building 191

e. Site Map



NAVBASE G-RAM FINAL REPORT

Section 1. Building 191

e. Overall Grid Map



1

III	VII	XI
II	VI	X
I	V	IX

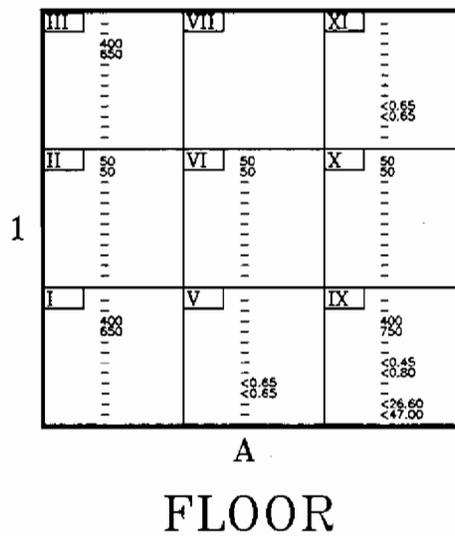
A

STORAGE CAGE

NAVBASE G-RAM FINAL REPORT

Section 1. Building 191

e. Localized Grid Map



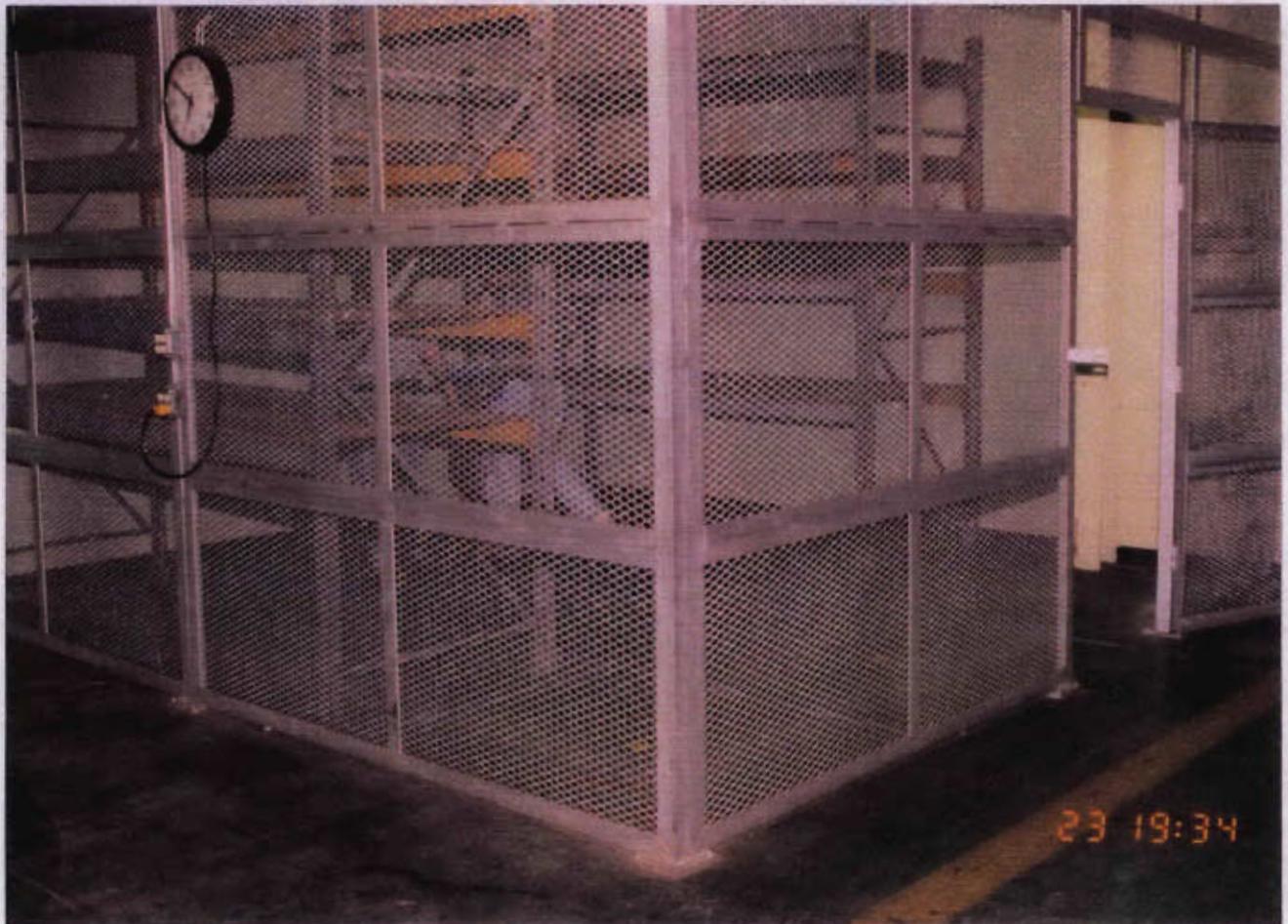
Note:
 Entries 5 and 6 are not required for Class "A" Localized Grid Maps. See the Discussion paragraph.

- Data Legend:
- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <80 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

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Section 1. Building 191

f. Photographs



Building 191 Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 2. Building 198

a. Introduction:

Building 198, built in 1961, was used for shipping and receiving of nonhazardous and nonflammable materials. The facility also has administrative work spaces.

(1) Description:

Building 198 is a two-story 229,293 square-foot structure with a brick exterior and cinder block interior. Building 198A, an addition that houses the computer system, was built in 1986.

(2) Brief History:

(a) **Use:** Building 198 has two areas that have been identified as being exposed to G-RAM. A Radioactive Material Cage and a Storage Cage were established in the shipping section for temporary storage of radioactive material shipments. In this section, radiography sources and RADIACs were stored.

(b) **Radiological History:** Radiological history gives no indication of any radioactive spill and no loose surface contamination greater than permissible limits have been detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the Storage Cage and adjacent Radioactive Material Cage were divided into a total of four grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the

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Section 2. Building 198

Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 198 were determined from similar materials in Building 672.

c. Summary:

Surveys performed in the Storage Cage and Radioactive Material Cage with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were all less than 0.65 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.59 pCi/g to a high of 1.06 pCi/g and Th-232 solid material samples ranged from a low of less than 1.10 pCi/g to a high of less than 1.40 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 5.20 pCi/100 cm² to a high of 9.50 pCi/100 cm² and the Th-232 levels ranged from a low of less than 10.00 pCi/100 cm² to a high of less than 14.00 pCi/100 cm².

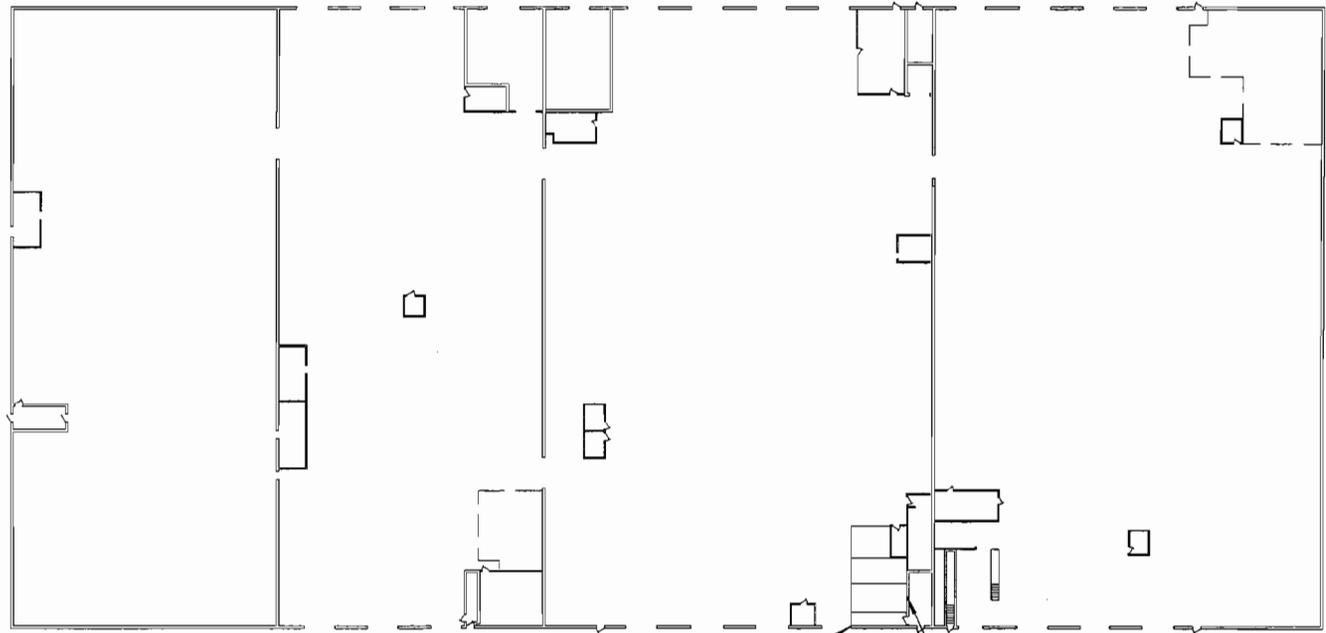
NAVBASE G-RAM FINAL REPORT

Section 2. Building 198

d. Site Map



SECOND STREET WEST



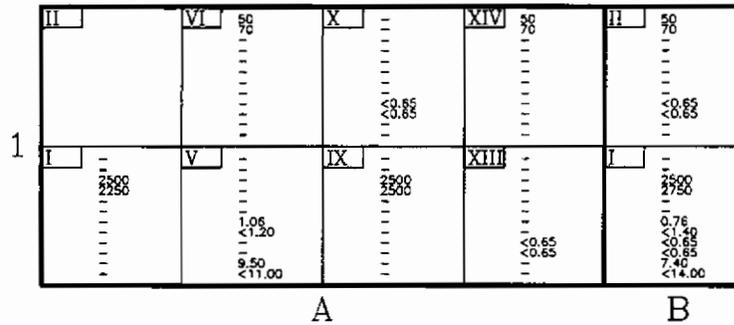
RADIOACTIVE MATERIAL CAGE

STORAGE CAGE

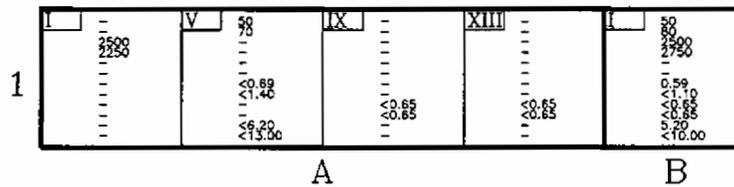
NAVBASE G-RAM FINAL REPORT

Section 2. Building 198

e. Localized Grid Map



STORAGE CAGE FLOOR



RADIOACTIVE MATERIAL CAGE FLOOR

Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- Data Legend:
- 1 - IM-247/PD [bkg.]
 - 2 - IM-247/PD [cpm]
 - 3 - IM-253/PD (HV-1 PHA) [bkg.]
 - 4 - IM-253/PD (HV-1 PHA) [cpm]
 - 5 - IM-253/PD (HV-2 GROSS) [bkg.]
 - 6 - IM-253/PD (HV-2 GROSS) [cpm]
 - 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 - 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 - 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 - 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 - 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 - 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

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Section 2. Building 198

f. Photographs



Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 2. Building 198

f. Photographs



Radioactive Material Cage

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Section 3. Building 200

a. Introduction:

Building 200 was built in 1954 and used as an office area, machine shop, weld shop and port navigation control for CNSY.

(1) Description:

Building 200 is a two story structure constructed of concrete walls with a concrete floor and roof. The facility contains 11,180 square feet of floor space.

(2) Brief History:

(a) **Use:** Building 200 Electricians Mate/Electronics Tech. (EM/ET), Engineman (EN), Machinery Repairman (MR) spaces were used for radium-containing commodities such as navigational devices and instrumentation and machinery repair spaces. These areas received a Class A survey.

Building 200 Hull Technician (HT) Shop was used to perform Tungsten Inert Gas (TIG) welding and received a Class B survey.

(b) **Radiological History:** Work associated with G-RAM materials was conducted in the EM/ET, EN, MR, and HT Shops.

(3) Survey Requirements:

- (a) Class A release survey.
- (b) Class B release survey.

b. Discussion:

For the Class A surveys, the floor of the EM/ET, EN, and MR Shops were divided into a total of 10 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-

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Section 3. Building 200

253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

For the Class B survey, the floor of the HT Shop was divided into eight grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls of the HT shop were horizontally divided into 12 10' grids with a maximum size of 6' high by 10' wide. Each of these wall grids were subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 200 were determined from similar materials in Building RTC-1.

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Section 3. Building 200

c. Summary:

In the Class A areas, surveys performed with the IM-247/PD did not detect any areas with surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect any areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that both removable Ra-226 and Th-232 levels ranged from a low of less than 0.54 pCi/100 cm² to a high of less than 0.60 pCi/100cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) for Ra-226, indicated that all solid material samples ranged from a low of less than 0.75 pCi/g to a high of 1.40 pCi/g . Analysis performed on solid material samples with the MCA for Th-232 indicated that all solid material samples ranged from a low of less than 1.60 pCi/g to a high of less than 2.90 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 6.50 pCi/100cm² to a high of less than 40.60 pCi/100cm² and the Th-232 levels ranged from less than 11.50 pCi/100cm² to a high of less than 100 pCi/100cm².

In the Class B area, surveys performed with the IM-247/PD did not detect any areas with surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) detected one area greater than or equal to twice background. A solid sample was obtained in this area.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that both removable Ra-226 and Th-232 levels ranged from a low of less than 0.79 pCi/100 cm² to a high of 1.81 piCi/100cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) for Ra-226, indicated that all solid material samples ranged from a low of 0.52 pCi/g to a high of less than 1.85 pCi/g. Analysis performed on solid

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Section 3. Building 200

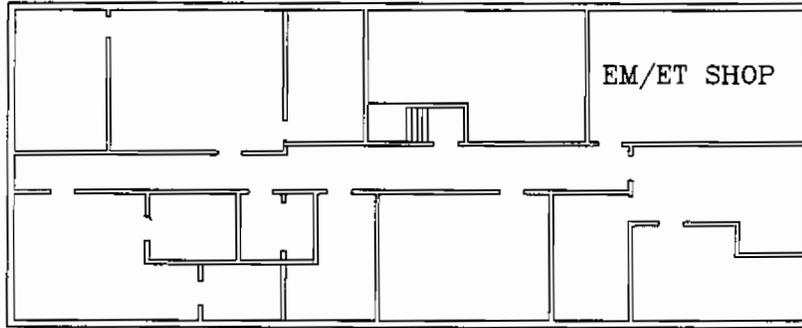
material samples with the MCA for Th-232 indicated that all solid material samples ranged from less than 1.10 pCi/g to a high of less than 3.10 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 4.80 pCi/100cm² to a high of 15.10 pCi/100cm² and the Th-232 levels ranged from a low of less than 11.00 pCi/100cm² to a high of less than 19.00 pCi/100cm².

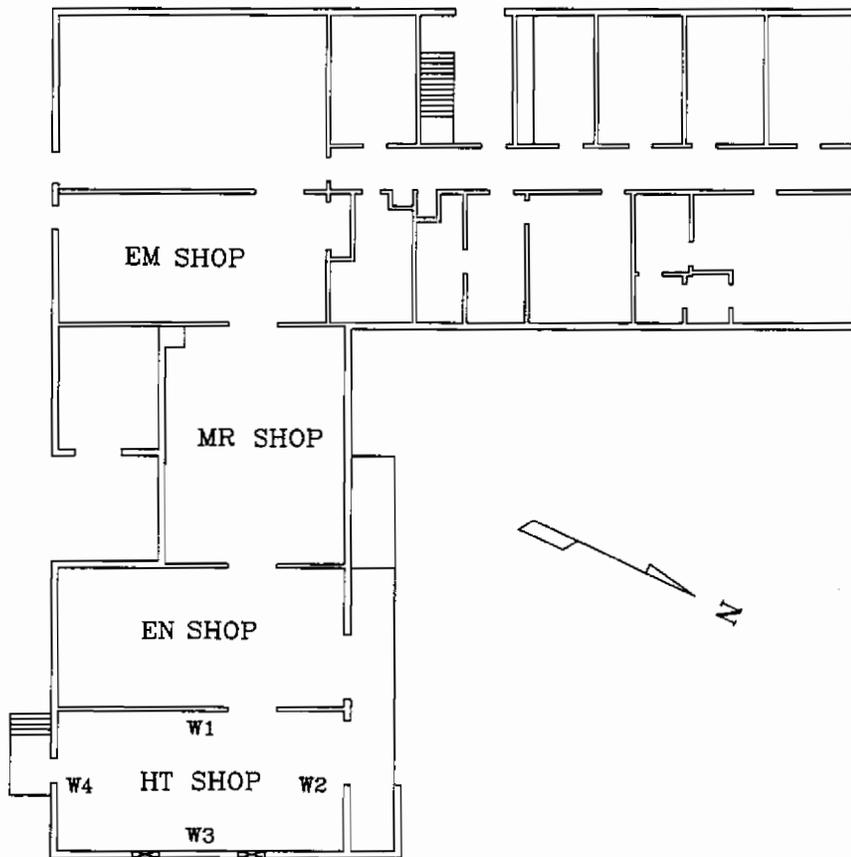
NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

d. Site Map



SECOND FLOOR



FIRST FLOOR

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

e. Overall Grid Map



2	II	IV	II	IV	II	IV	II
	I	III	I	III	I	III	I
1	II	IV	II	IV	II	IV	II
	I	III	I	III	I	III	I

HT SHOP

1	II	IV	II	IV	II	IV	II
	I	III	I	III	I	III	I

HT-W1

1	IV	II	IV	II
	III	I	III	I

HT-W2

1	II	IV	II	IV	II	IV	II
	I	III	I	III	I	III	I

HT-W3

1	II	IV	II
	I	III	I

HT-W4

2	II	VI	X	XIV	II
	I	V	IX	XIII	I
1	IV	VIII	XII	XVI	IV
	III	VII	XI	XV	III
	II	VI	X	XIV	II
	I	V	IX	XIII	I

MR SHOP

1	IV	VIII	XII	XVI	IV	VIII
	III	VII	XI	XV	III	VII
	II	VI	X	XIV	II	VI
	I	V	IX	XIII	I	V

EM/ET SHOP

1	III	VII	XI	XV	III	VII	XI
	II	VI	X	XIV	II	VI	X
	I	V	IX	XIII	I	V	IX

EM SHOP

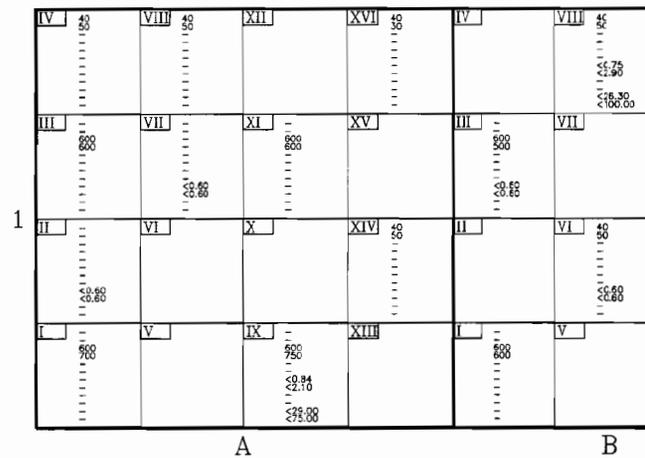
1	IV	VIII			IV	VIII	XII
	III	VII	XI	XV	III	VII	XI
	II	VI	X	XIV	II	VI	X
	I	V	IX	XIII	I	V	IX

EN SHOP

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Section 3. Building 200

e. Localized Grid Map



EM/ET SHOP FLOOR

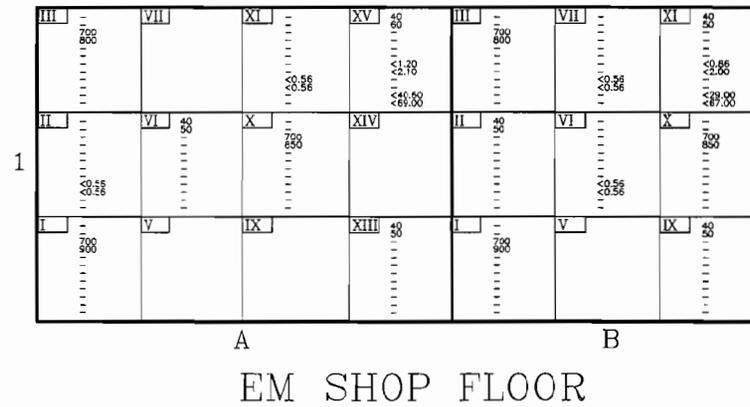
Note:
 Entries 5 and 6 are not required for Class "A" Localized
 Grid Map pages. See the Discussion paragraph.

Data Legend:	
1 - M-247/PD [bkg]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - M-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - M-235/Pd (HV-1 PMA) [bkg]	9 - Rn-220 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - M-235/Pd (HV-1 PMA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5 - M-235/Pd (HV-2 GROSS) [bkg]	11 - Rn-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - M-235/Pd (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

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Section 3. Building 200

e. Localized Grid Map



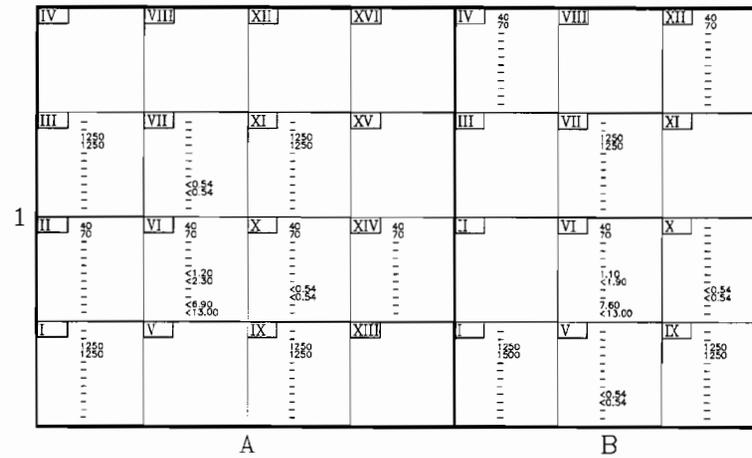
Note:
 Entries 5 and 6 are not required for Class "A" Localized
 Grid Map pages. See the Discussion paragraph.

Data Legend:			
1	M-237/Pb [bkg]	7	Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2	M-247/Pb [cpm]	8	Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3	M-233/Pb (H-1 PHA) [bkg]	9	Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4	M-233/Pb (Hv-1 PHA) [cpm]	10	Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5	M-233/Pb (Hv-2 GROSS) [bkg]	11	Ra-228 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6	M-233/Pb (Hv-2 GROSS) [cpm]	12	Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

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Section 3. Building 200

e. Localized Grid Map



EN SHOP FLOOR

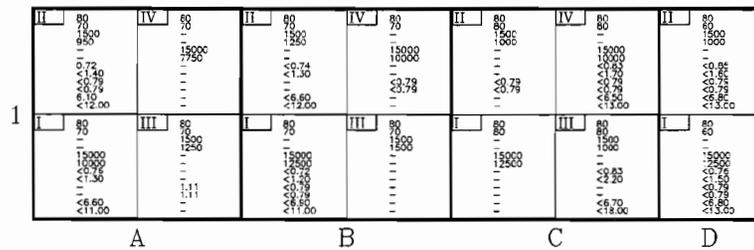
Note:
 Entries 5 and 6 are not required for Class "A" Localized
 Grid Map pages. See the Discussion paragraph.

Data Legend:	
1 - IM-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD (HV-1) (PHA) [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - IM-253/PD (HV-1) (PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <30
5 - IM-253/PD (HV-2) GROSS [dps]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD (HV-2) GROSS [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

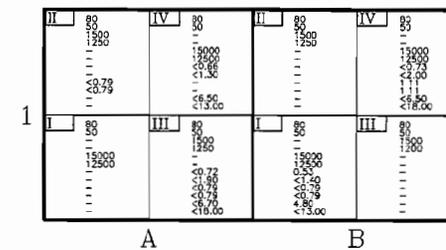
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Section 3. Building 200

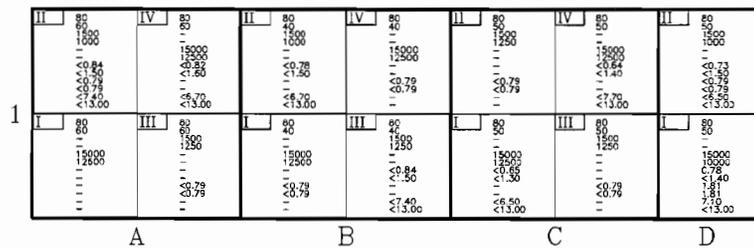
e. Localized Grid Map



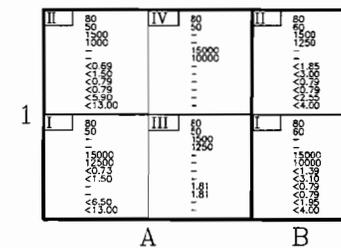
HT-W1



HT-W2



HT-W3



HT-W4

Data Legend:
 1 - M-247/PD [bq.]
 2 - M-247/PD [cpm]
 3 - M-253/PD (H-1) [bq.]
 4 - M-253/PD (H-1) PMA [cpm]
 5 - M-253/PD (H-2) [bq.]
 6 - M-253/PD (H-2) GROSS [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: 30
 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: 30
 11 - Re-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200 EM/ET

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200 EM

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200 EN

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200 MR

NAVBASE G-RAM FINAL REPORT

Section 3. Building 200

f. Photographs



BLDG 200 HT

NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

a. Introduction:

Building 202 was used as an office area, classroom facility, and instructional laboratories for mine warfare training. Building 202 has always been used for this purpose. The area of interest in Building 202 is the closet in Room 103.

(1) Description:

Building 202 is a concrete-block structure built in 1956. It is a two-story building of 39,119 square feet.

(2) Brief History:

(a) **Use:** The closet in Room 103 has been identified as a storage area for RADIAC equipment. RADIACs and sealed radioactive sources were used for demonstration purposes in various classrooms.

(b) **Radiological History:** Radiological history indicates that no known spills of radioactivity occurred and no loose surface contamination above the limit was detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the closet in Room 103 consisted of one grid with a maximum size that is less than the standard Class "A" size of 20' by 20'. The size and configuration of the room 103 closet only allowed for two sub-grids, approximately 5' by 5' in size, to be placed on the floor.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

A minimum of two swipes/smears were taken from the grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from the grid. The solid material sample was removed from the grid location having the highest potential for radioactivity.

The background level used in Building 202 was determined from a similar material in Naval Base Building 682.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect any areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The alpha/beta analyzer results indicated Ra-226 was less than 0.73 pCi/100 cm² and Th-232 was less than 0.73 pCi/100 cm².

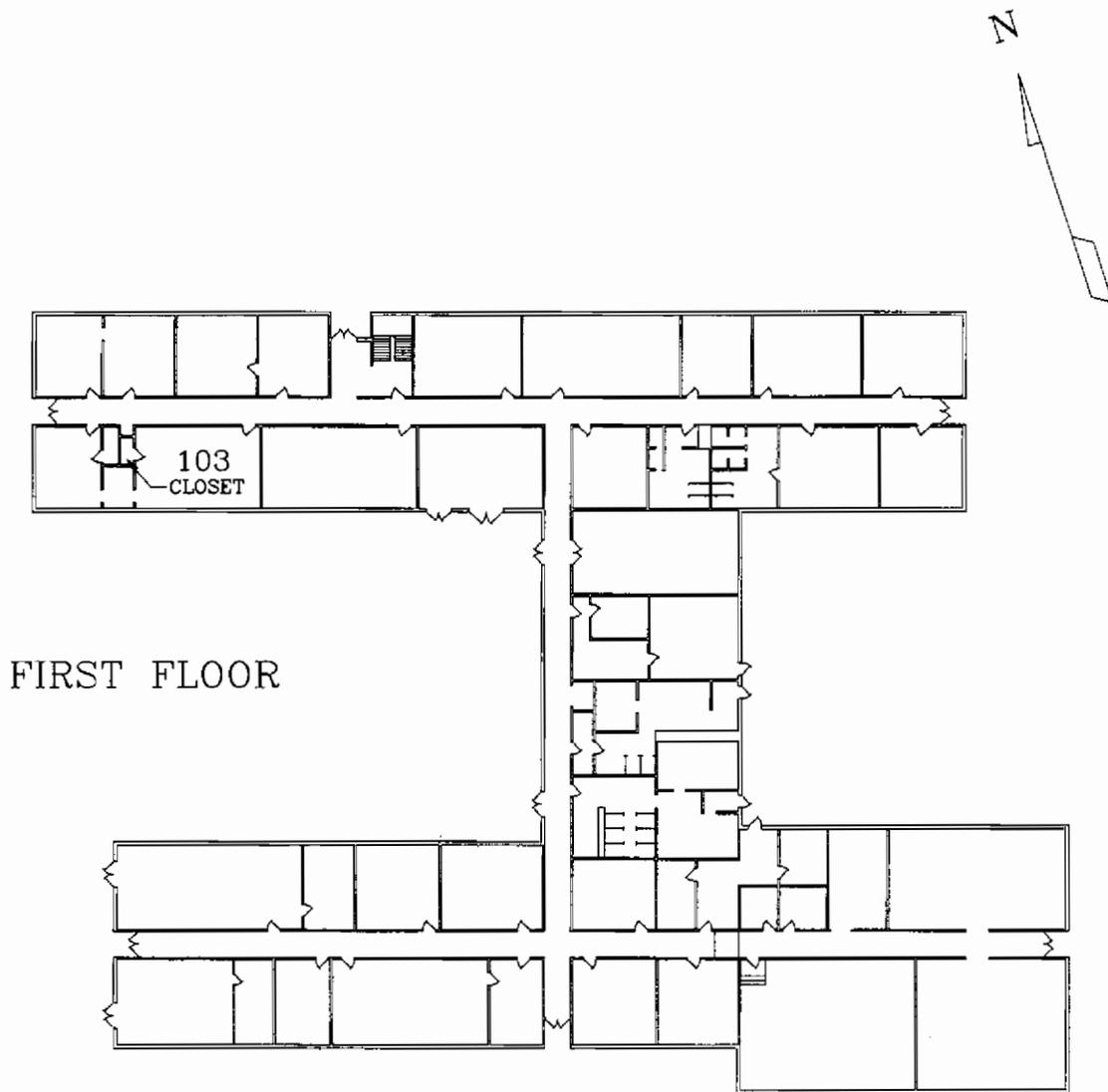
Analysis performed on the solid material sample with the multi-channel analyzer (MCA) indicated that Ra-226 and Th-232 levels were less than the limit of 5 pCi/g. The MCA analysis results indicated Ra-226 was less than 0.85 pCi/g and Th-232 was less than 1.40 pCi/g.

Mathematical computation of the specific radioactivity of the solid material sample confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed results indicated Ra-226 was less than 37.10 pCi/100 cm² and Th-232 was less than 61.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

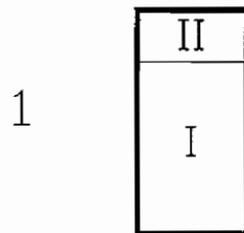
d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

e. Overall Grid Map



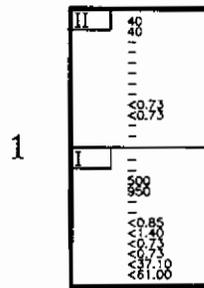
A

RM 103 CLOSET

NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

e. Localized Grid Map



A

Rm 103 Closet

Note:
Entries 5 and 6 are not required for Class "A" Localized
Grid Maps. See the Discussion paragraph.

Data Legend:

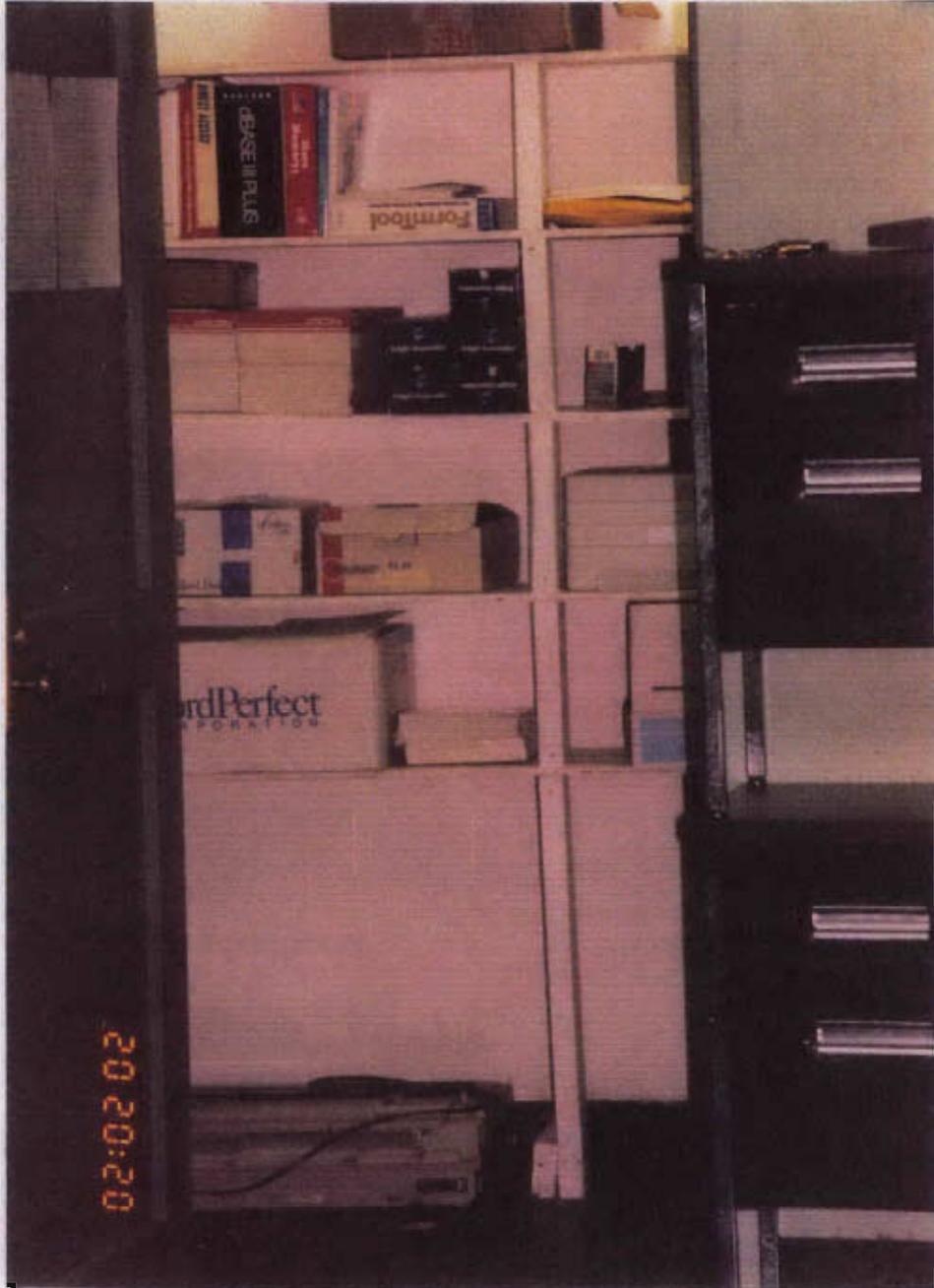
1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg.]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg.]
6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 4. Building 202

f. Photographs



BLDG 202 RM103

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

a. Introduction:

Building 203 was built in 1956 and has always been used for storage.

(1) Description:

Building 203 is a 64 square-foot concrete block structure.

(2) Brief History:

(a) **Use:** Building 203 was used to store sealed NRC-licensed Cobalt-60 and Cesium-137 radioactive sources, as well as RADIACs.

(b) **Radiological History:** Prior to 1987, these sources were removed and disposed. The building was then surveyed and released for unrestricted use by Radiation Health Division of CNSY.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 203 consisted of one grid. Class "A" sites are required to be divided into grids with a maximum size of 20' by 20' and subdivided into sub-grids of approximately 5' by 5'. However, the size and configuration of Building 203 only allowed for four approximately 5' by 5' sub-grids.

The grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from the grid.

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from the grid. The solid material sample was removed from the grid location having the highest potential for radioactivity.

The background level used in Building 203 was determined from a similar material in Building 21.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect any areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The alpha/beta analyzer results indicated Ra-226 was less than 0.73 pCi/100 cm² and Th-232 was less than 0.73 pCi/100 cm².

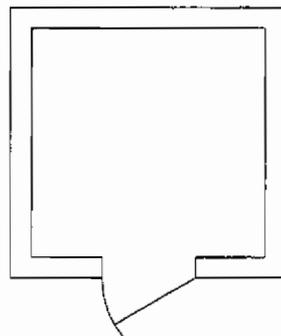
Analysis performed on the solid material sample with the multi-channel analyzer (MCA) indicated Ra-226 and Th-232 levels were less than the limit of 5 pCi/g. The MCA analysis results indicated Ra-226 was 0.93 pCi/g and Th-232 was less than 1.10 pCi/g.

Mathematical computation of the specific radioactivity of the solid material sample confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed results indicated Ra-226 was 8.90 pCi/100 cm² and Th-232 was less than 10.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

d. Site Map

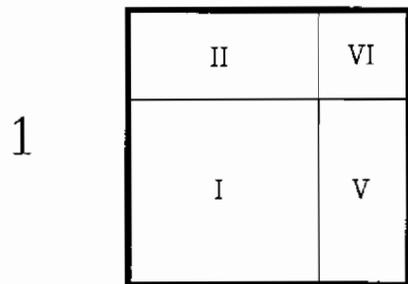


BLDG 203

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

e. Overall Grid Map



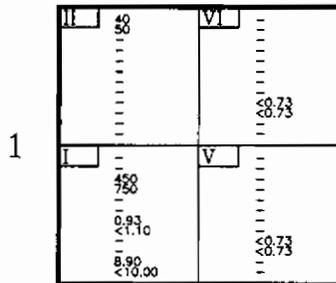
A

BLDG 203

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

e. Localized Grid Map



A

FLOOR

Note:

Entries 5 and 6 are not required for Class "A" Localized Grid Maps. See the Discussion paragraph.

Data Legend:

1 - IM-247/PD [bkg.]
2 - IM-247/PD [cpm]
3 - IM-253/PD (HV-1 PHA) [bkg.]
4 - IM-253/PD (HV-1 PHA) [cpm]
5 - IM-253/PD (HV-2 GROSS) [bkg.]
6 - IM-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <math>< 5</math> above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <math>< 5</math> above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <math>< 9</math>
10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <math>< 90</math>
11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <math>< 45</math>
12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <math>< 450</math>

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

f. Photographs



BLDG 203

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

f. Photographs



BLDG 203 FLOOR

NAVBASE G-RAM FINAL REPORT

Section 5. Building 203

f. Photographs



BLDG 203 DOORWAY

NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

a. Introduction:

Building 224, located south of Hobson Avenue at the west end of Dyess Avenue, was built in 1972 and improved in 1992. The area of consideration is the diver's cage located in the southeast corner of the building.

(1) Description:

The facility, which was built on pilings, has a concrete floor, concrete block walls, and a metal roof. It has an area of 63,860 square feet.

(2) Brief History:

(a) **Use:** The facility was originally constructed for supporting general supply packing operations for nuclear submarines.

(b) **Radiological History:** G-RAM concerns pertain to the existence of a storage cage which contained diver's compasses, watches, and other radioluminous commodities in the 1980s. This diver's cage was located in a 2' by 4' area in the southwest corner of the building. There is no known history of radioactive spills and no evidence of radioactive contamination.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the diver's cage in Building 224 consisted of one grid with a maximum size of 20' by 20'. This grid was subdivided into approximately 5' by 5' sub-grids. The size and configuration of this area only allowed for two sub-grids.

The grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific, therefore, entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the

NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

Summary paragraph.

A minimum of two swipes/smears were taken from the grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from the grid. The solid material samples were removed from the grid location having the highest potential for radioactivity.

Background levels used in Building 224 were determined from similar materials in Building 400.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

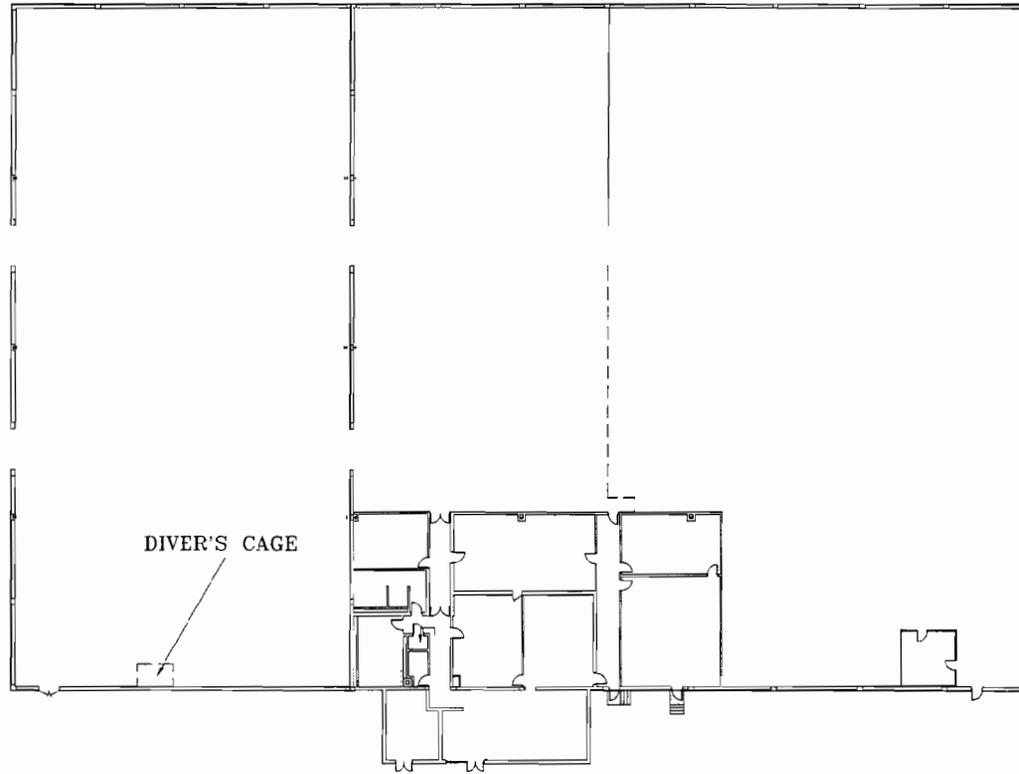
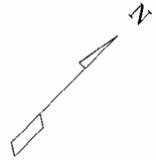
Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were all less than 0.65 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated Ra-226 and Th-232 were less than the limit of 5 pCi/g. MCA analysis performed for Ra-226 indicated 0.50 pCi/g and for Th-232 indicated less than 1.00 pCi/g.

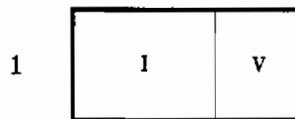
Mathematical computation of the specific radioactivity of the solid material sample confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels were 5.30 pCi/100 cm² and the Th-232 levels were less than 11.00 pCi/100 cm².



NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

e. Overall Grid Map



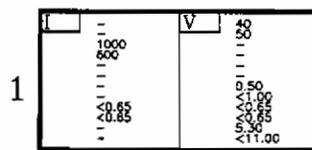
A

DIVER'S CAGE

NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

e. Localized Grid Map



DIVER'S CAGE FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

1 - IM-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD (HV-1 PHA) [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - IM-253/PD (HV-1 PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5 - IM-253/PD (HV-2 GROSS) [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

f. Photographs



Diver's Cage, Southwest Corner of Building 224

NAVBASE G-RAM FINAL REPORT

Section 6. Building 224

f. Photographs



Diver's Cage

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

a. Introduction:

Building 1172 is located at the intersection of Hobson Avenue and Tenth Street. Constructed in 1942, the building was previously used as an electric shop for the shipyard and as a small retail store. It was acquired by Navy Supply Center in 1964.

(1) Description:

Building 1172 has a concrete floor occupying 27,877 square feet, metal walls and a wooden truss roof.

(2) Brief History:

(a) **Use:** Building 1172 divers cage was used to house radioluminous items.

(b) **Radiological History:** The only radiological history noted for Building 1172 was the existence of a cage used to store divers' compasses, watches and other radioluminous commodities. There are no other known areas within the building that have been exposed to G-RAM. However, because of its long and incomplete history, other areas may have contained radioactive materials.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 1172 divers cage consisted of one grid approximately 20' by 20'. This grid was subdivided into approximately 5' by 5' sub-grids. The size and configuration of this cage only allowed for twelve sub-grids.

The grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1172 were determined from similar materials in Building 1897.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were less than 0.58 pCi/100cm².

Analysis performed on the solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on the Ra-226 solid material sample was less than 0.62 pCi/g, and the Th-232 solid material sample was less than 1.20 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 level was less than 5.40 pCi/100, and the Th-232 level was less than 10.00 pCi/100 cm².

Section 7. Building 1172

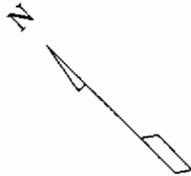
d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

e. Overall Grid Map



1

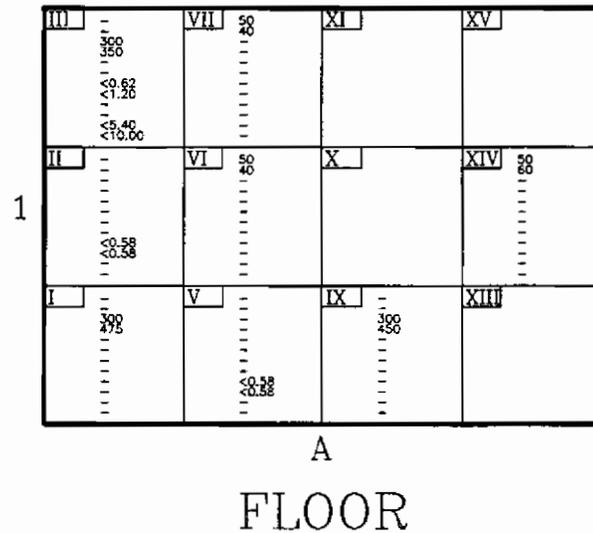
III	VII	XI	XV
II	VI	X	XIV
I	V	IX	XIII

A

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class "A" Localized Grid Maps. See the Discussion paragraph.

- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

f. Photographs



Building 1172 looking North.

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

f. Photographs



Storage Area

NAVBASE G-RAM FINAL REPORT

Section 7. Building 1172

f. Photographs



Storage Area

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

a. Introduction:

Building 1197, located off Viaduct Road across from the Tank Farm, was built in 1943 for the purpose of serving as a NAVSEA Quarterdeck.

(1) **Description:** Building 1197 is a single story wooden structure with 1,089 square feet of space.

(2) **Brief History:**

(a) **Use:** This facility has also been used as a storehouse.

(b) **Radiological History:** Building 1197 was used for RADIAC calibration, usage, and storage.

(3) **Survey Requirements:**

(a) Class B release survey.

b. Discussion:

The floor of building 1197 was divided into a total of 17 grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 44 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface. The IM-247/PD survey is grid specific, not sub-grid specific. The data shown on the localized grid map in each sub-grid indicates the highest potential for the entire grid. Solid samples for greater than or equal to twice background surveys are taken only in the sub-grid(s) that contain the twice background area(s).

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of two solid material samples were taken from each grid except that no samples were taken from grid RR-W5-A1, a fiberglass shower stall wall, due to impermeability of the material and the lack of G-RAM exposure due to usage. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1197 were determined from similar materials in Building 1489.

c. Summary:

Surveys performed with the IM-247/PD detected two areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.59 pCi/100 cm² to a high of 1.32 pCi/100 cm².

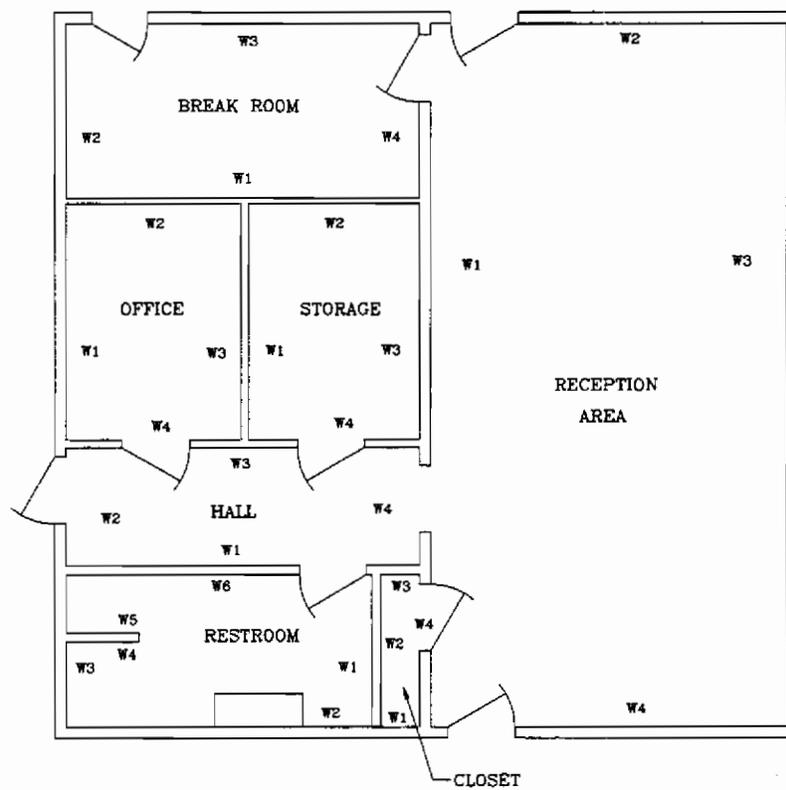
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.16 pCi/g to a high of 0.94 pCi/g and Th-232 solid material samples ranged from a low of less than 0.17 pCi/g to a high of less than 1.70 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 3.40 pCi/100 cm² to a high of 40.20 pCi/100 cm² and the Th-232 levels ranged from a low of less than 5.00 pCi/100 cm² to a high of less than 113.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

d. Site Map

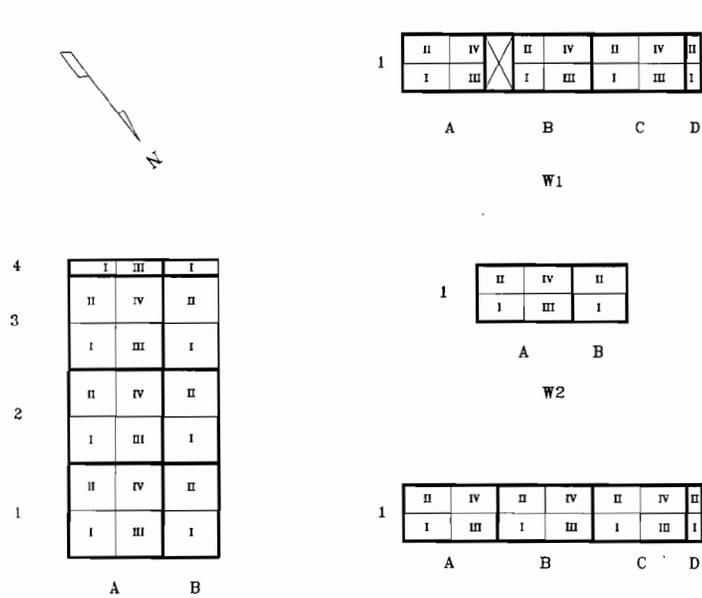


FLOOR

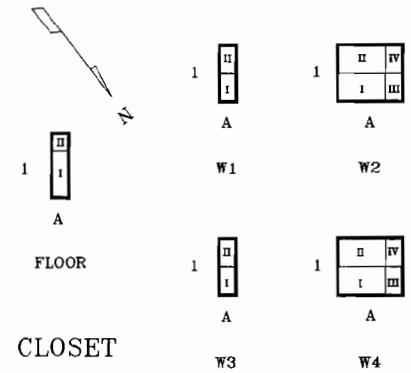
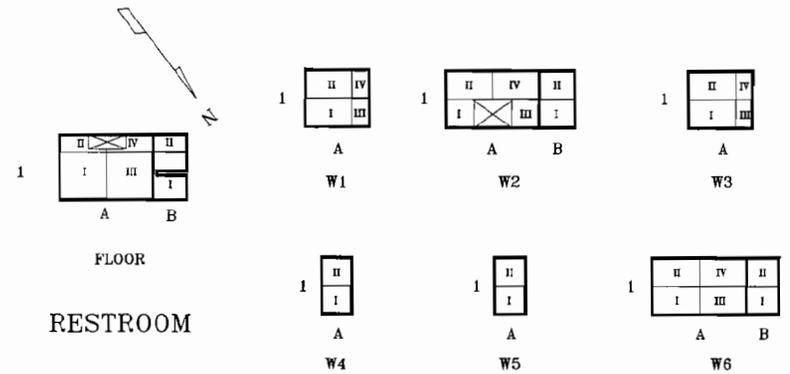
NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

e. Overall Grid Map



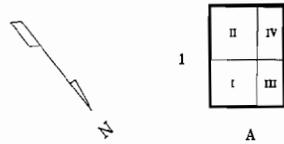
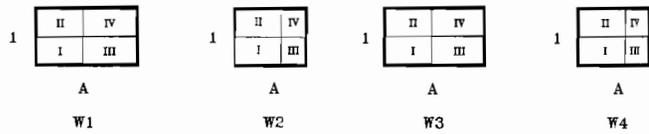
FLOOR
RECEPTION AREA



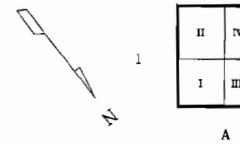
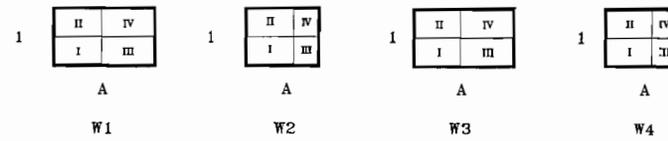
NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

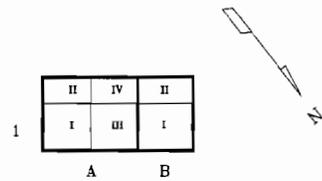
e. Overall Grid Map



FLOOR
STORAGE ROOM

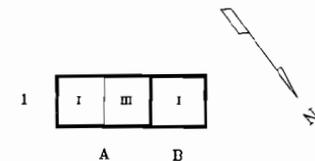


FLOOR
OFFICE



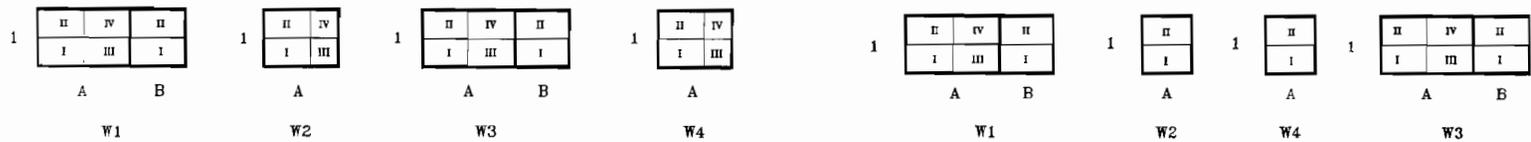
FLOOR

BREAK ROOM



FLOOR

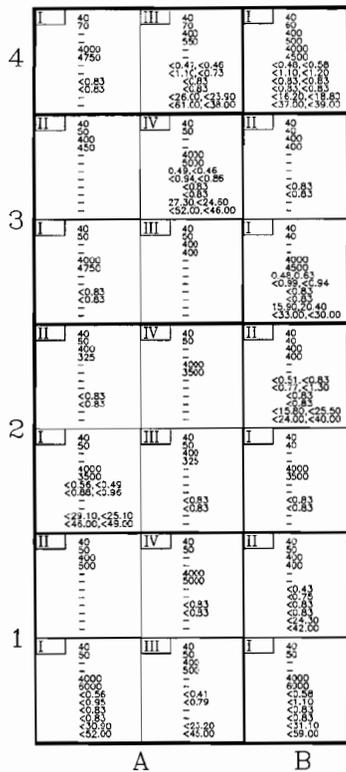
HALL



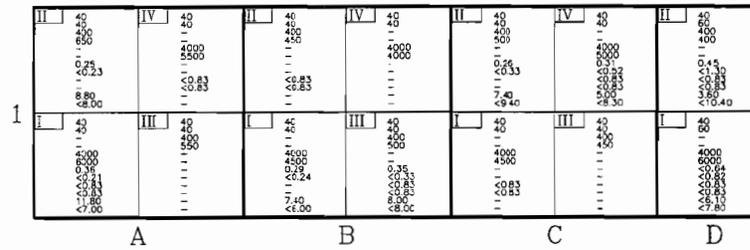
NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

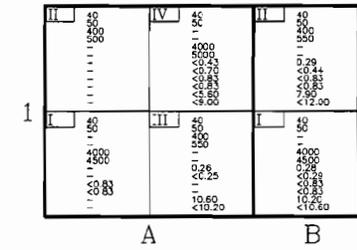
e. Localized Grid Map



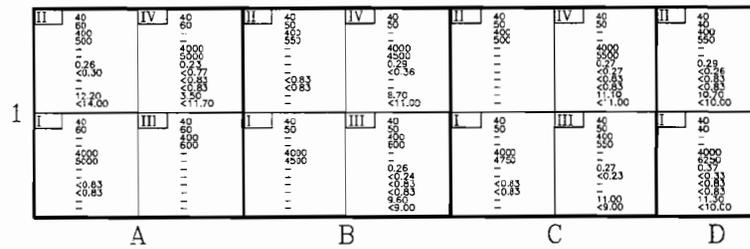
FLOOR
RECEPTION AREA



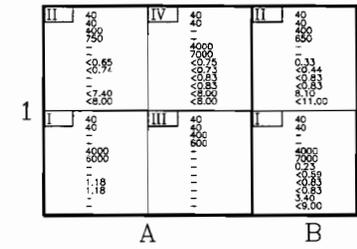
W1



W2



W3



W4

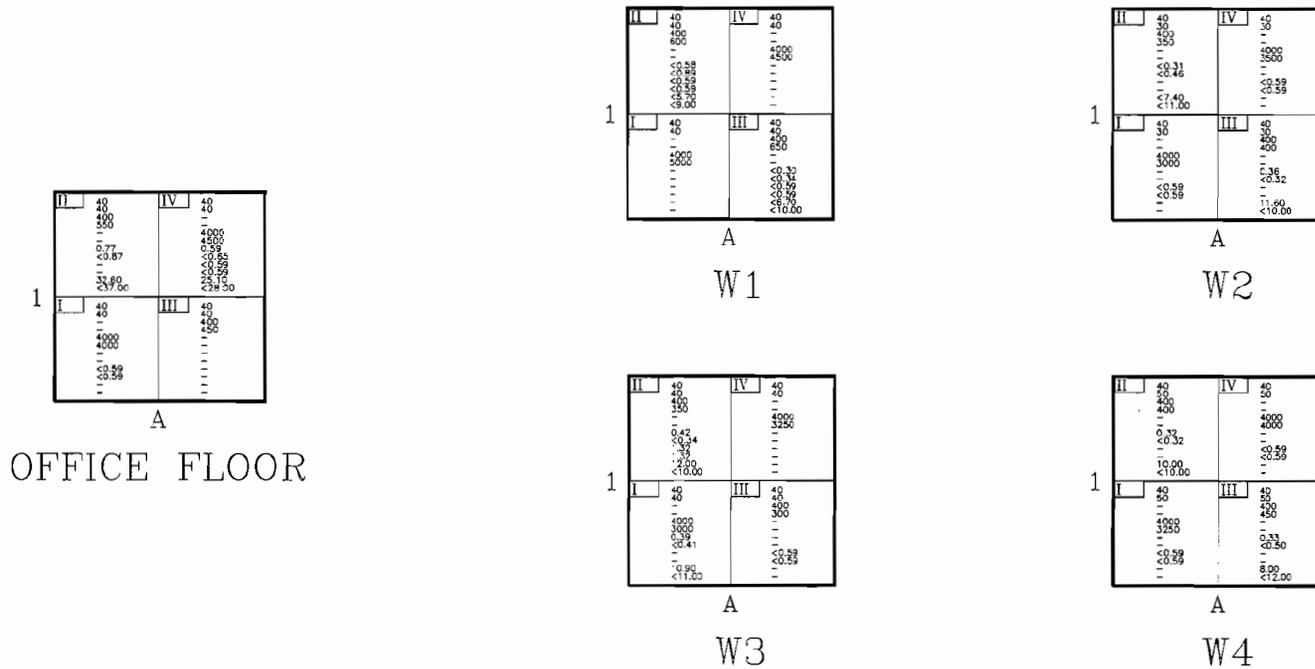
Data Legend:

- 1 - IM-247/PO [bkg]
- 2 - IM-247/PO [cpm]
- 3 - IM-253/PO [bkg]
- 4 - IM-253/PO [cpm]
- 5 - IM-253/PO (HV-2 GROSS) [bkg]
- 6 - IM-253/PO (HV-2 GROSS) [cpm]
- 7 - Po-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

e. Localized Grid Map



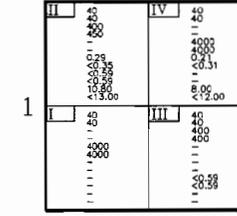
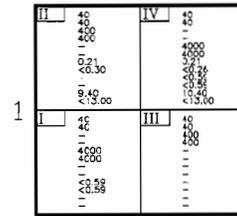
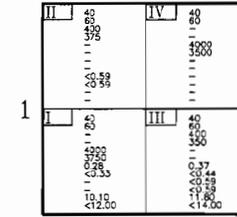
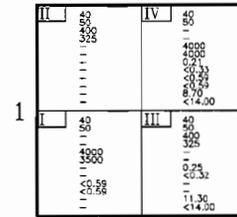
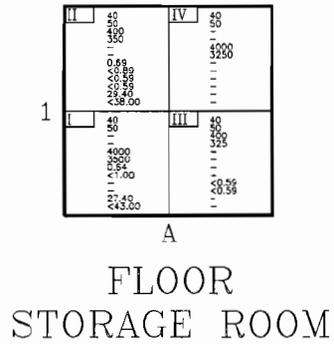
Data Legend:

1 - IM-242/PC [bkg.]	7 - R ₂ -228 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PC [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PE [HW-1 PHA] [bkg.]	9 - R ₂ -228 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - IM-253/PE [HW-1 PHA] [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5 - IM-253/PE [HW-2 GROSS] [bkg.]	11 - R ₂ -228 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PE [HW-2 GROSS] [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

e. Localized Grid Map



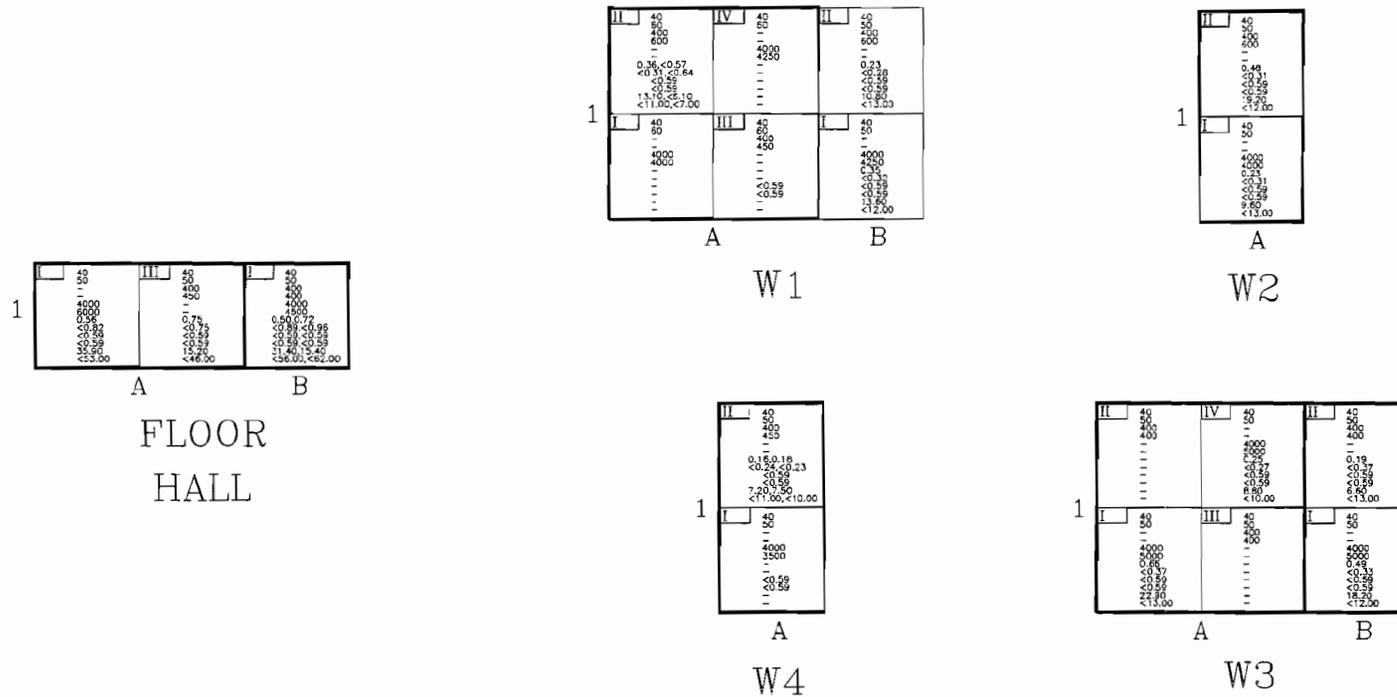
Data Legend:

1 - M-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - M-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - M-253/PD (WV-1 9HA) [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <5
4 - M-253/PD (WV-1 9HA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <5
5 - M-253/PD (WV-2 GROSS) [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - M-253/PD (WV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

e. Localized Grid Map



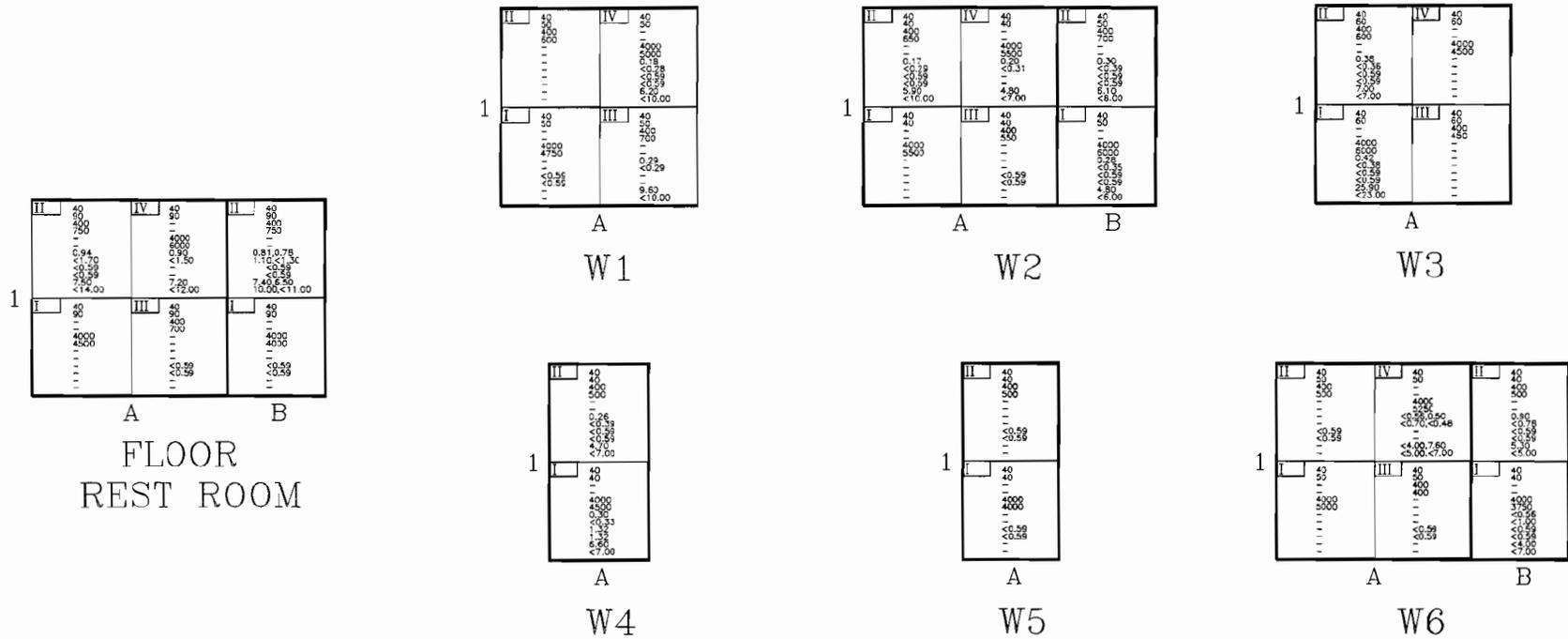
Data Legend:

1 - M-247/Pb [Bq]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - M-247/Pb [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - M-243/Pb (HV-1 PHA) [Bq]	9 - Rn-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - M-253/Pb (HV-1 PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <50
5 - M-253/Pb (HV-2 GROSS) [Bq]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - M-253/Pb (HV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

e. Localized Grid Map



Data Legend:

1 - IM-247/Pb [bq.]
 2 - IM-247/Pb [cpm]
 3 - IM-253/Pb (W-1) PHA [bkg.]
 4 - IM-253/Pb (W-1) PHA [cpm]
 5 - IM-253/Pb (W-2 CROSS) [bkg.]
 6 - IM-253/Pb (W-2 CROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph

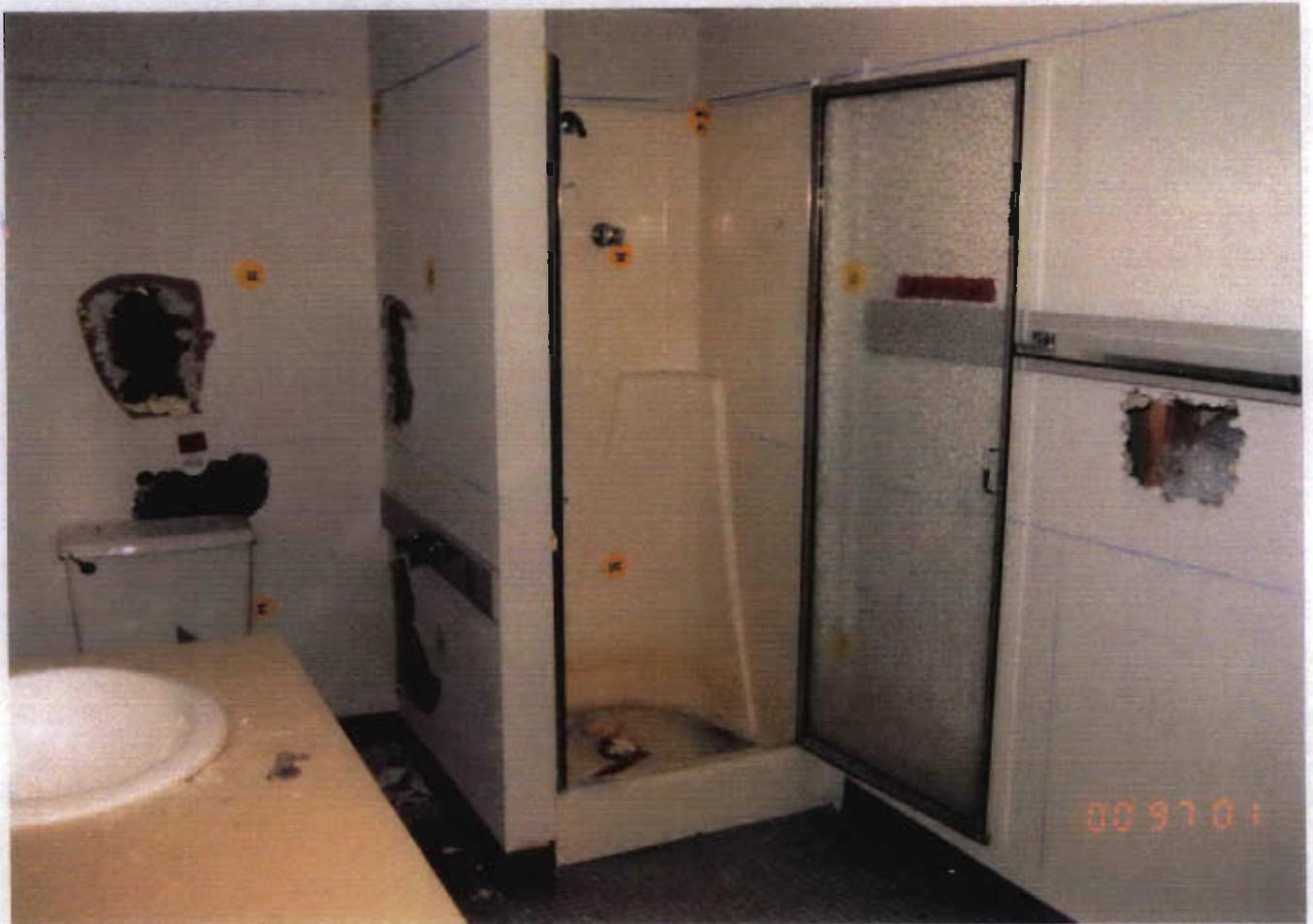


Reception Area

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph

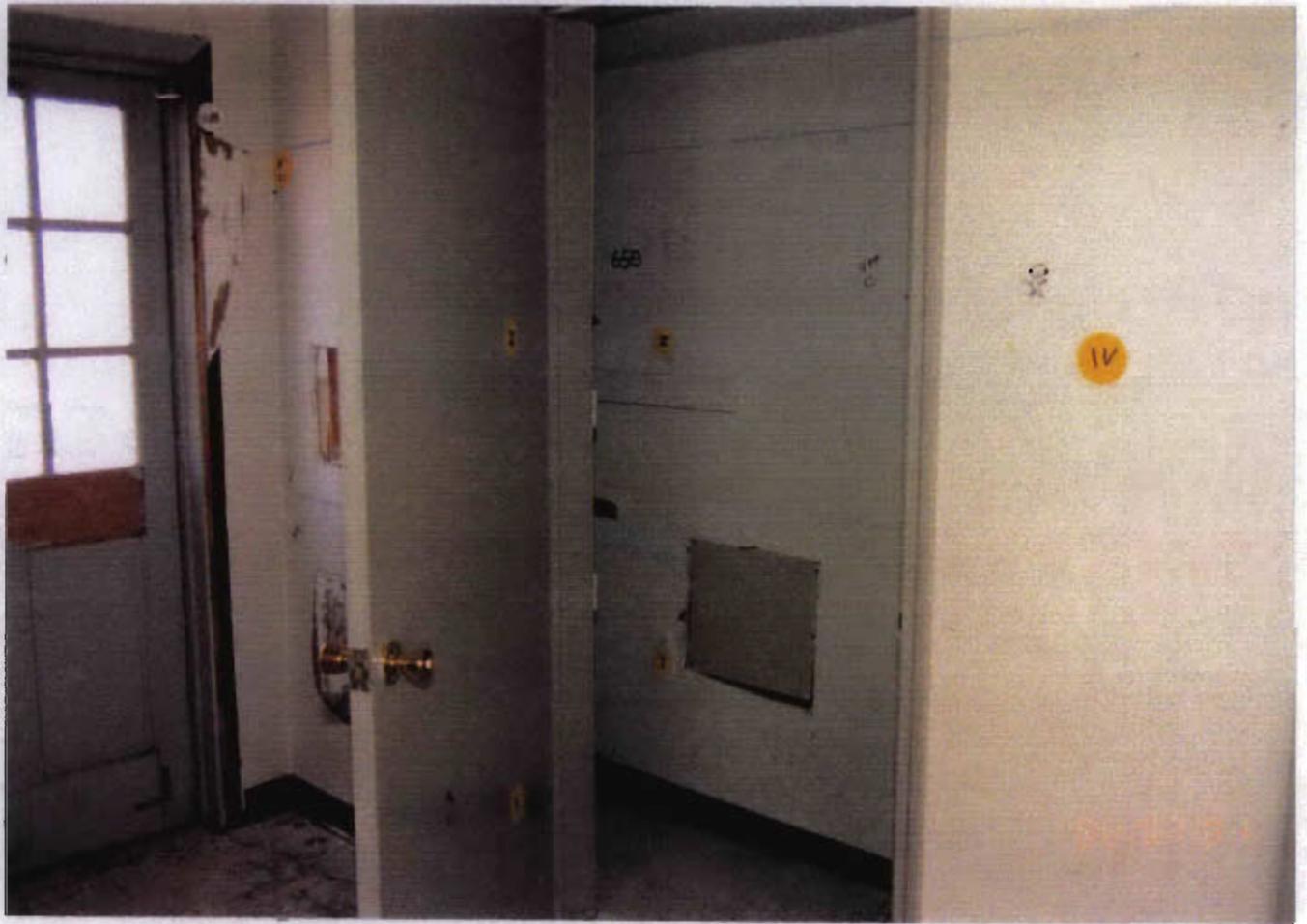


Restroom

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph



Closet

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph



Storage Room

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph



Office

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph



Break Room

NAVBASE G-RAM FINAL REPORT

Section 8. Building 1197

f. Photograph



Hall

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

a. Introduction:

Building 1296, located in parking area between Piers M and N, was built in 1951 as a semi-permanent structure.

(1) Description:

Building 1296 contains 527 square feet of floor space. It is constructed of corrugated sheet metal with a corrugated plastic roof on a concrete slab.

(2) Brief History:

(a) **Use:** This facility has been used as a motorcycle storage shed and a rubber and plastic shop. Its was most recently used as an electronics repair shop.

(b) **Radiological History:** History indicates heavy use and storage of electronic and ionization commodities including electron tubes.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 1296 was divided into a total of 2 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'. The size and configuration of this site only allowed for 24 sub-grids.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

A minimum of 10% of accessible cracks and crevices in this specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1296 were determined from similar materials in Building 1874.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were less than 0.67 pCi/100.

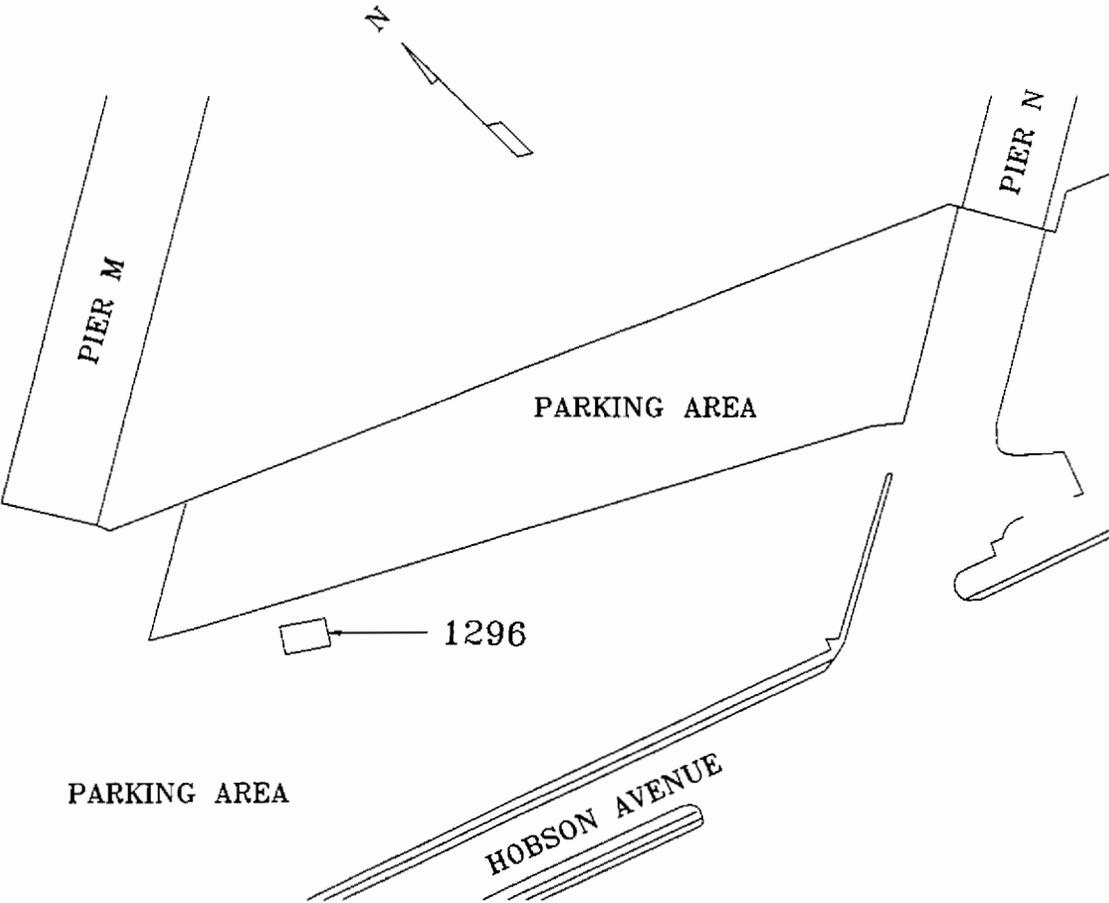
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.43 pCi/g to a high of 0.66 pCi/g and Th-232 solid material samples levels indicated less than 1.20 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 4.20 pCi/100 cm² to a high of 5.50 pCi/100 cm² and the Th-232 levels ranged from a low of less than 10.00 pCi/100 cm² to a high of less than 12.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

e. Overall Grid Map



1

IV	VIII	XII	XVI	IV	VIII
III	VII	XI	XV	III	VII
II	VI	X	XIV	II	VI
I	V	IX	XIII	I	V

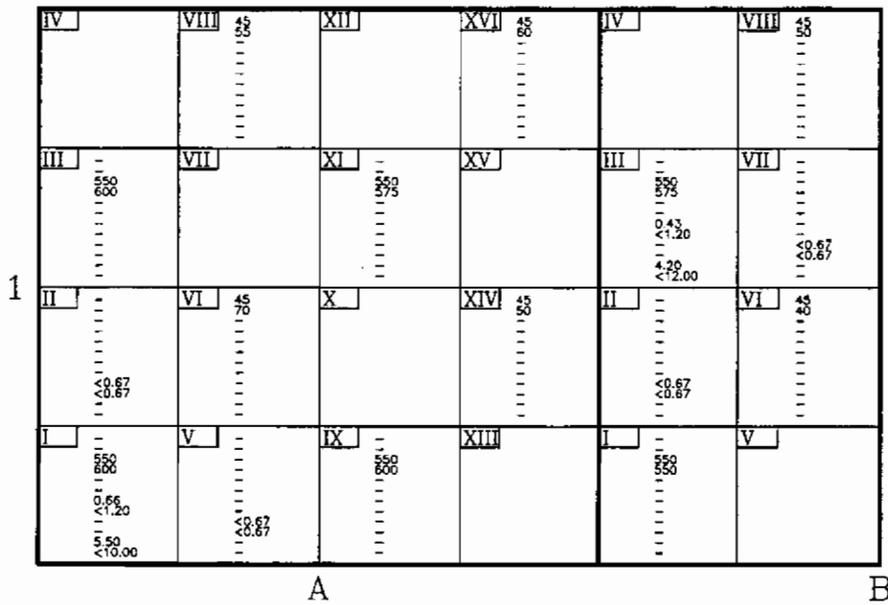
A

B

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

e. Localized Grid Map



FLOOR

Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

Data Legend:

- | | |
|----------------------------------|--|
| 1 - M-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - M-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - M-253/PD (HV-1) PHA [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - M-253/PD (HV-1) PHA [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - M-253/PD (HV-2) GROSS [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - M-253/PD (HV-2) GROSS [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

f. Photographs



Looking North

NAVBASE G-RAM FINAL REPORT

Section 9. Building 1296

f. Photographs



Looking South

NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

a. Introduction:

Building 1501 was a warehouse built in 1941. Located at the intersection of McMillan Avenue and St. Johns Avenue, this facility was used to store industrial metal and rubber parts, and pre-fabricated asbestos parts. In the past, petroleum products were stored there also.

(1) Description:

Building 1501 occupies 11,280 square feet. Only the storage cage area was surveyed.

(2) Brief History:

(a) **Use:** Building 1501 had a storage cage located in the southwest corner of the building for diver's compasses, watches, and other radioluminous commodities which were stored there for a short period of time.

(b) **Radiological History:** There are no other known areas within the building that have been exposed to G-RAM.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building 1501 storage cage was divided into a total of two grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'. The size and configuration of the storage cage only allowed for nine sub-grids in each grid.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1501 storage cage area were determined from similar materials in Building 1509.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were less than 0.58 pCi/100 cm².

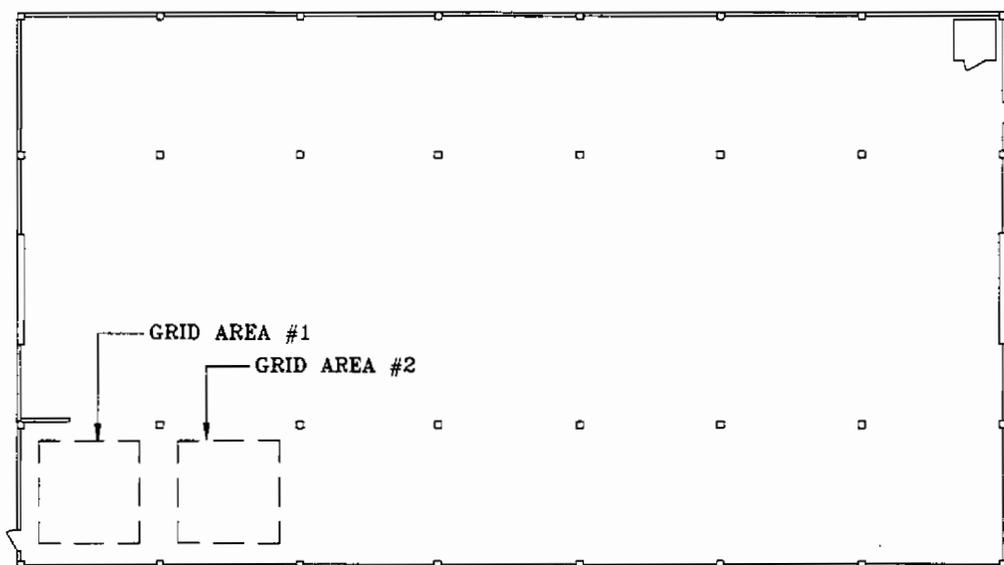
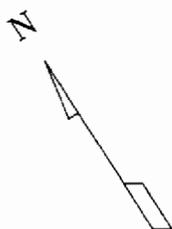
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.51 pCi/g to a high of less than 0.63 pCi/g and Th-232 solid material samples ranged from a low of less than 1.50 pCi/g to a high of less than 1.70 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 4.40 pCi/100 cm² to a high of less than 6.00 pCi/100 cm² and the Th-232 levels ranged from a low of less than 14.00 pCi/100 cm² to a high of less than 15.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

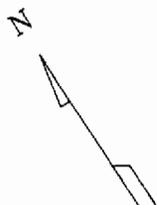
d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

e. Overall Grid Map



1

III	VII	XI
II	VI	X
I	V	IX

A

GRID AREA #1

1

III	VII	XI
II	VI	X
I	V	IX

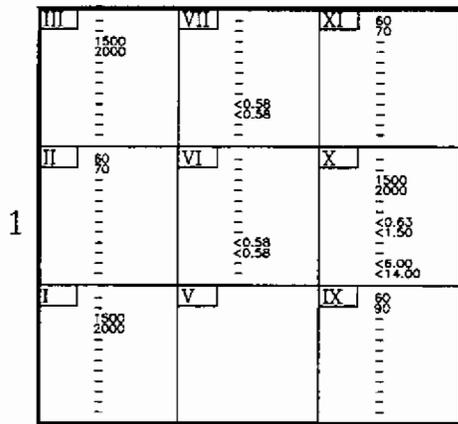
A

GRID AREA #2

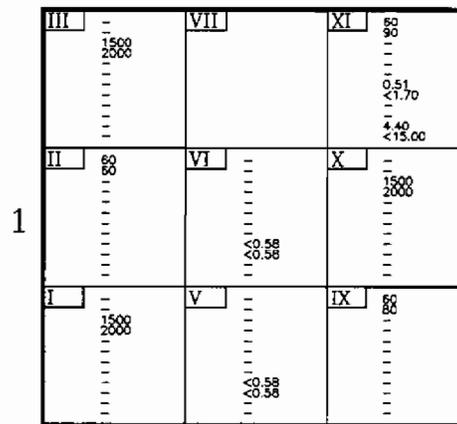
NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

e. Localized Grid Map



GRID AREA #1
FLOOR



GRID AREA #2
FLOOR

Note:
Entries 5 and 6 are not required for Class "A" Localized Grid Maps. See the Discussion paragraph.

Data Legend:

- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

f. Photographs



Building 1501 Storage Cage Area

NAVBASE G-RAM FINAL REPORT

Section 10. Building 1501

f. Photographs



Building 1501 Storage Area

NAVBASE G-RAM FINAL REPORT

Section 11. Building 1632

a. Introduction:

Building 1632, located near the intersection of Avenue A North and Avenue B North, was constructed in 1982. This facility has always been used to store food supplies for ships/submarines.

(1) Description:

This facility was constructed on a concrete slab floor of 15,000 square feet, with concrete block walls and a sheet metal roof.

(2) Brief History:

(a) **Use:** A storage cage, located in the southeast end of the building, was used at times to store sealed radioactive sources and at other times to store diver's watches, compasses and other radioluminescent commodities.

(b) **Radiological History:** The only known radiological history of Building 1632 was related to the storage cage.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the storage cage in Building 1632 was divided into a total of two grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'. The size and configuration of Building 1632 allowed for two grids with only 12 sub-grids.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

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Section 11. Building 1632

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1632 were determined from similar materials in Building 1893.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels were all less than 0.67 pCi/100 cm².

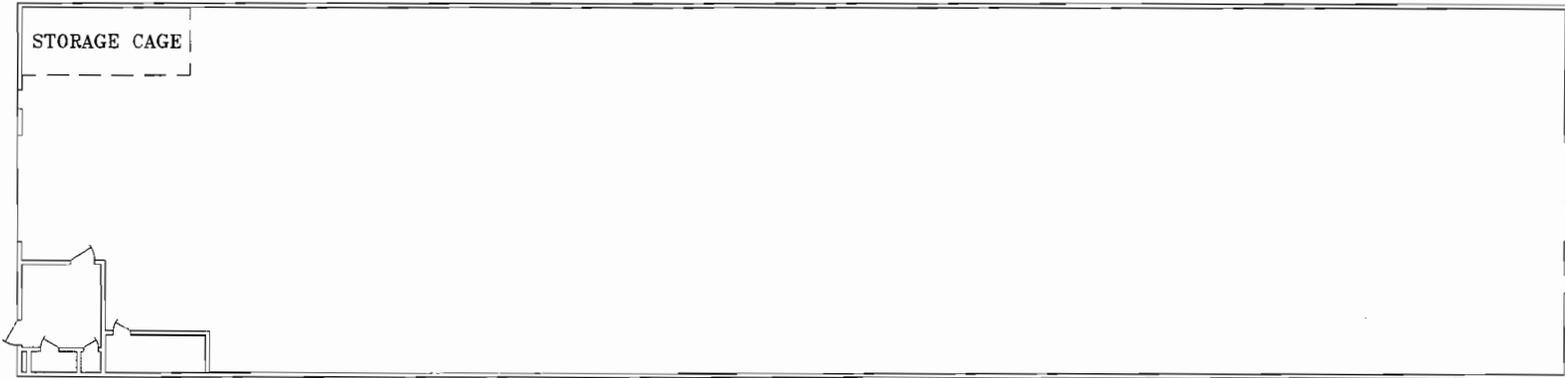
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all solid material sample Ra-226 and Th-232 levels were less than the limit of 5 pCi/g. MCA analysis performed for Ra-226 ranged from a low of 0.89 pCi/g to a high of 1.18 pCi/g and for Th-232 ranged from a low of less than 1.20 pCi/g to a high of less than 1.30 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 8.90 pCi/100 cm² to a high of 13.30 pCi/100 cm² and the Th-232 levels ranged from a low of less than 13.00 pCi/100 cm² to a high of less than 14.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 11. Building 1632

d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 11. Building 1632

e. Overall Grid Map



1

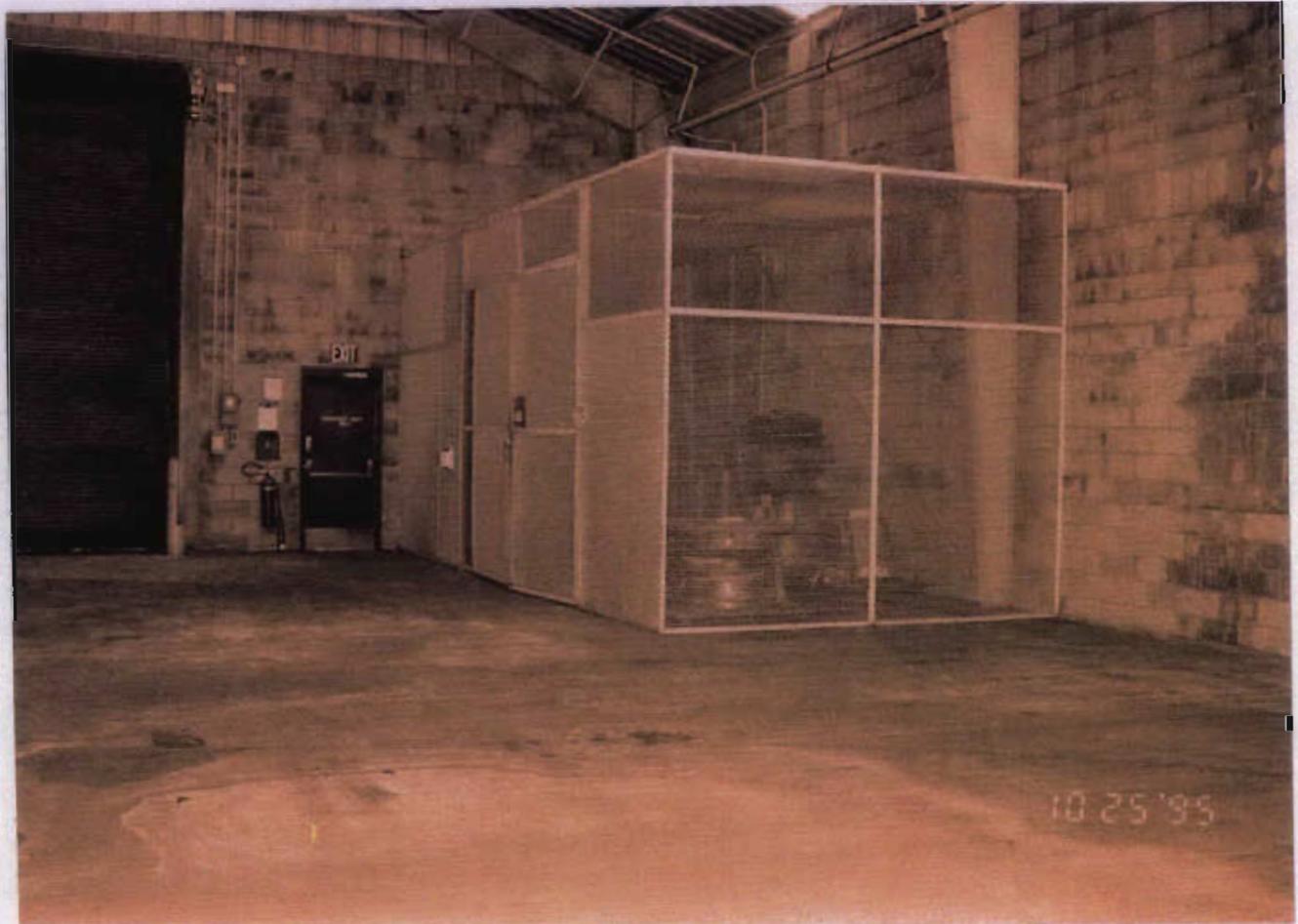
II	VI	X	XIV	II	VI
I	V	IX	XIII	I	V
A			B		

STORAGE CAGE FLOOR

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Section 11. Building 1632

f. Photographs

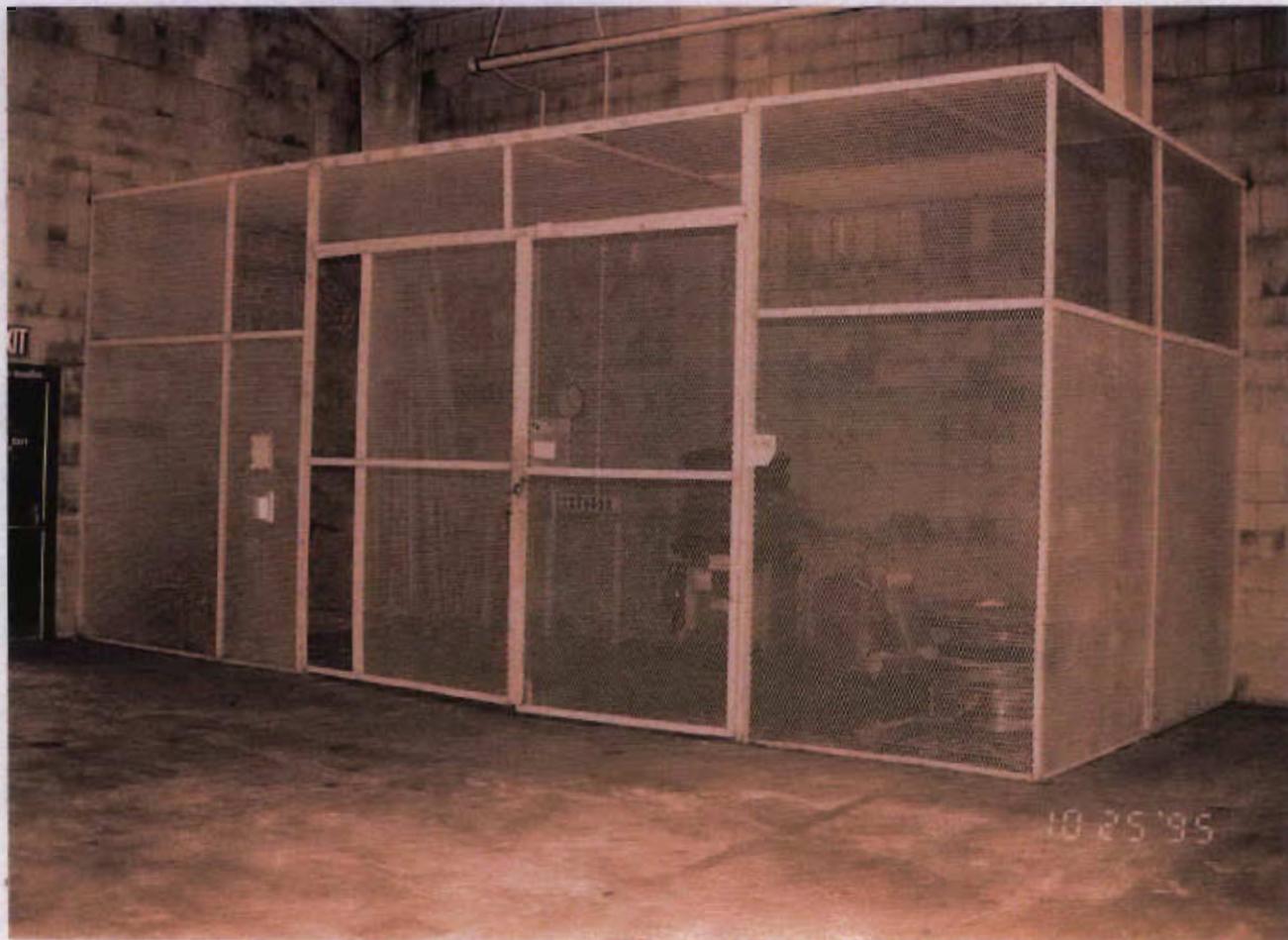


Storage Cage, Building 1632

NAVBASE G-RAM FINAL REPORT

Section 11. Building 1632

f. Photographs



Storage Cage, Building 1632

NAVBASE G-RAM FINAL REPORT

Section 12. Building 1639

a. Introduction:

Building 1639 is located at the junction of Avenue B North and Avenue D North near the Virginia Avenue Gate.

(1) Description:

Building 1639 is a one-story, climate-controlled, concrete block and sheet metal structure with a concrete slab floor. It contains 59,813 square feet of floor space. Construction started on building 1639 in 1988 and was completed in 1990.

(2) Brief History:

- (a) **Use:** This facility was used to store medical and food supplies. The area of interest for the G-RAM survey was a storage cage in the northwest corner of the building.
- (b) **Radiological History:** This building has a history of storage of radioluminous commodities since 1989.

(3) Survey Requirements:

- (a) Class A release survey.

b. Discussion:

The floor of Building 1639 was divided into a total of 5 grids with a maximum size of 20' by 20'. Each of these grids were subdivided into sub-grids with an approximate size of 5' by 5'. The size and configuration of this site only allowed for 42 sub-grids.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

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Section 12. Building 1639

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in this specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building 1639 were determined from similar materials in Building 672.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.65 pCi/100 cm² to a high of 1.46 pCi/100 cm².

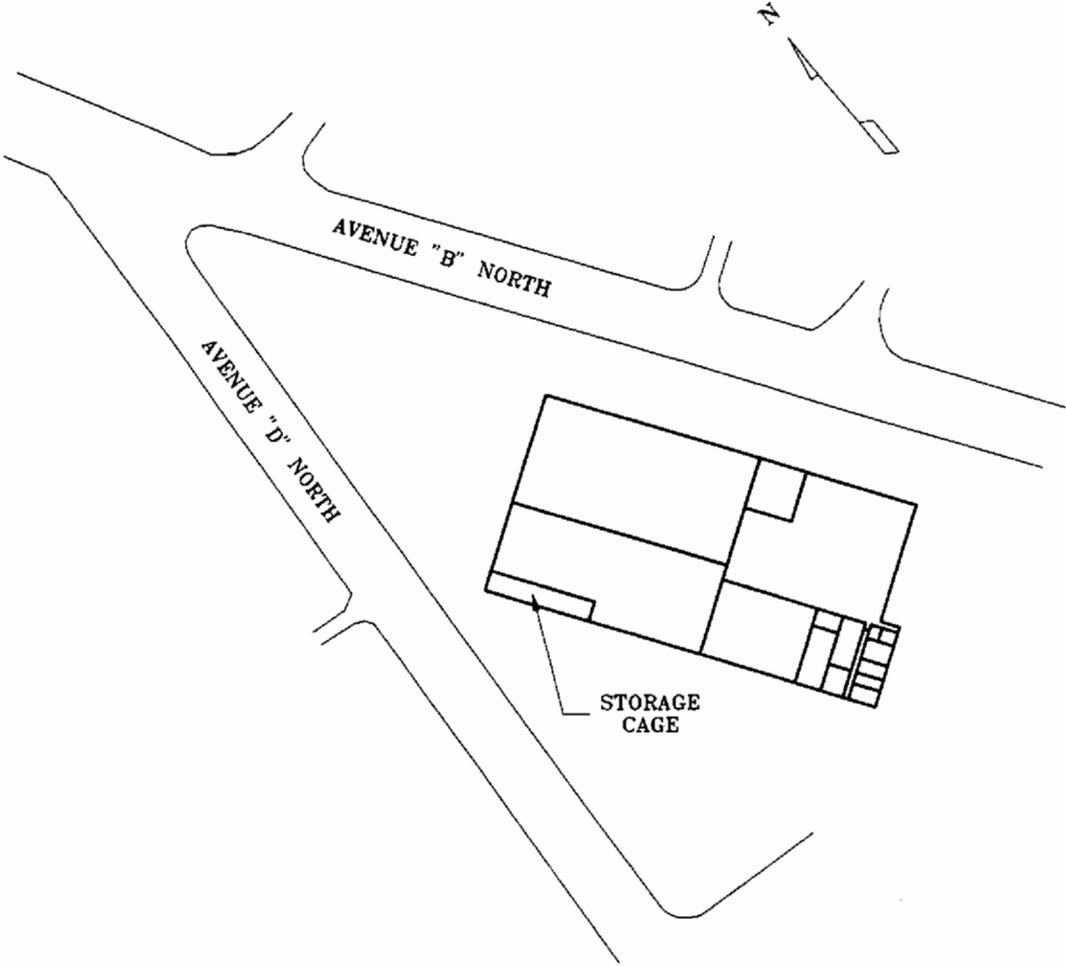
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.58 pCi/g to a high of 1.00 pCi/g and Th-232 solid material samples ranged from a low of less than 1.40 pCi/g to a high of less than 1.50 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 5.20 pCi/100 cm² to a high of 8.60 pCi/100 cm² and the Th-232 levels ranged from a low of less than 13.00 pCi/100 cm² to a high of less than 14.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 12. Building 1639

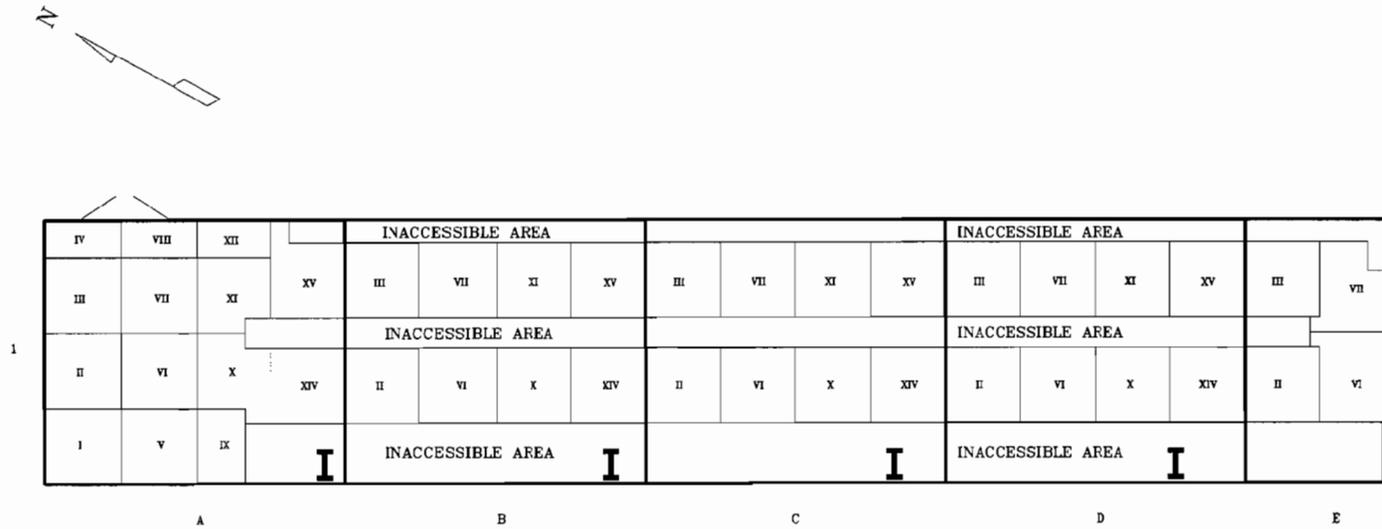
d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 12. Building 1639

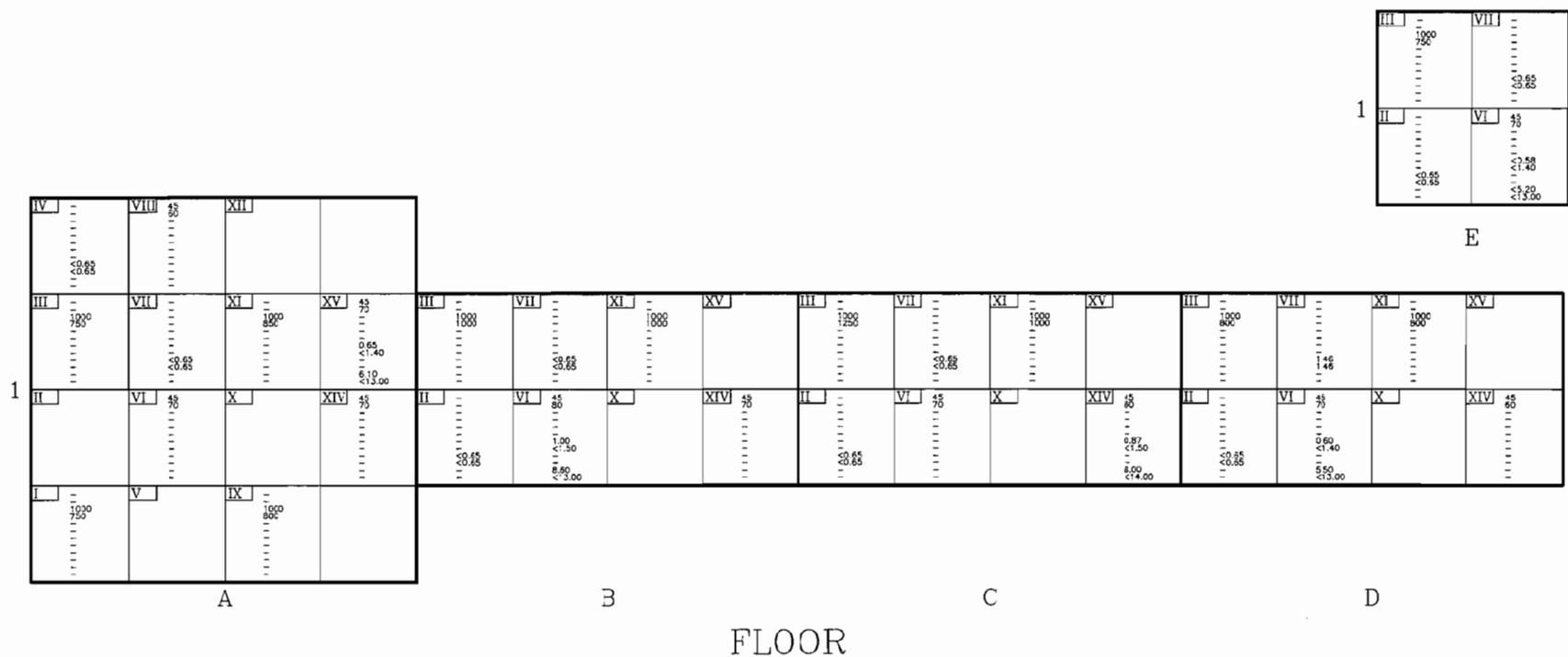
e. Overall Grid Map



NAVBASE G-RAM FINAL REPORT

Section 12. Building 1639

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- Data Legend:
- 1 - Iu-247/PD [Bq.]
 - 2 - Iu-247/PD [cpm]
 - 3 - Iu-235/PD (W-1 PHA) [Bq.]
 - 4 - Iu-235/PD (W-1 PHA) [cpm]
 - 5 - Iu-235/PD (W-2 GROSS) [Bq.]
 - 6 - Iu-235/PD (W-2 GROSS) [cpm]
 - 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 - 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <3 above bkg. of 3.2 pCi/g
 - 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
 - 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 - 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 - 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

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Section 12. Building 1639

f. Photographs



Storage Cage Entrance

NAVBASE G-RAM FINAL REPORT

Section 12. Building 1639

f. Photographs



Storage Cage, looking south.

NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

a. Introduction:

Building FBM-61 is located at the intersection of Bainbridge Avenue and Proteus Street. FBM-61 housed the Fleet Ballistic Missile Training Center (FBMTC) since its initial construction in 1962.

(1) Description:

Building FBM-61 is 168,360 square-feet with various additions made until its completion of the building in 1980. However, the only areas of interest are rooms 2-172 and 2-177.

(2) Brief History:

(a) **Use:** This facility housed training mock-ups of segments from Fleet Ballistic Missile Submarine compartments used in training evolutions.

(b) **Radiological History:** Room 2-177 of FBM-61 was used for temporary storage of electron tubes containing radioactive materials. All of the electron tubes have been removed and properly disposed. Room 2-172 was the Weld Shop used for TIG welding operations using thoriated tungsten welding rods. The area also contained nine kiln bricks that contained naturally-occurring Ra-226 at concentrations up to 15 pCi/g. The remaining areas of FBM-61 were not used for handling or storage of radioactive materials.

(3) Survey Requirements:

(a) Class B release survey.

b. Discussion:

The floor of Building FBM-61 rooms 2-172 and 2-177 was divided into a total of 19 grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 60 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface. The IM-247/PD results are grid specific, not sub-grid specific. The results shown on the localized grid map in each sub-grid indicate the

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Section 13. Building FBM-61

highest potential found in the entire grid. Solid samples for greater than or equal to twice background results are taken only in the sub-grid(s) that contain the highest potential area(s).

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

Supplemental surveys were performed on ventilation systems remaining in the weld shop area.

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building FBM-61 were determined from similar materials in Building 681.

c. **Summary:**

Surveys performed with the IM-247/PD did not detect any grids having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect any sub-grids greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any sub-grids greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.65 pCi/100 cm² to a high of 1.45 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material

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Section 13. Building FBM-61

samples ranged from a low of 0.29 pCi/g to a high of 4.52 pCi/g and Th-232 solid material samples ranged from a low of less than 0.65 pCi/g to a high of less than 4.80 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm² and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 1.6 pCi/100 cm² to a high of less than 23.90 pCi/100 cm² and the Th-232 levels ranged from a low of less than 4.00 pCi/100 cm² to a high of less than 54.00 pCi/100 cm².

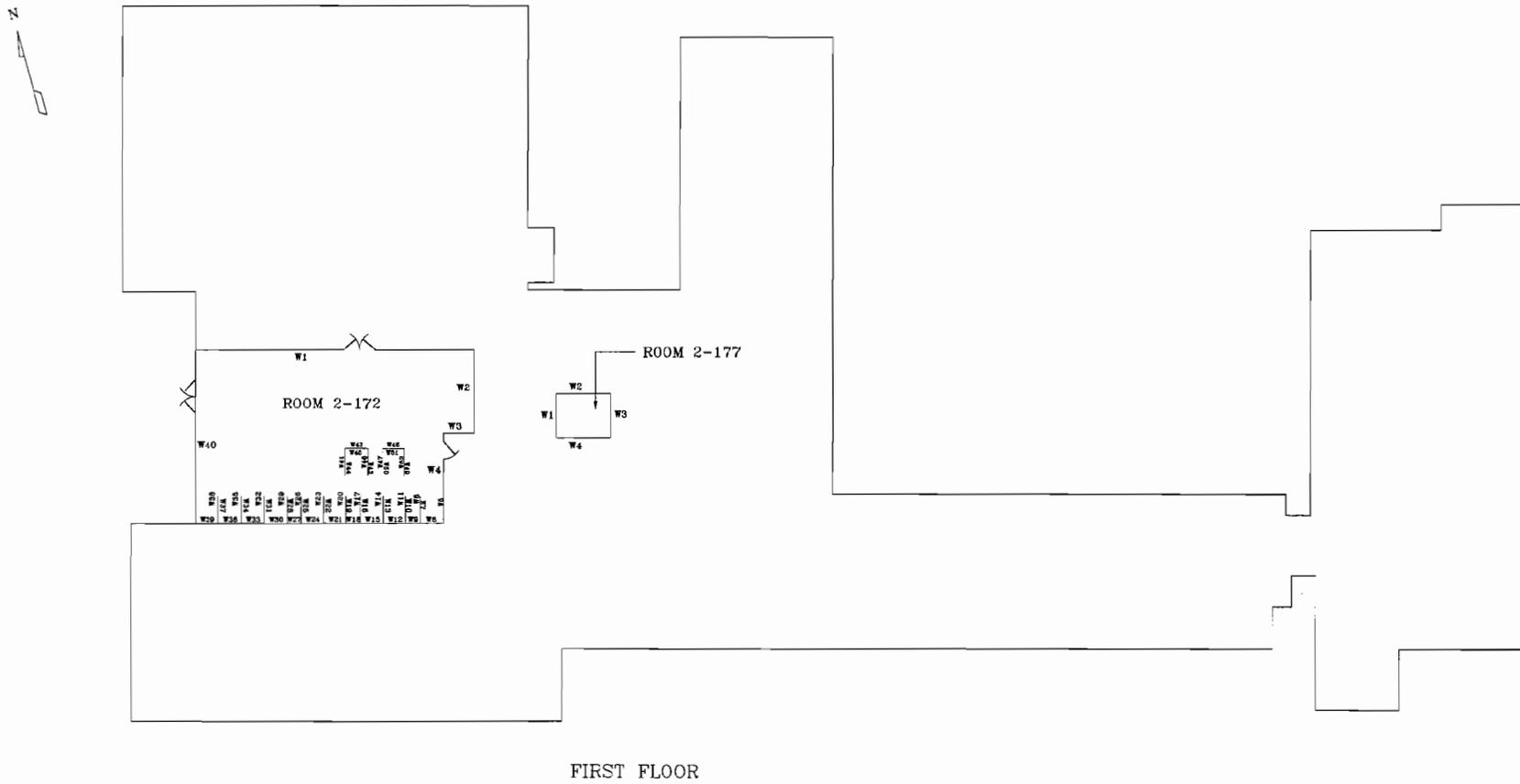
Sub-grids having two data entries per line have had an additional sample taken within this sub-grid.

Paint samples from grids W33-A1-II and W34-A1-II were found to be in excess of the allowable limits. Grid W33-A1-II contained 13.29 pCi/g of Ra-226 and grid W34-A1-II contained 64 pCi/g of Th-232. The identified portions of the grids were removed and properly disposed.

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Section 13. Building FBM-61

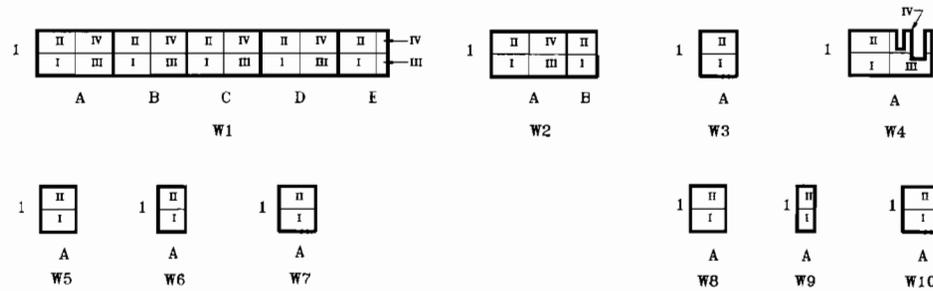
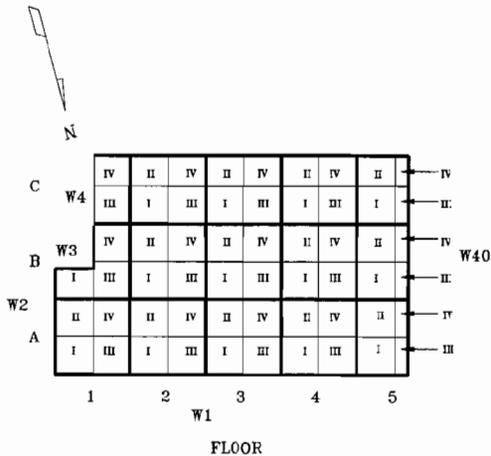
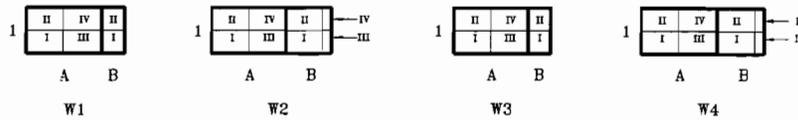
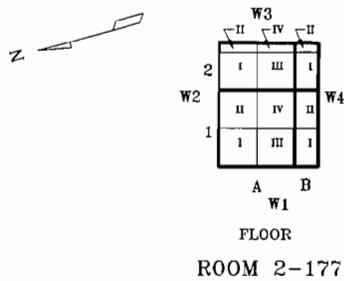
d. Site Map



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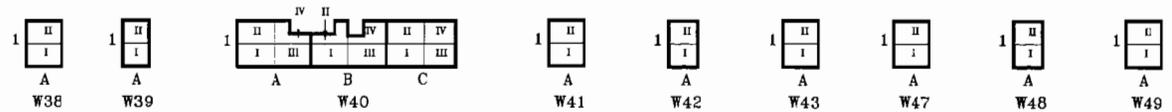
Section 13. Building FBM-61

e. Overall Grid Map



ROOM 2-177 TYPICAL WELDING BOOTH WALL CONFIGURATIONS
(WALLS 5 - 7, 11 - 16, 20 - 25, 29 - 37, 44 - 46 and 50 - 52)

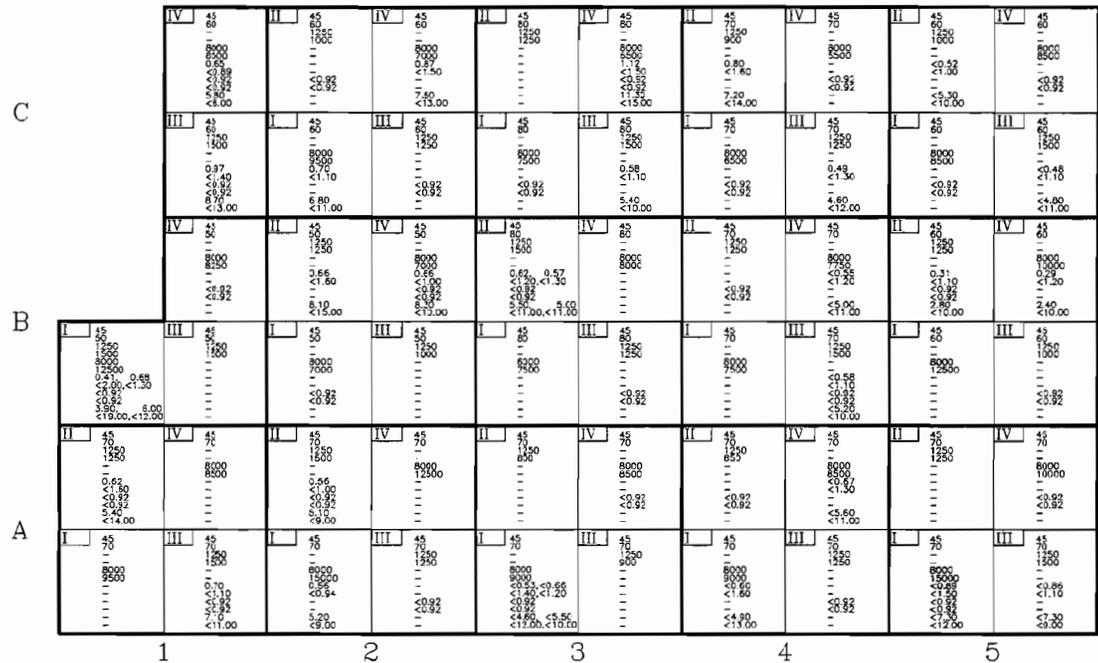
ROOM 2-177 TYPICAL WELDING BOOTH ADJACENT WALL CONFIGURATION (WALLS 8 - 10, 17 - 19 and 26 - 28)



NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

e. Localized Grid Map



ROOM 2-172 FLOOR

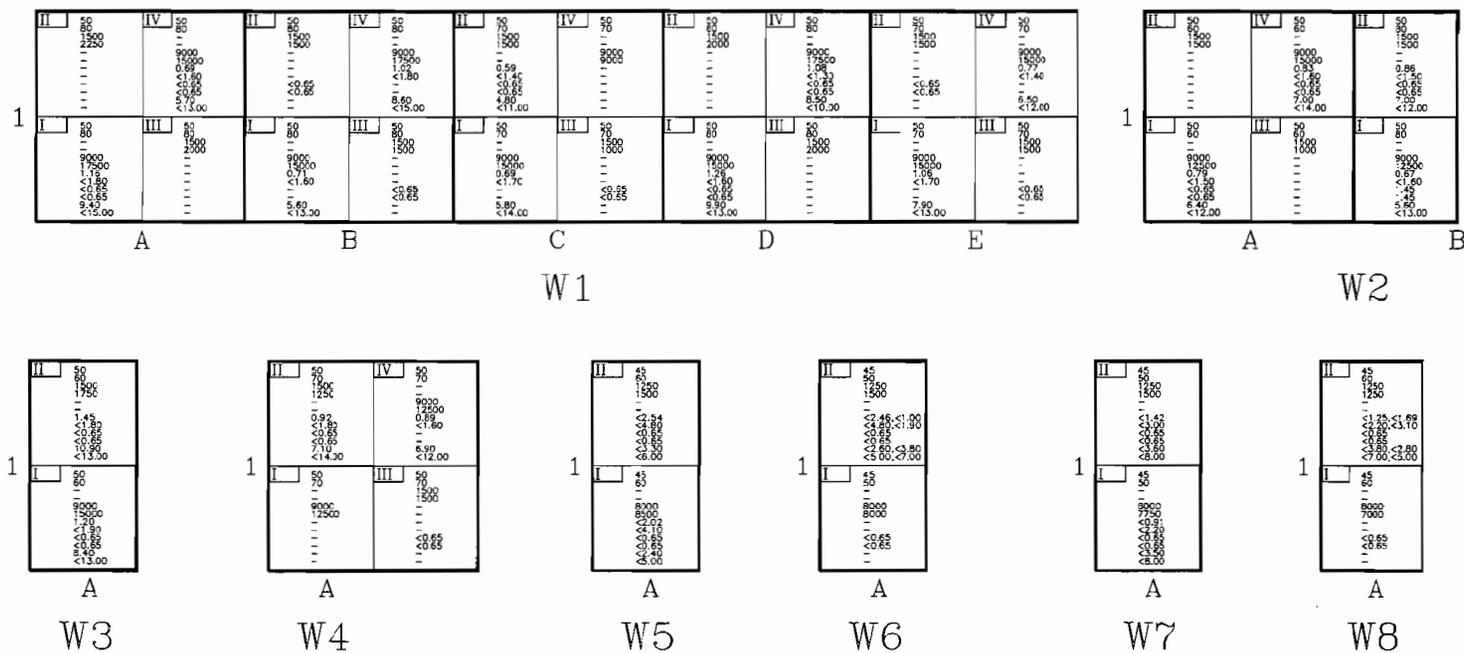
Data Legend:

1 - M-243/PO [pk]	7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - M-247/PO [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - M-253/PO (IV-1) [pk]	9 - Re-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - M-253/PO (IV-1) [pk]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
5 - M-253/PO (IV-2 GROSS) [pk]	11 - Re-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - M-253/PO (IV-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

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Section 13. Building FBM-61

e. Localized Grid Map



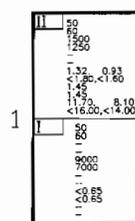
Data Legend:

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2 - M-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]: Regulator value: <math><5</math> above bkg. of 3.2 pCi/g
3 - M-253/PD [IV-1] PHA [Skg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]: Regulator value: <math><9</math>
4 - M-253/PD [IV-1] PHA [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]: Regulator value: <math><90</math>
5 - M-253/PD [IV-2] GROSS [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]: Regulator value: <math><45</math>
6 - M-253/PD [IV-2] GROSS [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]: Regulator value: <math><450</math>

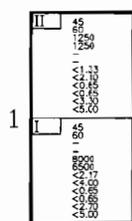
NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

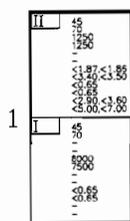
e. Localized Grid Map



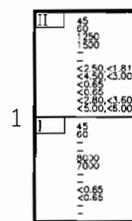
A
W9



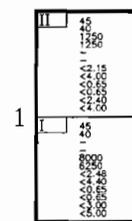
A
W10



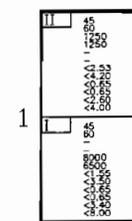
A
W11



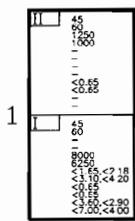
A
W12



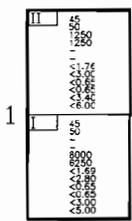
A
W13



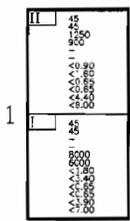
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W14



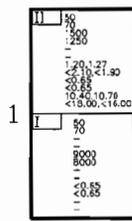
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W15



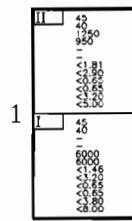
A
W16



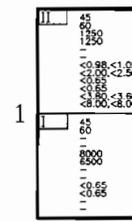
A
W17



A
W18



A
W19



A
W20

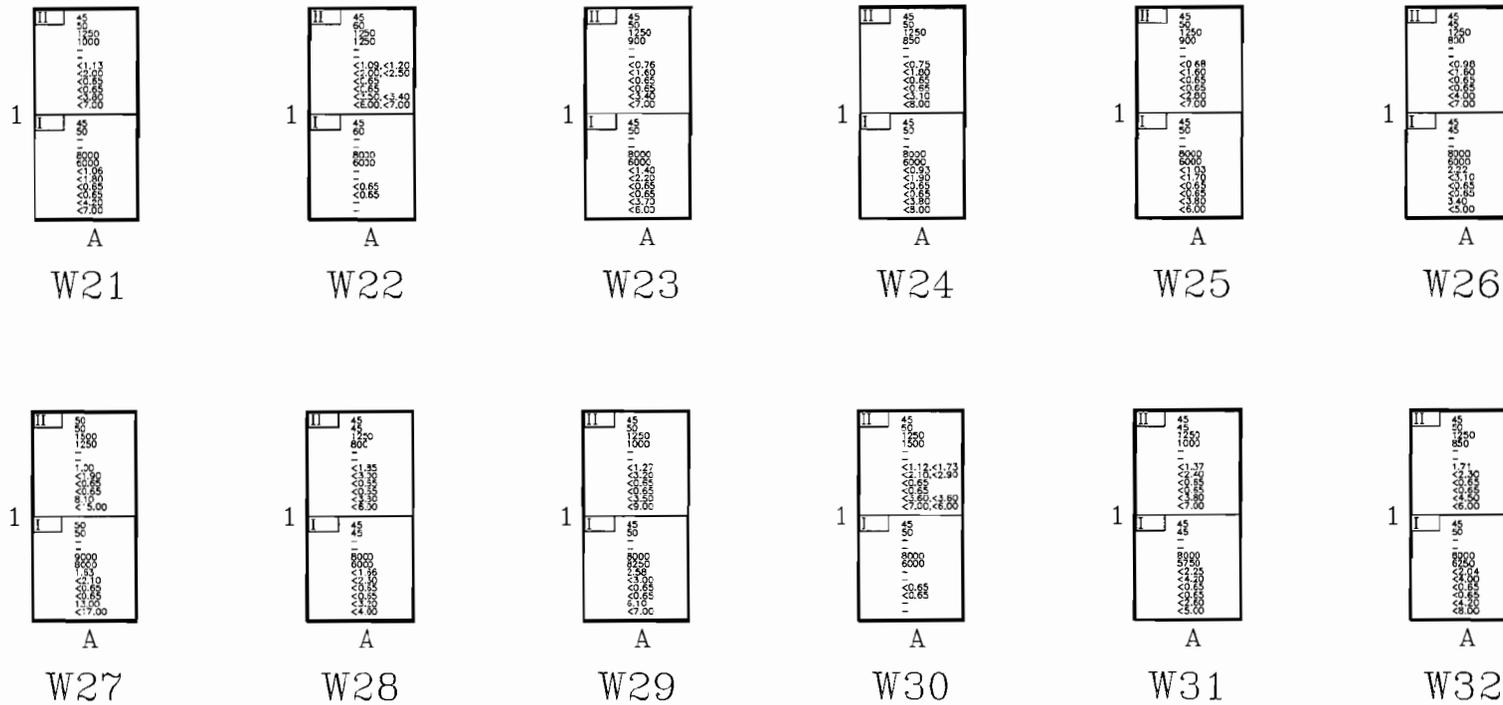
Date Legend:
 1 - IM-247/PD [Bq]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD (W-1 PHA) [Bq]
 4 - IM-253/PD (W-1 PHA) [cpm]
 5 - IM-253/PD (W-2 GROSS) [Bq]
 6 - IM-253/PD (W-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <150

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Section 13. Building FBM-61

e. Localized Grid Map



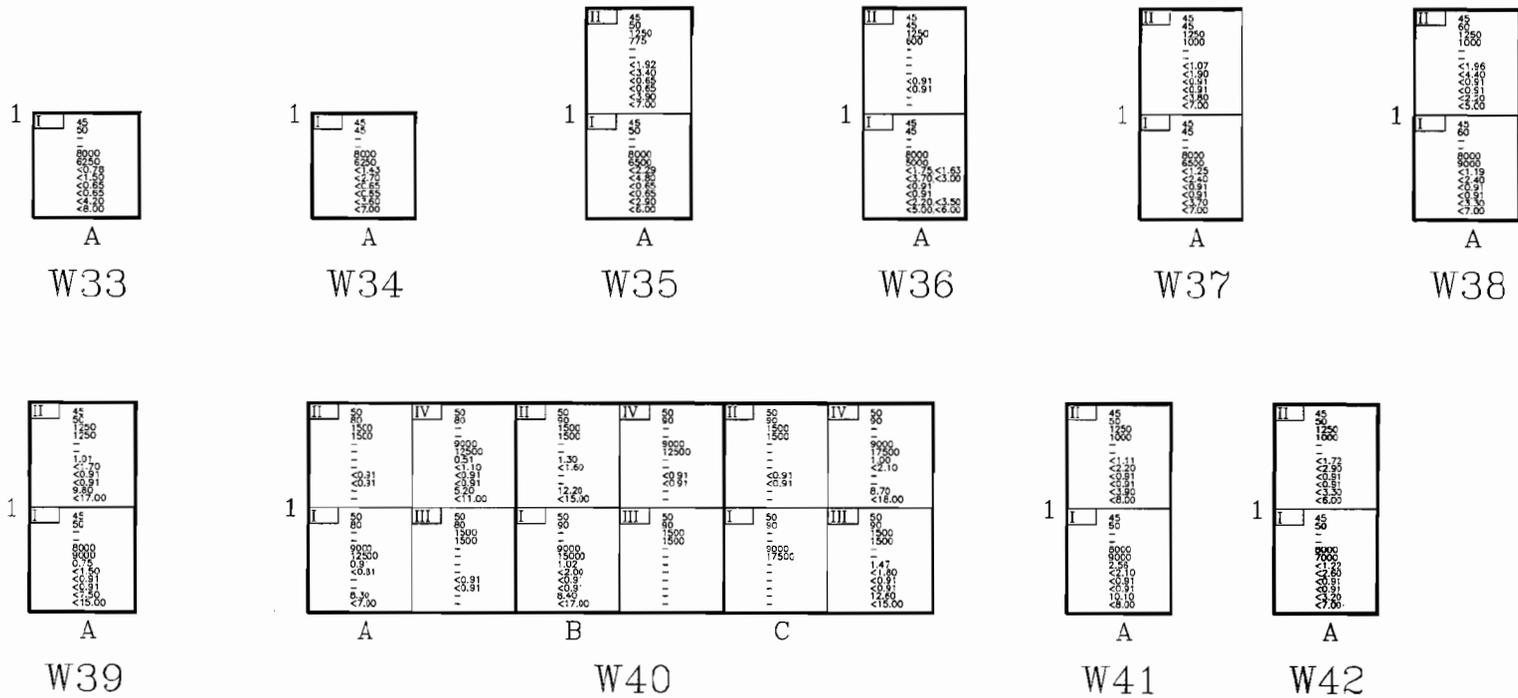
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 2 - M-247/PD [cpm]
 3 - M-253/PD (HV-1) PhA [Bq]
 4 - M-253/PD (HV-1) PhA [cpm]
 5 - M-253/PD (HV-2) GRSS [Bq]
 6 - M-253/PD (HV-2) GRSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

e. Localized Grid Map



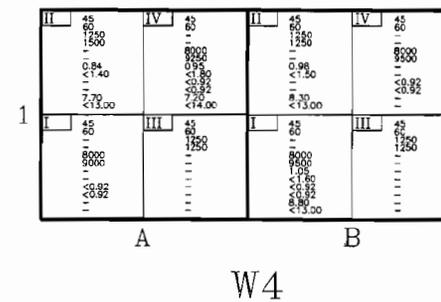
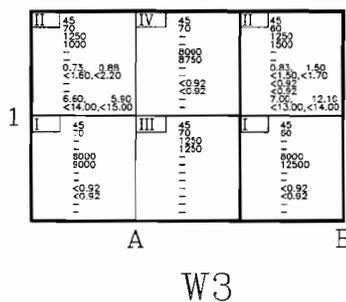
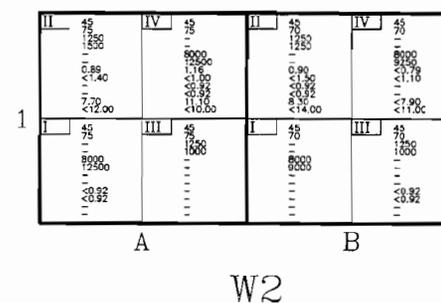
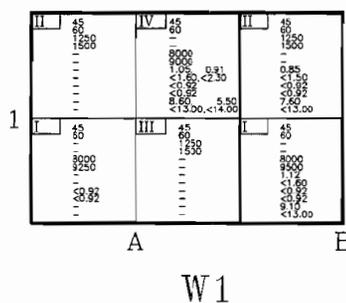
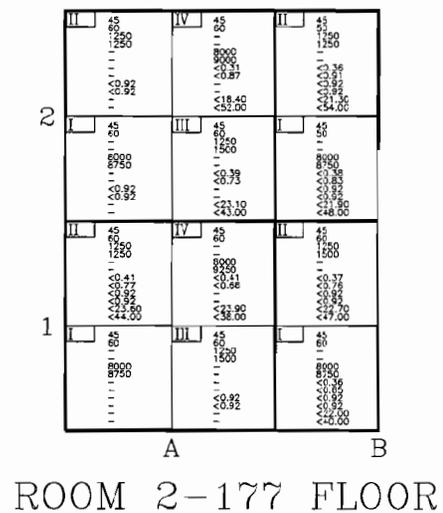
Data Legend:

1 - IM-247/PD [Bq]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD (W-1 PHA) [cpm]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - IM-253/PD (W-1 PHA) [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90
5 - IM-253/PD (W-2 GROSS) [Bq]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD (W-2 GROSS) [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

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Section 13. Building FBM-61

e. Localized Grid Map



Data Legend:

1 - M-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
2 - M-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
3 - M-233/PD (V-1) PhA [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]. Regulator value: <9
4 - M-233/PD (V-1) PhA [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]. Regulator value: <90
5 - M-233/PD (V-2) GRCSS [bkg.]	1 - Ra-226 Surface Radioactivity [pCi/100cm ²]. Regulator value: <45
6 - M-233/PD (V-2) GRCSS [cpm]	2 - Th-232 Surface Radioactivity [pCi/100cm ²]. Regulator value: <450

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Section 13. Building FBM-61

f. Photographs



Building FBM-61, Room 2-172

NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

f. Photographs



Building FBM-61, Room 2-172 Welding Booths

NAVBASE G-RAM FINAL REPORT

Section 13. Building FBM-61

f. Photographs



Building FBM-61, Room 2-177

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

a. Introduction:

Building NS-26 is located on Thompson Avenue at the head of Pier U. Building NS-26 was constructed in 1958 for use as shop and office spaces for the Shore Intermediate Maintenance Activity (SIMA).

(1) Description:

Building NS-26, renovated in 1985, is a single story building comprised of 22,322 square feet of floor space.

(2) Brief History:

(a) **Use:** This facility housed a General Purpose Shop Area which received a Class A survey and a Weld Shop, Weld Bay Area, and an NDT Laboratory, with associated rooms, which received a Class B survey.

(b) **Radiological History:** This building had a history of usage and storage of iridium 192 sources for radiography as well as various electronic and ionization commodities. TIG welding was performed in various locations throughout the weld shop area using portable weld screens and temporary weld booths. Other TIG welding activities performed in the weld shop area included preparation, and storage of thoriated tungsten welding rods.

(3) Survey Requirements:

- (a) Class A release survey.
- (b) Class B release survey.

b. Discussion:

For the Class A survey, portions of the floor of Building NS-26 were divided into a total of 30 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific, therefore, entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

Supplemental surveys were performed on ventilation systems remaining in the weld shop area.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

For the Class B survey, the floors of the Weld Shop, Welding Bay Area, and the NDT Laboratory were divided into a total of 50 grids with a maximum size of 10' by 10'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

The walls were horizontally divided into 62 grids with a maximum size of 6' high and 10' wide. Each of these wall grids was subdivided into sub-grids with an approximate size of 3' high by 5' wide.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over 100% of the grid surface. The IM-247/PD results are grid specific, not sub-grid specific. The results shown on the localized grid map in each sub-grid indicate the highest potential found in the entire grid. Solid samples for greater than or equal to twice background results are taken only in the sub-grid(s) that contain the highest potential area(s).

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over diagonal sub-grids to represent at least 50% of the grid surface.

A wide gamma energy range scintillation scan survey with the IM-253/PD (GROSS mode) was performed over the other diagonal sub-grids to represent the remaining 50% of the grid surface.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

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Section 14. Building NS-26

A minimum of two solid material samples were taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building NS-26 were determined from similar materials in Building 23 at the SIMA complex.

c. Summary:

Surveys performed in the Class A area with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 3 areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect any areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.65 pCi/100 cm² to a high of 1.46 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.41 pCi/g to a high of 1.21 pCi/g and Th-232 solid material samples ranged from a low of less than 0.87 pCi/g to a high of less than 1.40 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 3.80 pCi/100 cm² to a high of 12.90 pCi/100 cm² and the Th-232 levels ranged from a low of less than 9.00 pCi/100 cm² to a high of less than 14.00 pCi/100 cm².

Surveys performed in the Class B area with the IM-247/PD did not detect any grids having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 12 sub-grids greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect sub-grids greater than or equal to twice background.

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Section 14. Building NS-26

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.65 pCi/100 cm² to a high of 1.46 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.13 pCi/g to a high of 3.42 pCi/g and Th-232 solid material samples ranged from a low of less than 0.17 pCi/g to a high of less than 4.70 pCi/g.

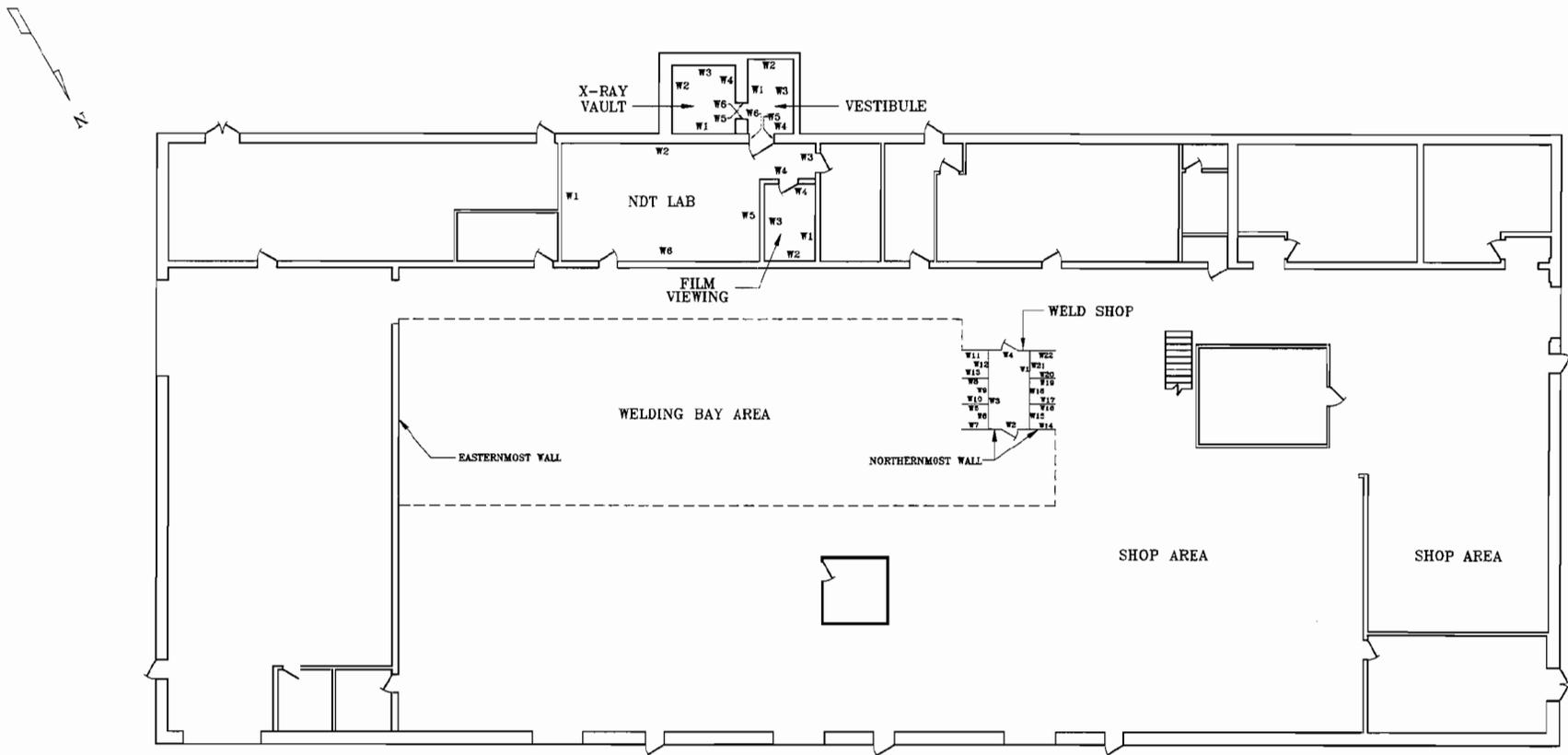
Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 1.60 pCi/100 cm² to a high of 36.90 pCi/100 cm² and the Th-232 levels ranged from a low of less than less than 4.00 pCi/100 cm² to a high of less than 146.60 pCi/100 cm².

Sub-grids having two data entries per line have had an additional sample taken within this sub-grid.

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

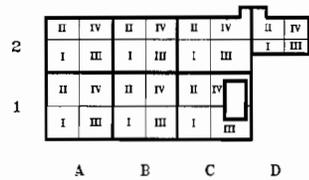
d. Site Map



NAVBASE G-RAM FINAL REPORT

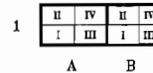
Section 14. Building NS-26

e. Overall Grid Map



A B C D

NDT LAB FLOOR



A B

W1



A B C D

W2



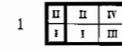
A

W3



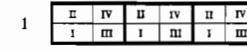
A

W4



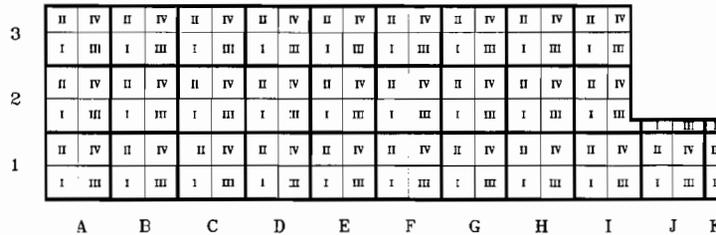
A B

W5



A B C

W6



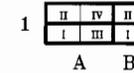
A B C D E F G H I J K

WELDING BAY AREA FLOOR



A B C

WELDING BAY AREA EASTERNMOST WALL LOOKING EAST



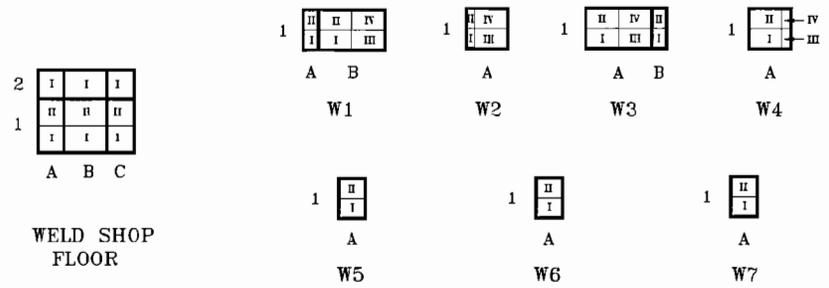
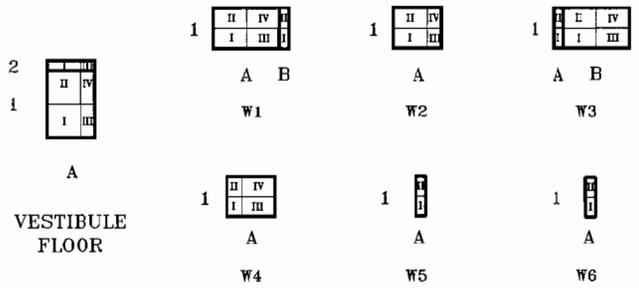
A B

WELD SHOP NORTHERNMOST WALL LOOKING SOUTH

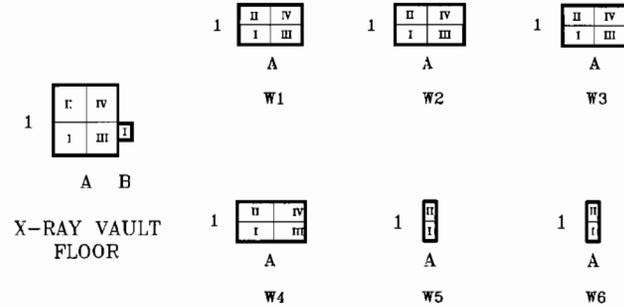
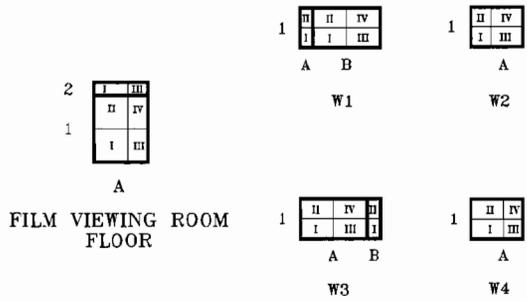
NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Overall Grid Map



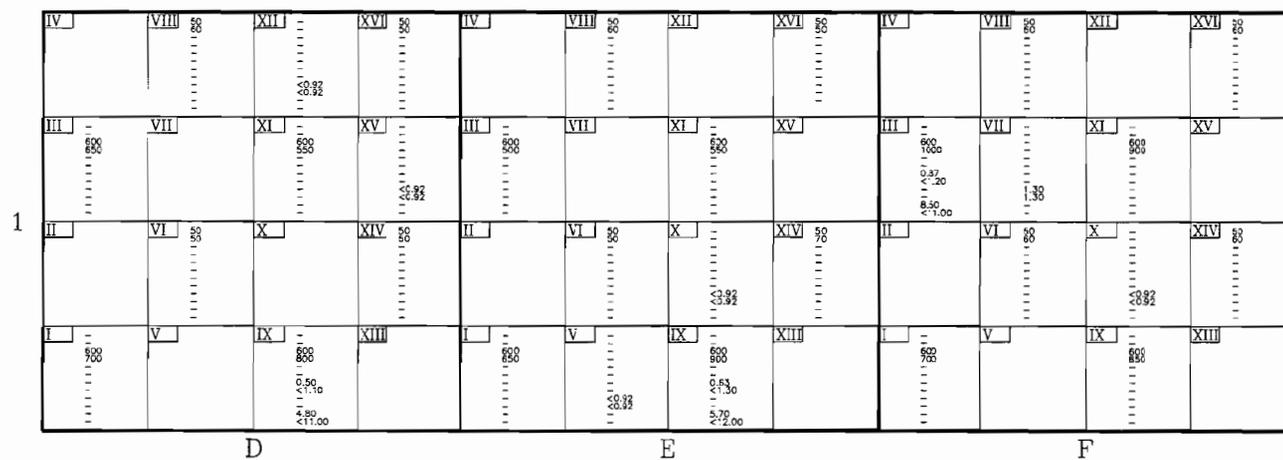
TYPICAL WELD SHOP WELDING BOOTH WALL CONFIGURATION (WALLS 5 - 22)



NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



SHOP AREA FLOOR

Note:
 Entries 5 and 6 are not required for Cass A' Localized
 Grid Map pages. See the Discussion paragraph.

- Data Legend:
- 1 - IM-247/PD [dkg]
 - 2 - IM-247/PO [dkg]
 - 3 - IM-253/PO (-V- PH4) [dkg]
 - 4 - IM-253/PO (-V- 1 PH4) [cpm]
 - 5 - IM-253/PO (-V- 2 GRCS5) [dkg]
 - 6 - IM-253/PO (-V- 2 GRCS5) [cpm]
 - 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 - 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 - 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 - 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <30
 - 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 - 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



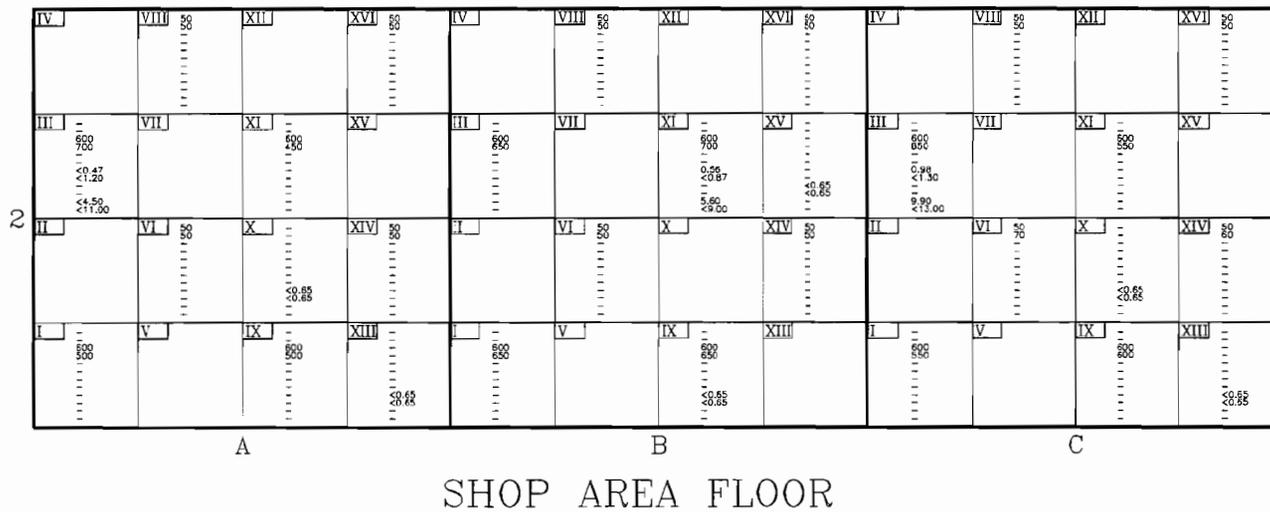
Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- | | |
|--------------------------------|--|
| 1 - M-247/PD [bkg] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - M-253/PD HV-1 PHA [bkg] | 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9 |
| 4 - IM-253/PD HV-1 PHA [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9 |
| 5 - IM-253/PD HV-2 GROSS [bkg] | 11 - Ra-226 Surface Radioactivity [pCi/100m²]; Regulator value: <45 |
| 6 - IM-253/PD HV-2 GROSS [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100m²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

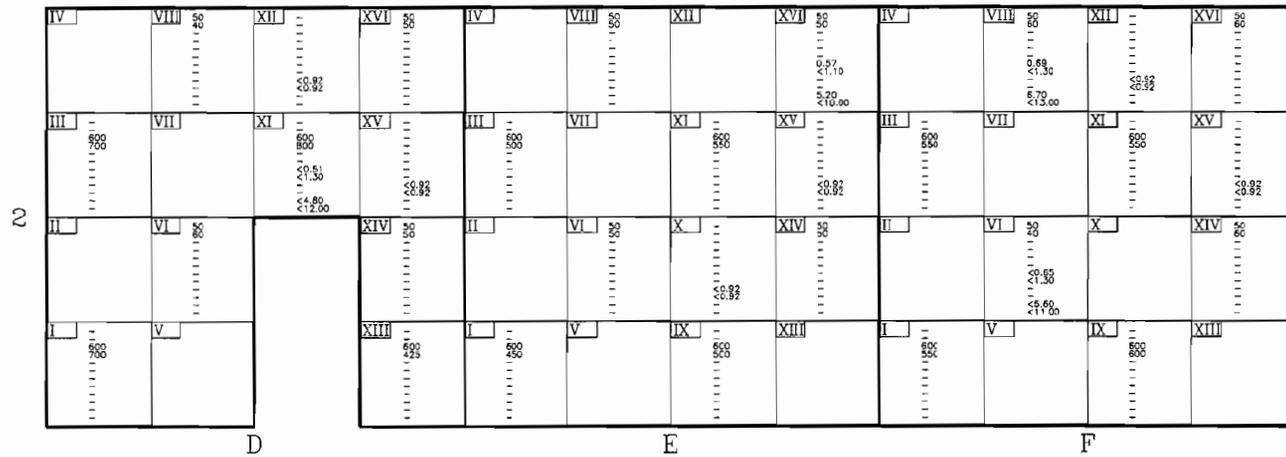
Data Legend:
 1 - IM-247/PD [bkg.]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD [PHA] [bkg.]
 4 - IM-253/PD [HV-1 PHA] [cpm]
 5 - IM-253/PD [HV-2 GROSS] [bkg.]
 6 - IM-253/PD [HV-2 GROSS] [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



SHOP AREA FLOOR

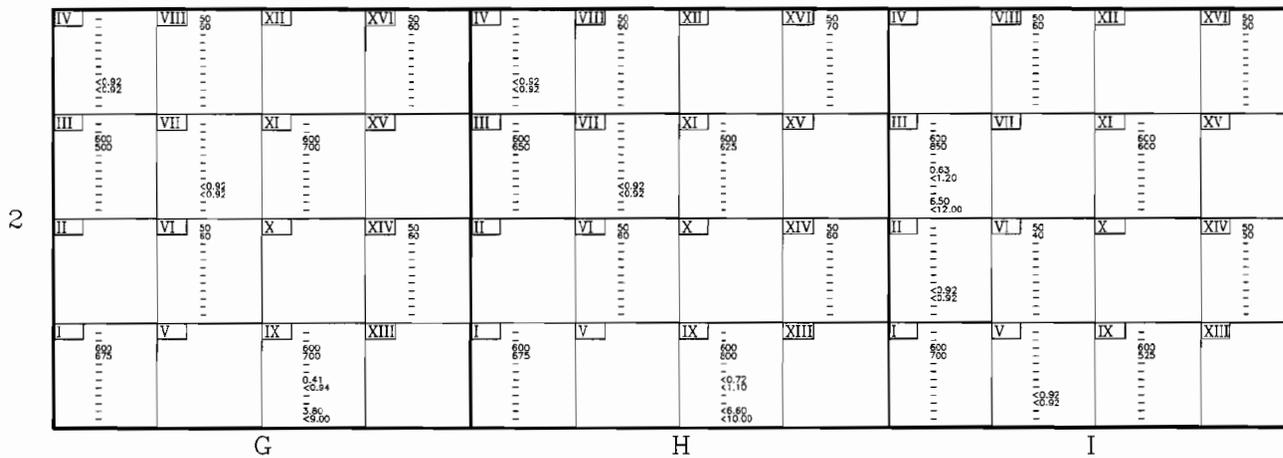
Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- Data Legend:
- | | |
|----------------------------------|---|
| 1 - IM-247/PD [bkg.] | 7 - Fa-226 Solid Sample Radioactivity [pCi/g]; Regulator value <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - In-226 Solid Sample Radioactivity [pCi/g]; Regulator value <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (V-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value <9 |
| 4 - IM-253/PD (V-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value <90 |
| 5 - IM-253/PD (V-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value <45 |
| 6 - IM-253/PD (V-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value <450 |

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



SHOP AREA FLOOR

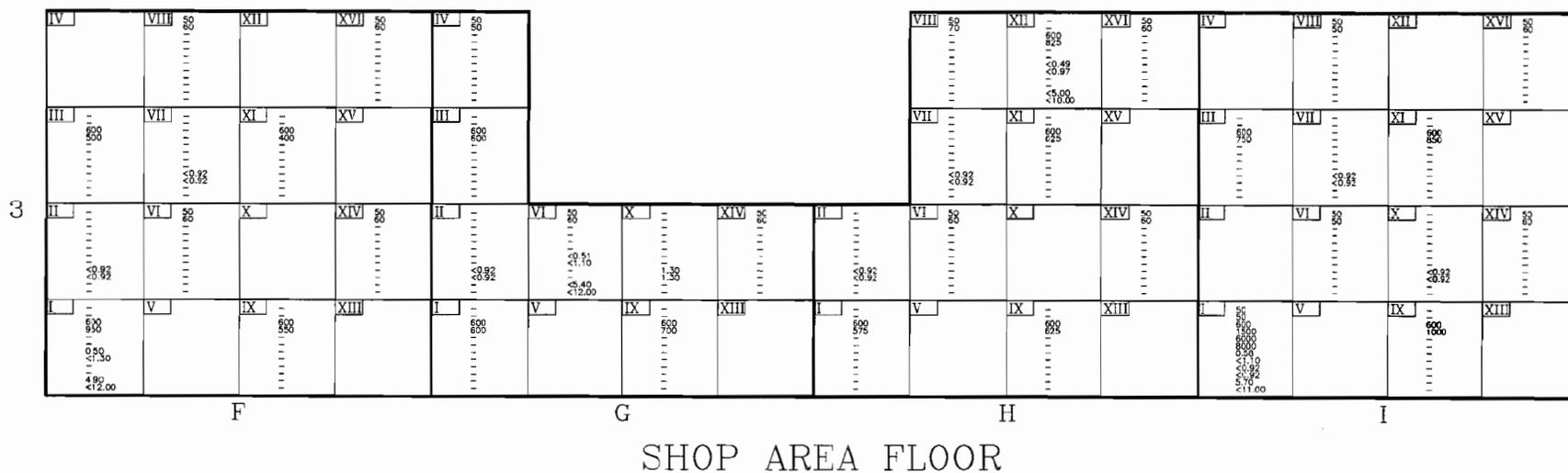
Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- | | |
|---------------------|---|
| 1 - IM-247/PD [bkg] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g] Regulator value: <5 above bkg. of 3.1 pCi/g |
| 3 - IM-253/PD [bkg] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²] Regulator value: <5 |
| 4 - IM-253/PD [bkg] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²] Regulator value: <50 |
| 5 - IM-253/PD [bkg] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²] Regulator value: <45 |
| 6 - IM-253/PD [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²] Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



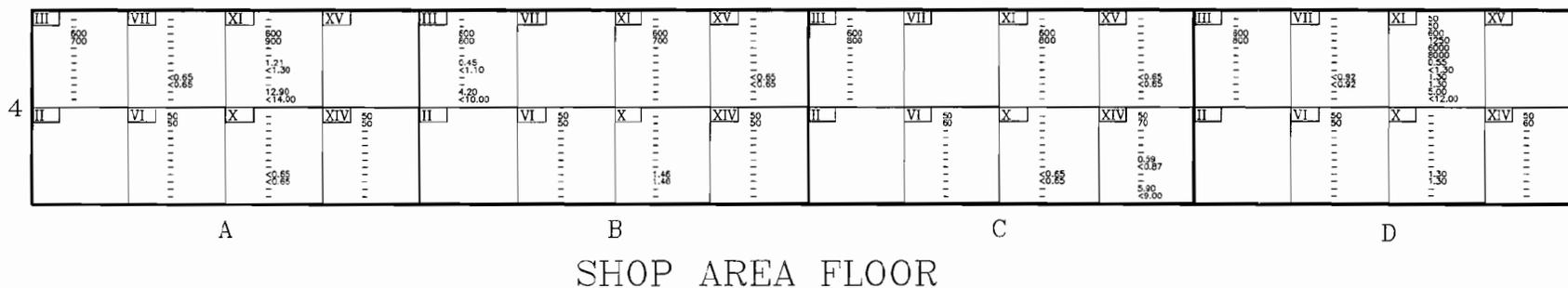
Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- | | |
|---------------------------------|--|
| 1 - M-247/PD [dkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - M-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - M-253/PD (H-1 PHA) [dkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - M-253/PD (H-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 5 - M-253/PD (H-2 GROSS) [dkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - M-253/PD (H-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

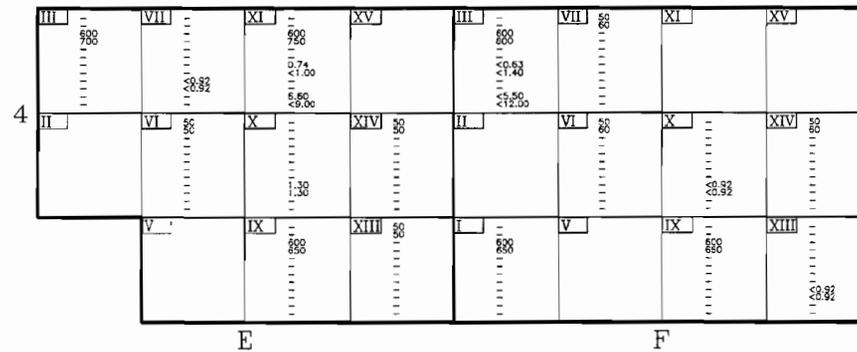
Data Legend:

1 - IM-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - IM-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - IM-253/PD MW-1 PHA [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <5
4 - IM-253/PD MW-1 PHA [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <5
5 - IM-253/PD MW-2 CROSS [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - IM-253/PD MW-2 CROSS [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45

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Section 14. Building NS-26

e. Localized Grid Map



SHOP AREA FLOOR

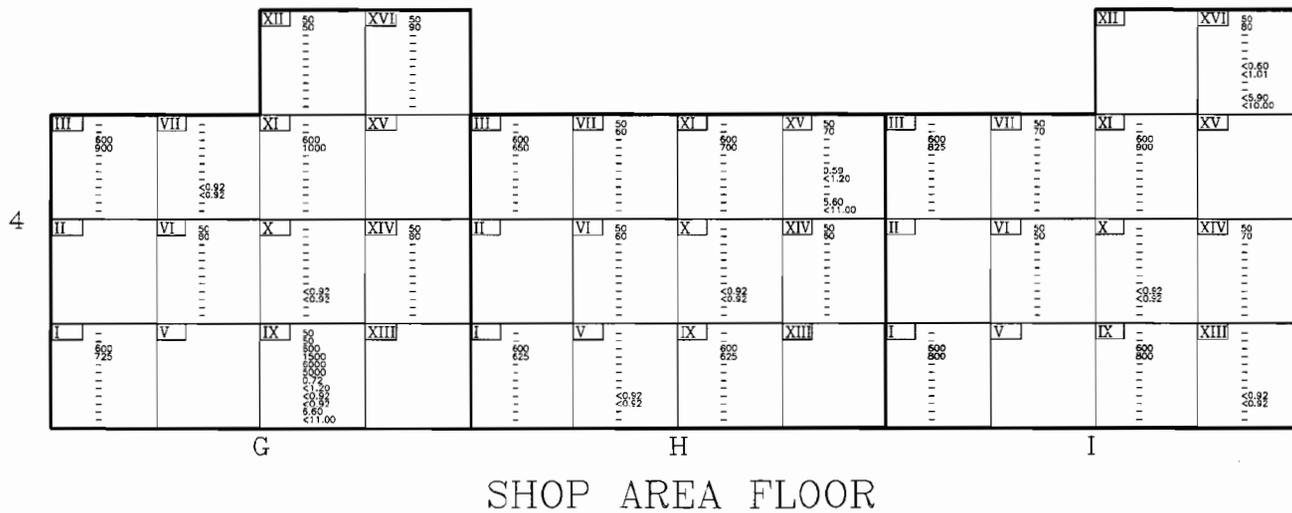
Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- | | |
|---------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD HW-1 PHA [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <3 |
| 4 - IM-253/PD HW-1 PHA [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <30 |
| 5 - IM-253/PD HW-2 GROSS [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD HW-2 GROSS [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

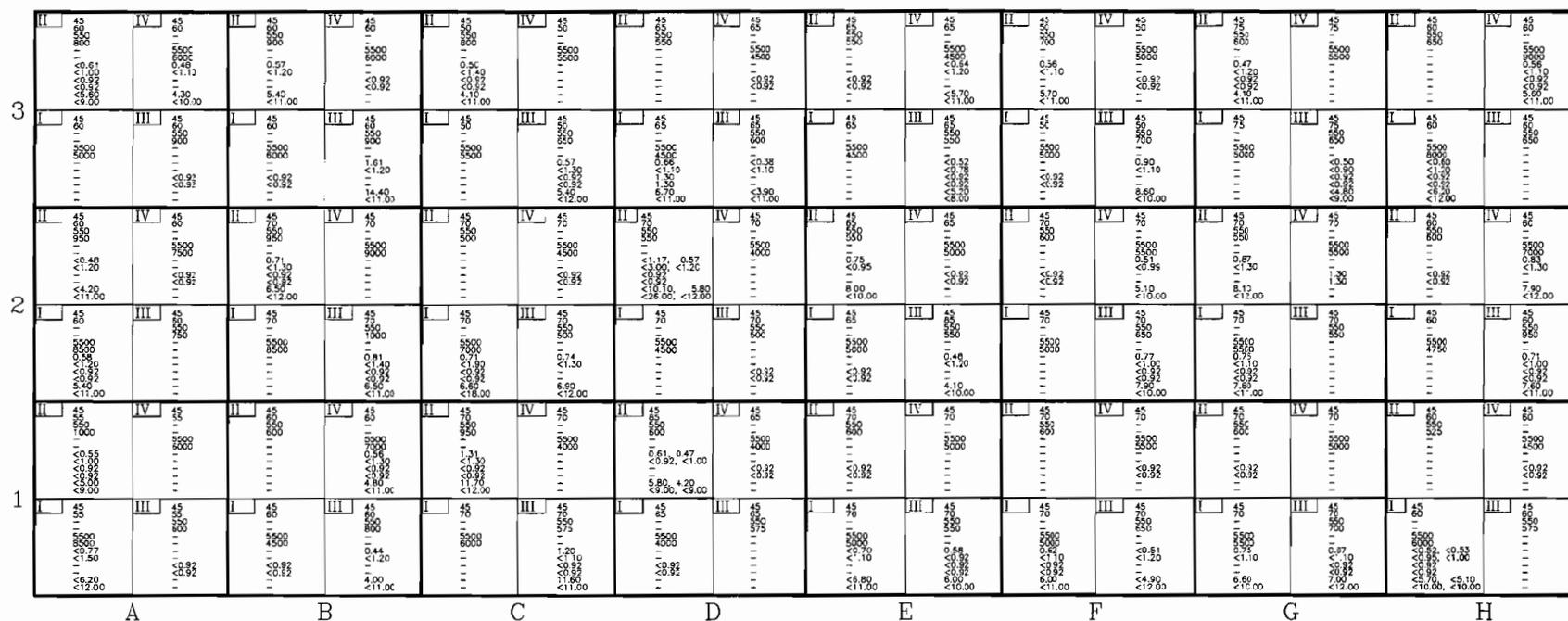
Data Legend:
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 2 - IM-247/PD [cpm]
 3 - IM-253/PD HV-1 PHA [bkg.]
 4 - IM-253/PD HV-1 PHA [cpm]
 5 - IM-253/PD HV-2 GROSS [bkg.]
 6 - IM-253/PD HV-2 GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <50
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



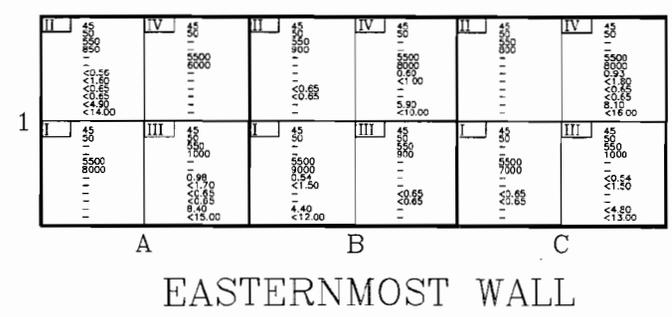
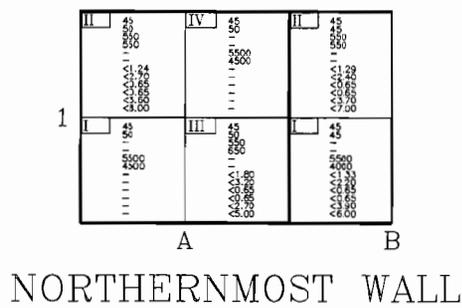
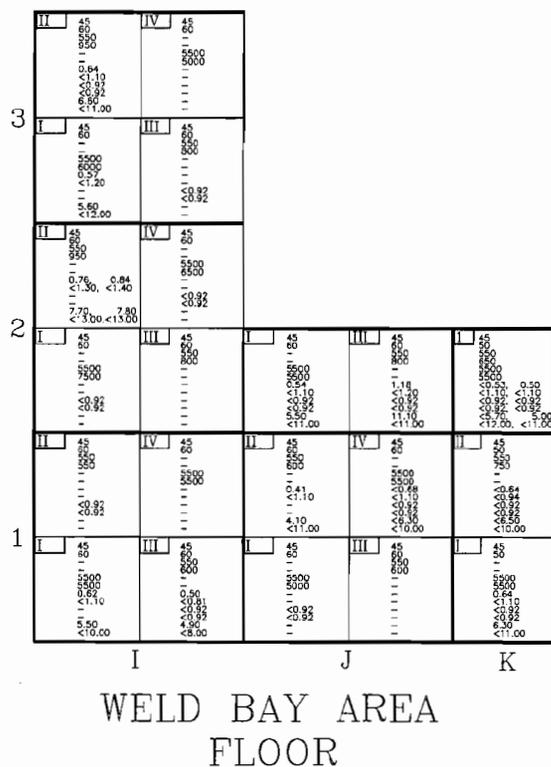
WELD BAY AREA FLOOR

- Data Legend:
- 1 - M-247/PD [Bq.]
 - 2 - M-247/PD [cpm]
 - 3 - M-253/PD (V-1 PHA) [Bq.]
 - 4 - M-253/PD (V-1 PHA) [cpm]
 - 5 - M-253/PD (V-2 GROSS) [Bq.]
 - 6 - M-253/PD (V-2 GROSS) [cpm]
 - 7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 - 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 - 9 - Re-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 - 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 - 11 - Re-226 Surface Radioactivity [pCi/15cm²]; Regulator value: <45
 - 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



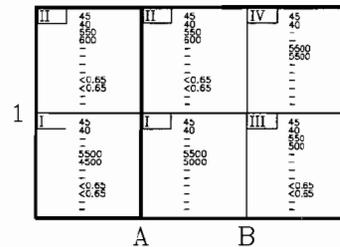
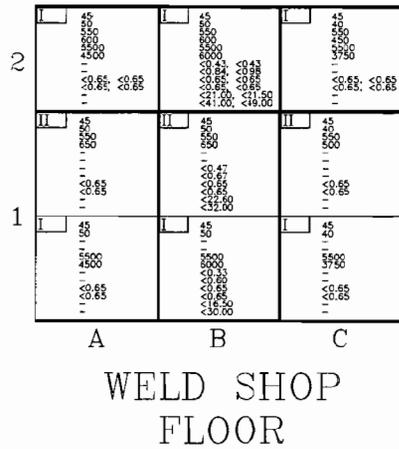
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 2 - IM-247/PD [cpm]
 3 - IM-253/PD [cpm] PHA [bkg.]
 4 - IM-253/PD [cpm] PHA [cpm]
 5 - IM-253/PD [cpm] GROSS [bkg.]
 6 - IM-253/PD [cpm] GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <5
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <50
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

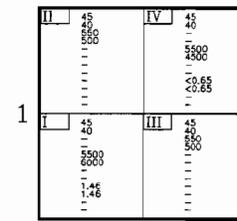
NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

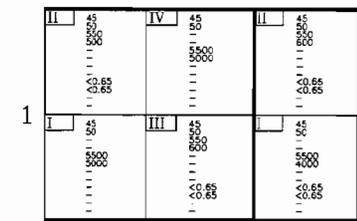
e. Localized Grid Map



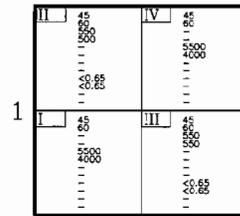
W1



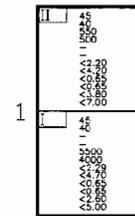
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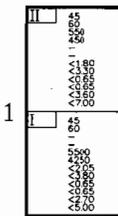
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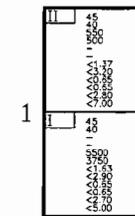
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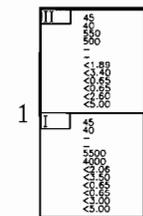
W5



W6



W7



W8

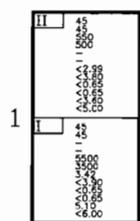
Data Legend:
 1 - IM-247/PD [Bq]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD HV-1 PHA [Bq]
 4 - IM-253/PD HV-1 PHA [cpm]
 5 - IM-253/PD HV-2 GROSS [Bq]
 6 - IM-253/PD HV-2 GROSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

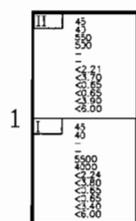
NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

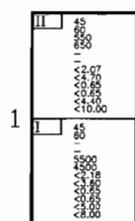
e. Localized Grid Map



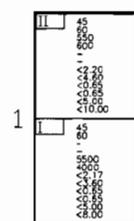
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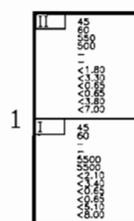
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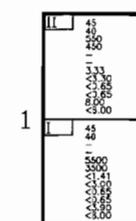
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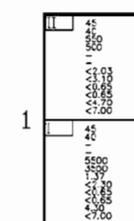
W12



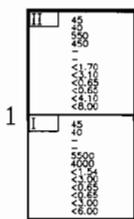
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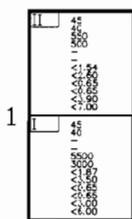
W14



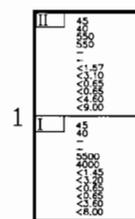
W15



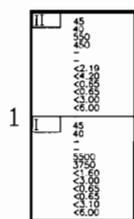
W16



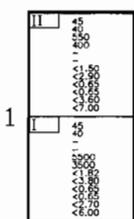
W17



W18



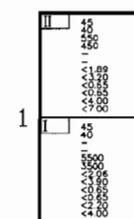
W19



W20



W21



W22

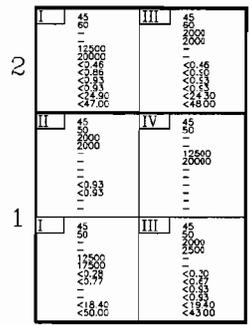
Data Legend:

- | | |
|---------------------------------|--|
| 1 - I-247/PD [Bq] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - I-247/PD [cpm] | 8 - Ir-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - I-253/PD (IV-1) [Bq] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <5 |
| 4 - I-253/PD (IV-1) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <50 |
| 5 - I-253/PD (IV-2) GROSS [Bq] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - I-253/PD (IV-2) GROSS [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

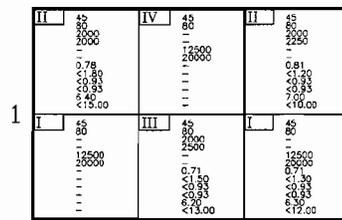
NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

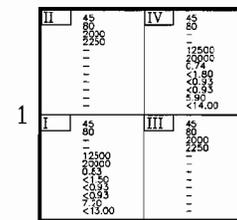
e. Localized Grid Map



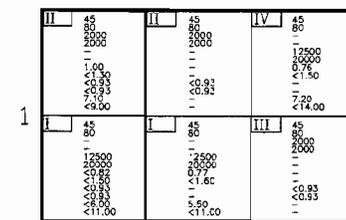
VESTIBULE FLOOR



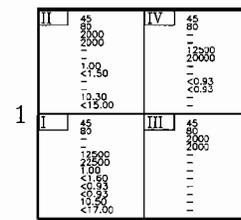
W1



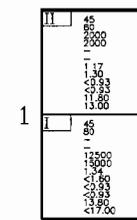
W2



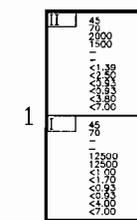
W3



W4



W5



W6

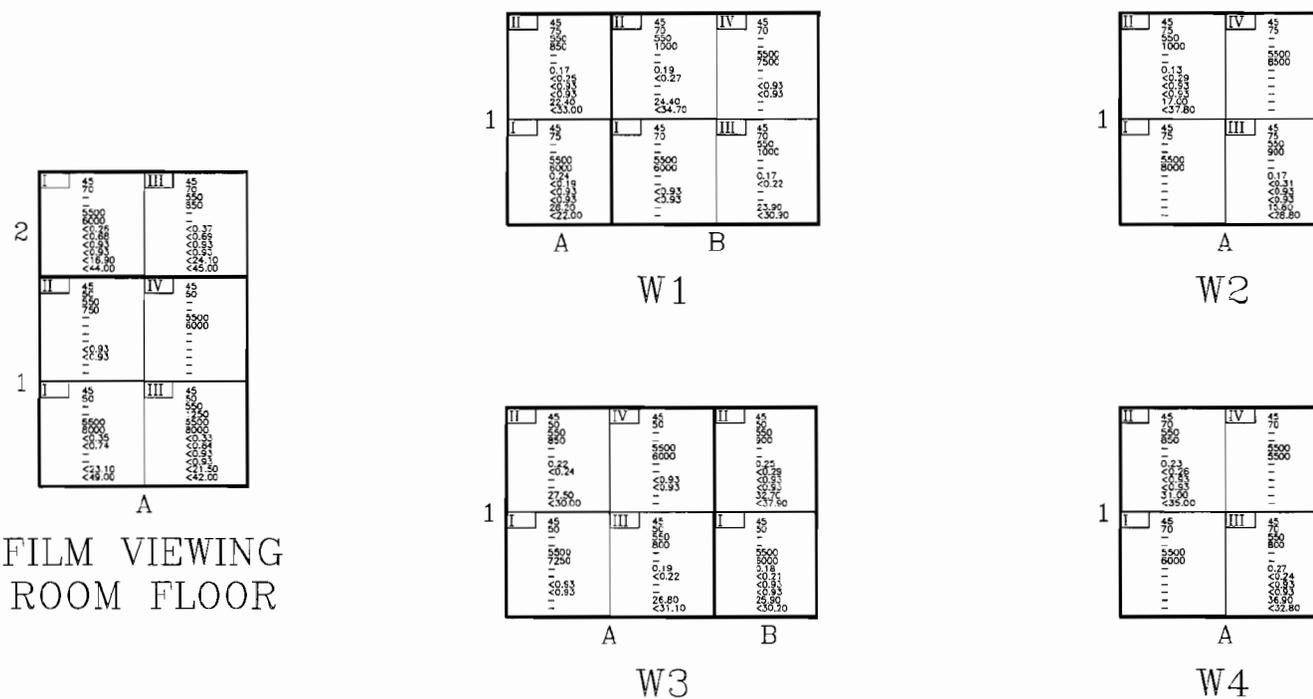
Data Legend:
 1 - IN-247/PD [Bq]
 2 - IN-247/PD [cpm]
 3 - IN-253/PD (HV-1 P-A) [Bq]
 4 - IN-253/PD (HV-1 P-A) [cpm]
 5 - IN-253/PD (HV-2 GROSS) [Bq]
 6 - IN-253/PD (HV-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <30
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



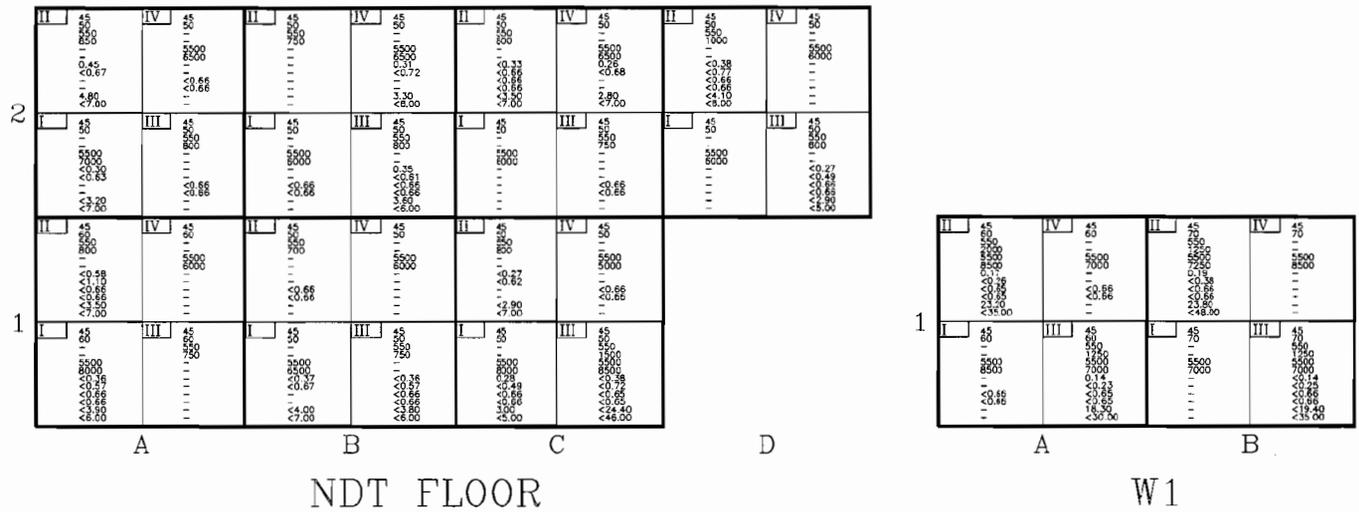
FILM VIEWING ROOM FLOOR

Data Legend:
 1 - IM-247/PD [bkg.]
 2 - IM-247/PD [cpm]
 3 - IM-253/PD (HV- PHA) [bkg.]
 4 - IM-253/PD (HV- PHA) [cpm]
 5 - IM-253/PD (HV-2 GROSS) [bkg.]
 6 - IM-253/PD (HV-2 GROSS) [cpm]
 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



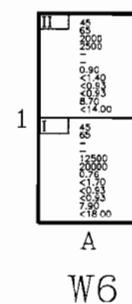
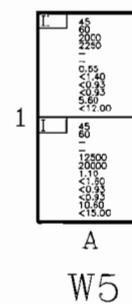
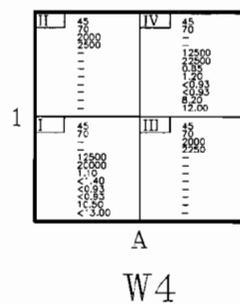
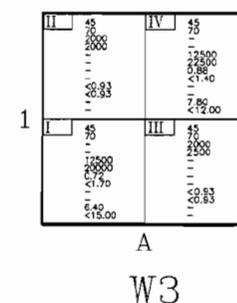
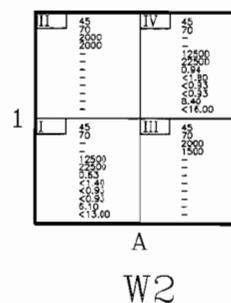
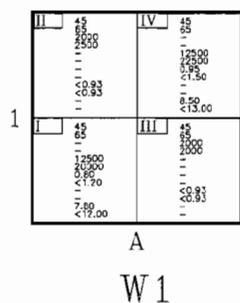
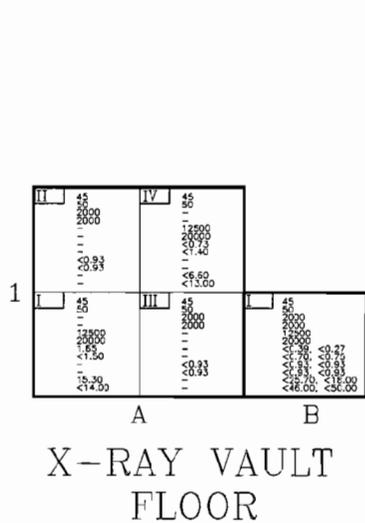
Data Legend:
 1 - IN-247/PD [bkg]
 2 - IN-247/PD [cpm]
 3 - IN-252/PD (IV-1) PHA [bkg]
 4 - IN-252/PD (IV-1) PHA [cpm]
 5 - IN-252/PD (IV-2) GRDSS [bkg]
 6 - IN-252/PD (IV-2) GRDSS [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <3
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <10
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <45

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

e. Localized Grid Map



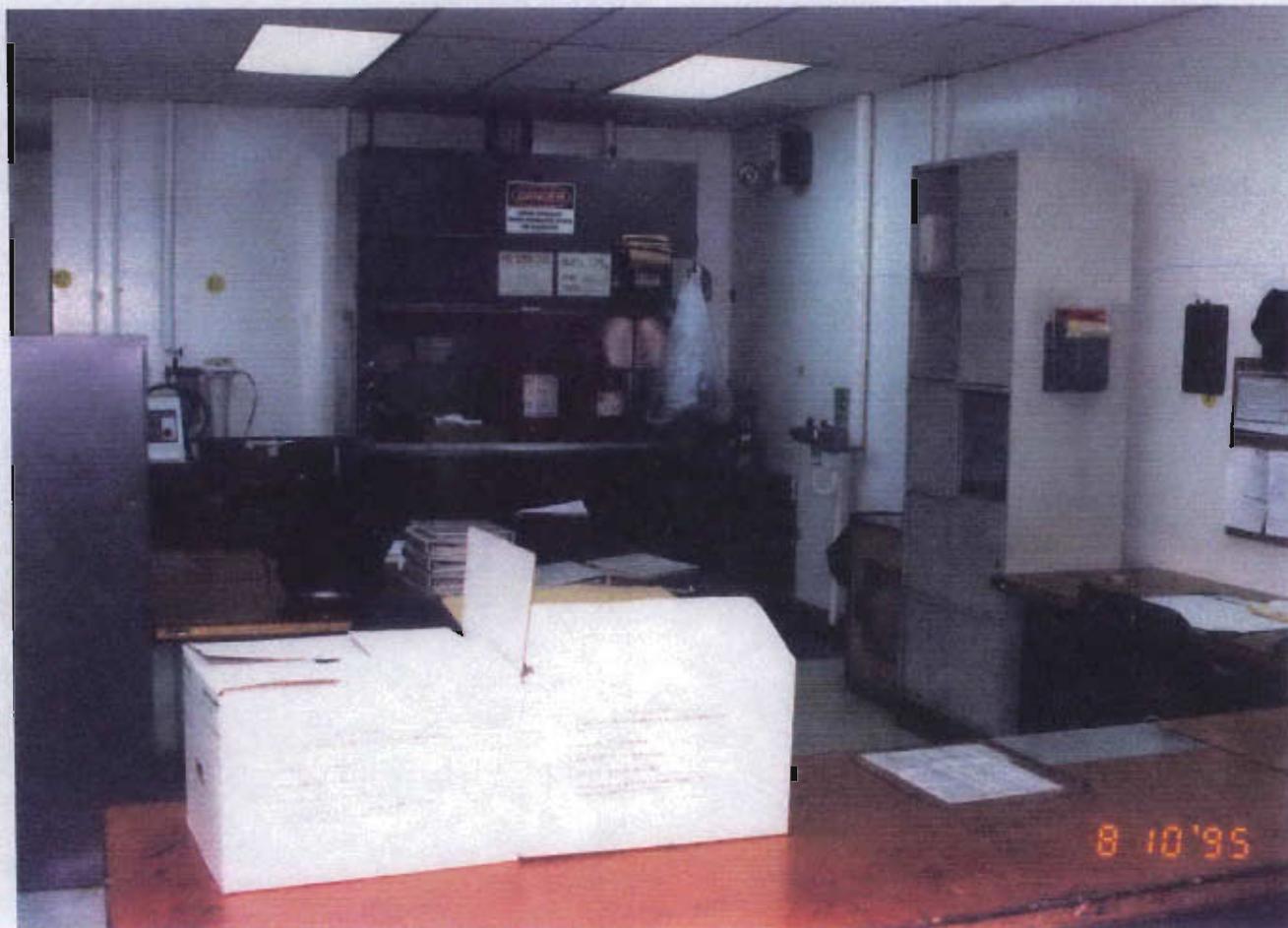
Data Legend:

1 - Iu-247/PD [bkg.]	7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
2 - Iu-247/PD [cpm]	8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
3 - Iu-233/PD [HV-1 PHA] [bkg.]	9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
4 - Iu-233/PD [HV-1 PHA] [cpm]	10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9
5 - Iu-233/PD [HV-2 GROSS] [bkg.]	11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45
6 - Iu-233/PD [HV-2 GROSS] [cpm]	12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

f. Photographs

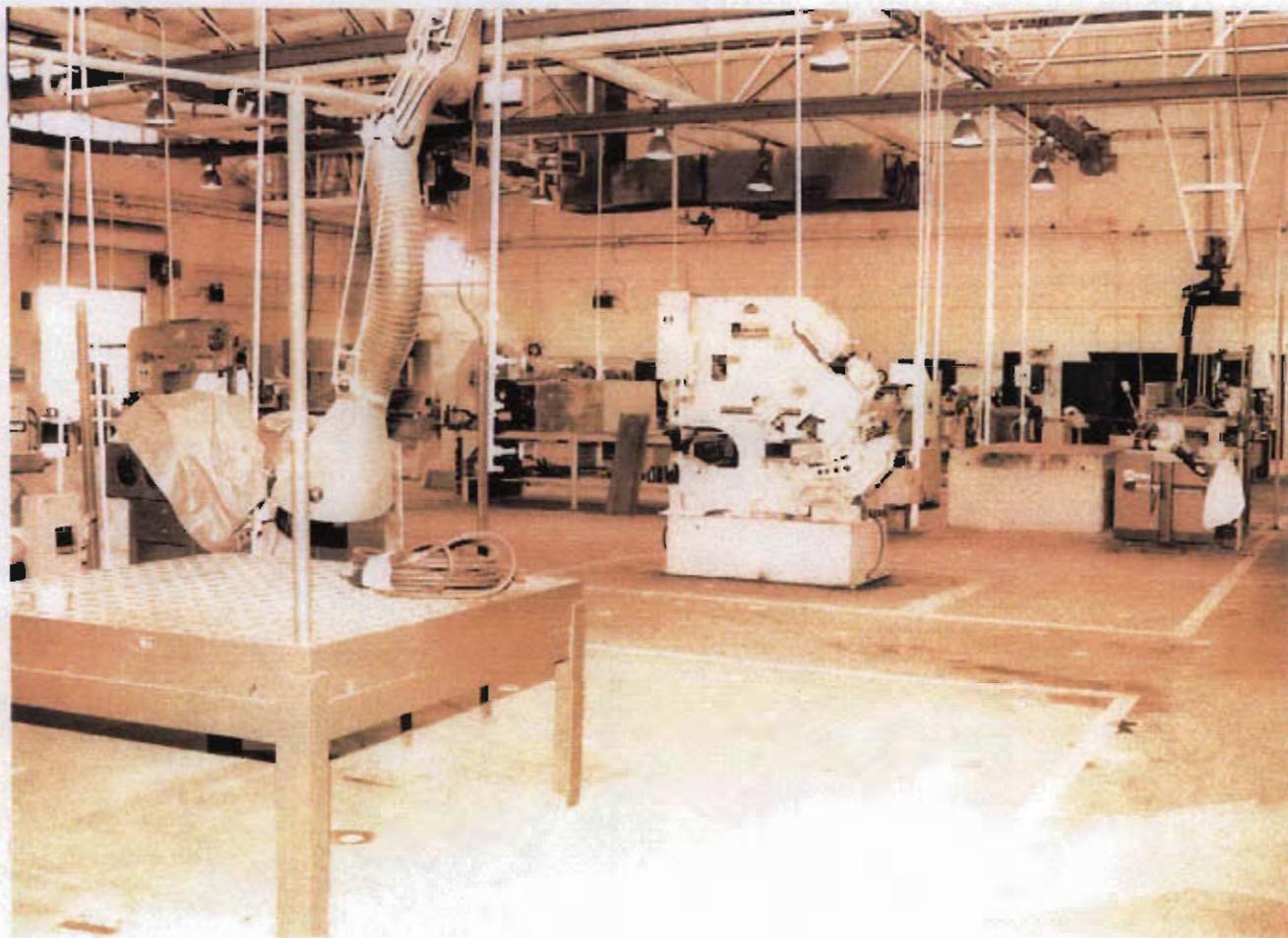


NDT Lab

NAVBASE G-RAM FINAL REPORT

Section 14. Building NS-26

f. Photographs



Weld Bay Area.

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

a. Introduction:

Building NS-46 was constructed in 1959. It is located on West Osprey Street and Kite Avenue.

(1) Description:

Building NS-46 is a two story brick facility that covers 82,840 square feet.

(2) Brief History:

(a) **Use:** Prior to the construction of the present Naval Exchange, a watch repair shop was located in a 9 foot by 15 foot office space in one wing of NS-46. This space is now occupied by the NAVSTA Chaplain.

(b) **Radiological History:** In April 1964 a spill was discovered during routine surveys of the watch repair shop. A swipe survey of the repair shop showed radioactivity on a work bench. The work bench was decontaminated and no other contamination was found. Since that spill occurred the watch repair shop has been renovated and the work bench removed.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the Chaplain's office was divided into a total of one grid with a maximum size of 20' by 20'. This grid was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in the Chaplain's office were determined from similar materials in the southwest wing of NS-46 Commander's Office.

c. **Summary:**

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than 9 pCi/100 cm² and removable Th-232 levels were less than 90 pCi/100 cm². The removable Ra-226 levels were less than 0.65 pCi/100 cm² and removable Th-232 levels were less than 0.65 pCi/100 cm².

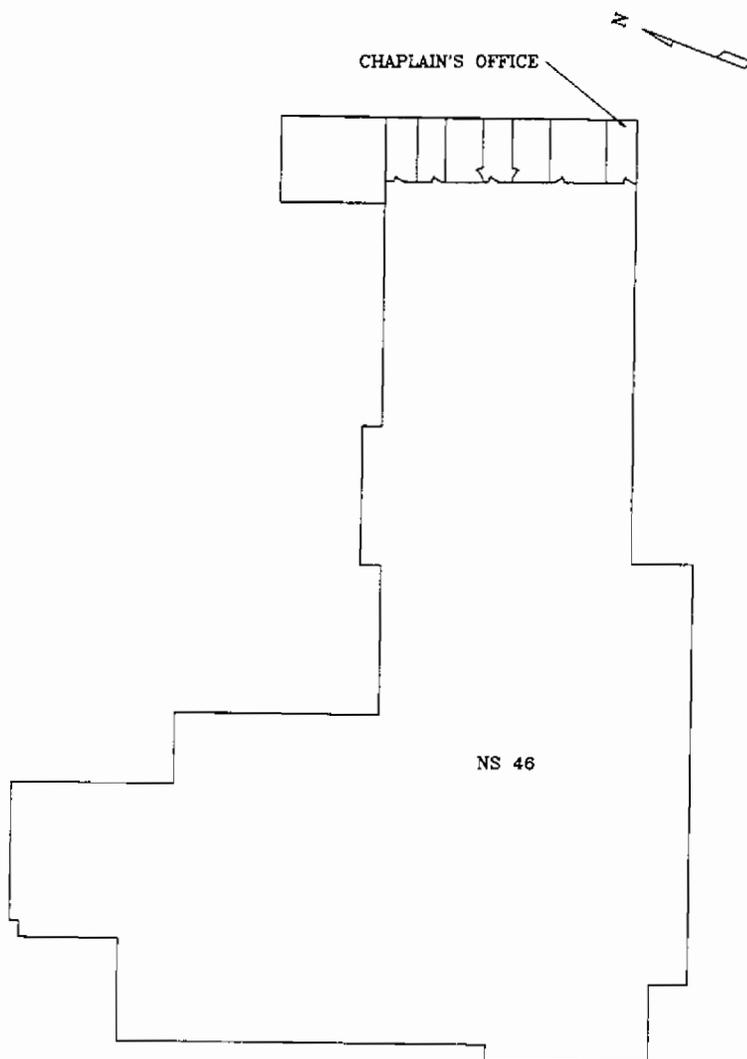
Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than 5 pCi/g above background. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.54 pCi/g to a high of less than 0.89 pCi/g and Th-232 solid material samples ranged from a low of less than 1.00 pCi/g to a high of less than 1.70 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 5.10 pCi/100 cm² to a high of less than 7.50 pCi/100 cm² and the Th-232 levels ranged from a low of less than 9.00 pCi/100 cm² to a high of less than 14.00 pCi/100 cm².

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

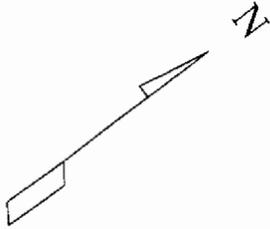
d. Site Map



NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

e. Overall Grid Map



1

II	VI	X	XIV
I	V	IX	XIII

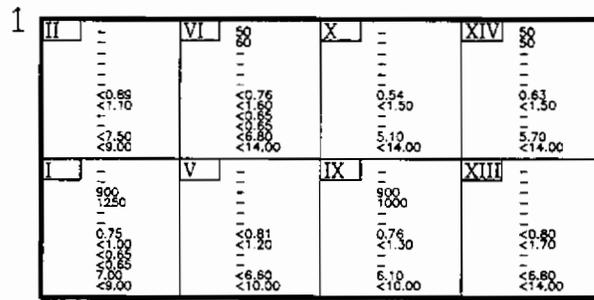
A

BLDG NS-46
CHAPLAIN'S OFFICE
GRID PLAN

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

e. Localized Grid Map



A

Floor

Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

Data Legend:

- 1 - IM-247/PD [bkg.]
- 2 - IM-247/PD [cpm]
- 3 - IM-253/PD (HV-1 PHA) [bkg.]
- 4 - IM-253/PD (HV-1 PHA) [cpm]
- 5 - IM-253/PD (HV-2 GROSS) [bkg.]
- 6 - IM-253/PD (HV-2 GROSS) [cpm]

- 7 - Ra-228 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
- 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
- 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

f. Photographs



In Chaplain's Office; looking out

NAVBASE G-RAM FINAL REPORT

Section 15. Building NS-46; Chaplain's Office

f. Photographs



In doorway of Chaplain's Office; looking in

NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

a. Introduction:

Constructed in 1942, NSC-66 has always been used to store ship and electrical parts. There is no other known use of this facility. This warehouse is located along Avenue D, west of Building 234.

(1) Description:

This 77,990 square-foot facility consists of a concrete slab floor with concrete block walls and a wood roof constructed over a metal frame.

(2) Brief History:

(a) **Use:** Building NSC-66 had two areas that received a G-RAM release survey. A storage cage, located in the north end of the building, was used to house RADIACs and associated response sources. A storage area, also located in the north end of the building, was used to store electron tubes.

(b) **Radiological History:** There is no documentation of any loss of control of G-RAM regulated radioactive material.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floors of the storage cage and storage area were divided into a total of three grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

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Section 16. Building NSC-66

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in these specific sites were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in Building NSC-66 were determined from similar materials in Building NSC-64.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

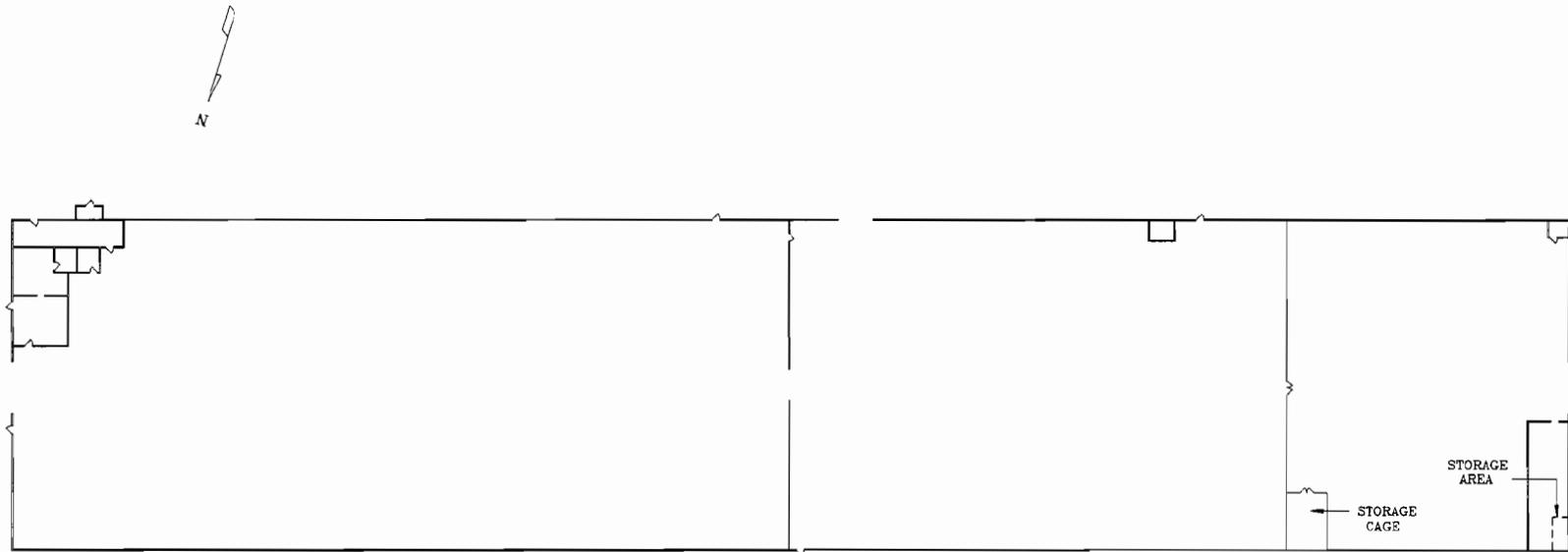
Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.67 pCi/100 cm² to a high of less than 0.94 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of less than 0.46 pCi/g to a high of less than 0.50 pCi/g and Th-232 solid material samples indicated less than 1.20 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of less than 4.50 pCi/100 cm² to a high of less than 4.80 pCi/100 cm² and the Th-232 levels indicated less than 12.00 pCi/100 cm².

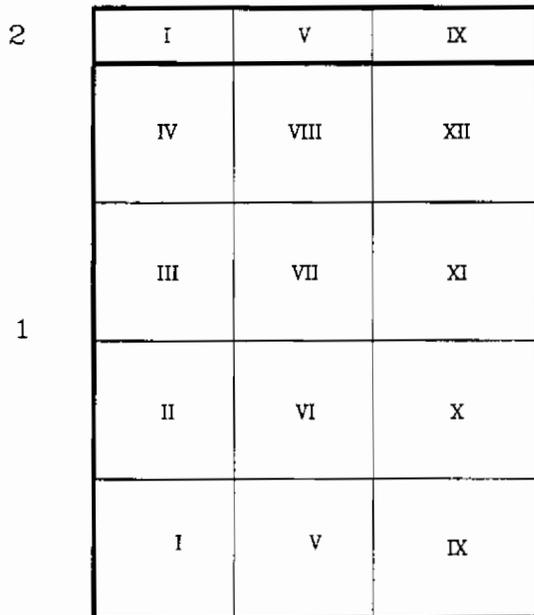
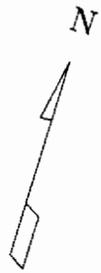
d. Site Map



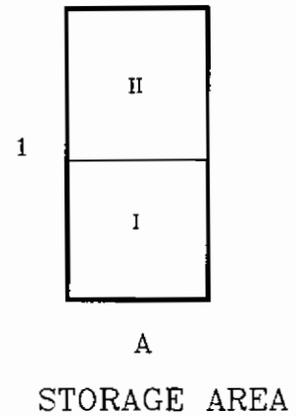
NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

e. Overall Grid Map



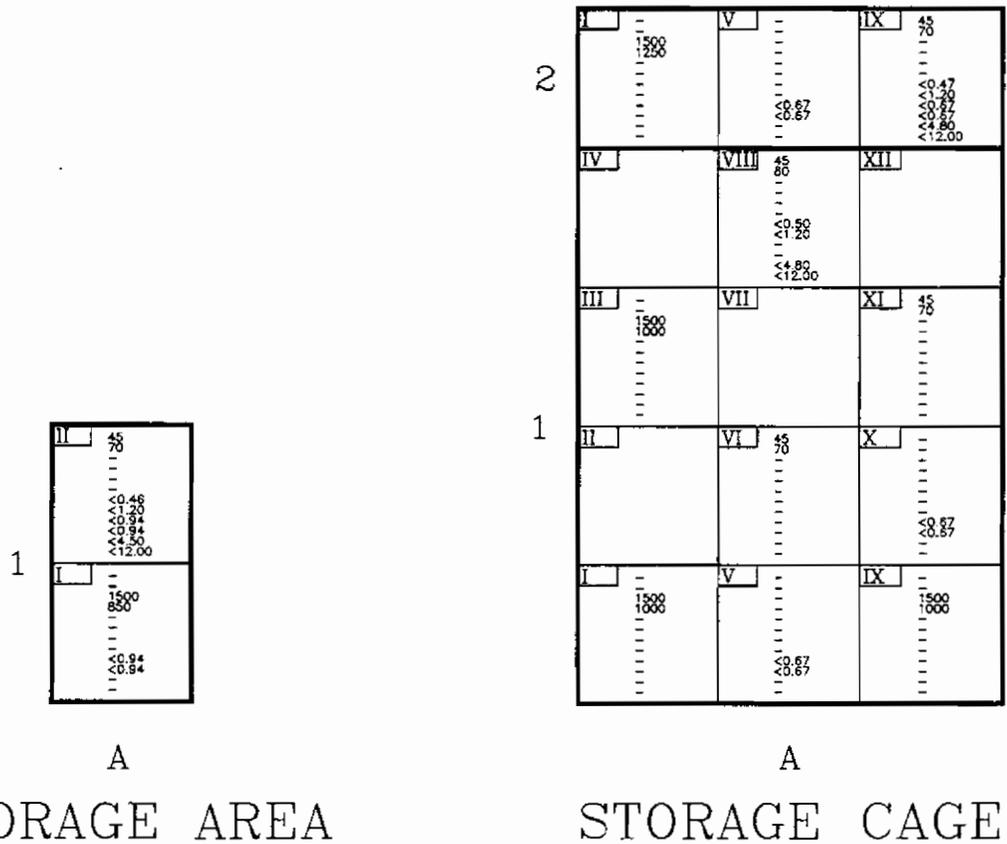
A
STORAGE CAGE



NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

e. Localized Grid Map



Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

- Data Legend:
- | | |
|-----------------------------------|--|
| 1 - IM-247/PD [bkg.] | 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g |
| 2 - IM-247/PD [cpm] | 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g |
| 3 - IM-253/PD (HV-1 PHA) [bkg.] | 9 - Ra-226 Removable Radioactivity [pCi/100cm ²]; Regulator value: <9 |
| 4 - IM-253/PD (HV-1 PHA) [cpm] | 10 - Th-232 Removable Radioactivity [pCi/100cm ²]; Regulator value: <90 |
| 5 - IM-253/PD (HV-2 GROSS) [bkg.] | 11 - Ra-226 Surface Radioactivity [pCi/100cm ²]; Regulator value: <45 |
| 6 - IM-253/PD (HV-2 GROSS) [cpm] | 12 - Th-232 Surface Radioactivity [pCi/100cm ²]; Regulator value: <450 |

NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

f. Photographs



NSC-66 Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

f. Photographs



NSC-66 Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 16. Building NSC-66

f. Photographs



NSC-66 Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

a. Introduction:

Constructed in 1942, NSC-67 has always been utilized as a warehouse. There has been no other documented use made of this facility. This warehouse is located adjacent to Avenue D, north of Second Street West.

(1) Description:

Building NSC-67 has a concrete slab floor with sheet metal sides and a wooden roof constructed over a metal frame. The building comprises 82,650 square feet of floor space.

(2) Brief History:

(a) **Use:** NSC-67 was used for storage of ship and submarine parts, along with paper products. Building NSC-67 had two specific areas that received a G-RAM survey. Those areas consist of a cage located in the southwest corner that housed a fifty-five gallon drum where G-RAM material was stored prior to disposal, and a storage area located in the southeast sector. The shed attaching buildings NSC-66 and NSC-67 was used for a Shipping and Receiving area where G-RAM material was temporarily stored. G-RAM materials such as electron tubes were stored here prior to final disposition.

(b) **Radiological History:** Radiological history indicates that no known spills of radioactivity occurred and no contamination above the limit has been detected.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of Building NSC-67 storage cage, storage area, and the Shipping/Receiving Area was divided into a total of 26 grids with a maximum size of 20' by 20'. Each of these grids was subdivided into sub-grids with an approximate size of 5' by 5'.

Each grid and sub-grid was identified with its own unique designator.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

each grid.

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from each grid. The solid material samples were removed from the grid locations having the highest potential for radioactivity.

Background levels used in NSC 66/67 Warehouse and NSC 66/67 Shipping and Receiving area were determined from similar materials in Building NSC 64.

c. **Summary:**

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels ranged from a low of less than 0.67 pCi/100 cm² to a high of 1.51 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated that all Ra-226 and Th-232 solid material samples were less than the limit of 5 pCi/g. MCA analysis performed on Ra-226 solid material samples ranged from a low of 0.50 pCi/g to a high of 1.35 pCi/g and Th-232 solid material samples ranged from a low of less than 0.98 pCi/g to a high of less than 1.80 pCi/g.

Mathematical computation of the specific radioactivity of the solid material samples confirmed that the surface radioactivity of Ra-226 was less than the limit of 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less

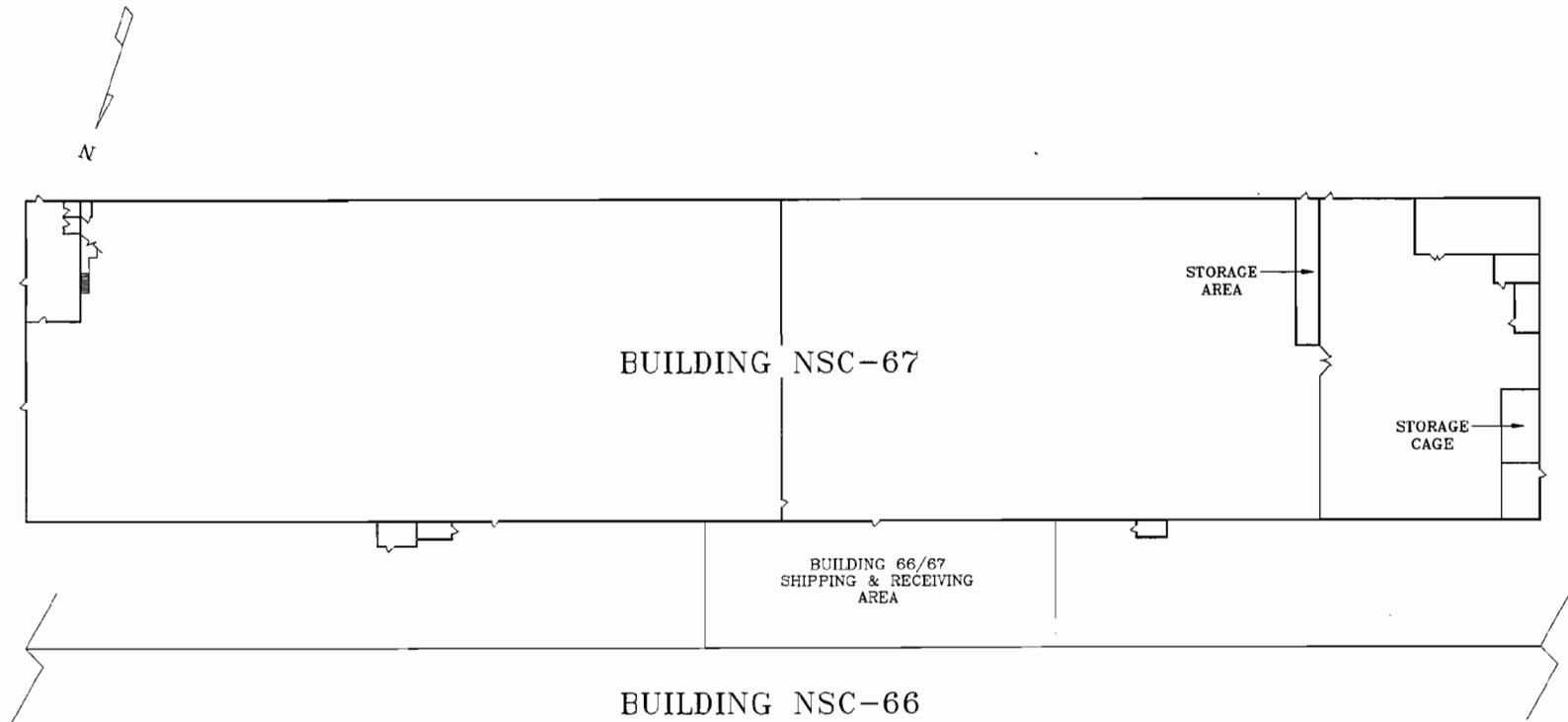
NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

than the limit of 450 pCi/100 cm². The mathematically computed Ra-226 levels ranged from a low of 5.00 pCi/100 cm² to a high of 14.40 pCi/100 cm² and the Th-232 levels ranged from a low of less than 10.00 pCi/100 cm² to a high of less than 16.00 pCi/100 cm².

Section 17. Building NSC-67

d. Site Map



Section 17. Building NSC-67

e. Overall Grid Map



		II	VI	X	XIV																				
3		I	V	IX	XIII																				
		IV	VIII	XII	XVI																				
	2	III	VII	XI	XV																				
		II	VI	X	XIV																				
		I	V	IX	XIII																				
		IV	VIII	XII	XVI																				
		III	VII	XI	XV																				
1		II	VI	X	XIV																				
		I	V	IX	XIII																				
		A		B		C		D		E		F		G											

SHIPPING AND RECEIVING AREA

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

e. Overall Grid Map



	IV	VIII
	III	VII
3	II	VI
	I	V
	IV	VIII
	III	VII
2	II	VI
	I	V
	IV	VIII
	III	VII
1	II	VI
	I	V

A

STORAGE AREA

	II	VI	X
2	I	V	IX
	IV	VIII	XII
	III	VII	XI
1	II	VI	X
	I	V	IX

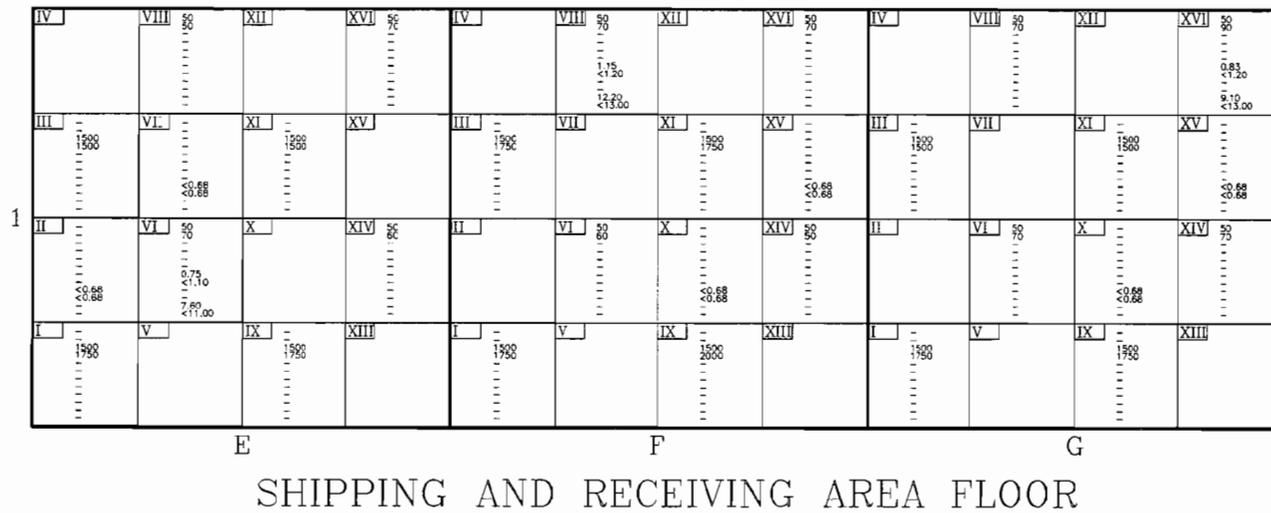
A

STORAGE CAGE

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

e. Localized Grid Map



Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

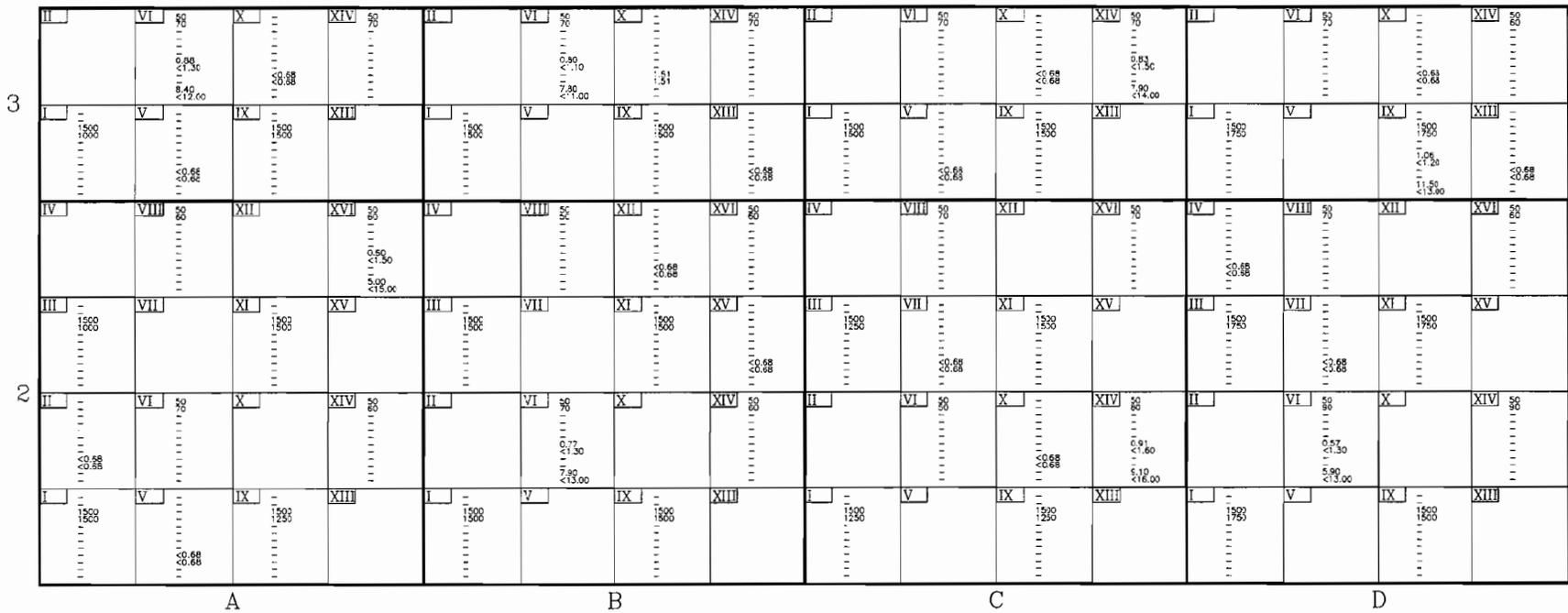
Data Legend:
 1 - M-247/P3 [bkg]
 2 - M-247/P3 [cpm]
 3 - M-253/P3 (W-1 PHA) [bkg]
 4 - M-253/P3 (W-1 PHA) [cpm]
 5 - M-253/P3 (W-2 PROS) [bkg]
 6 - M-253/P3 (W-2 PROS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

e. Localized Grid Map



SHIPPING AND RECEIVING AREA FLOOR

Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

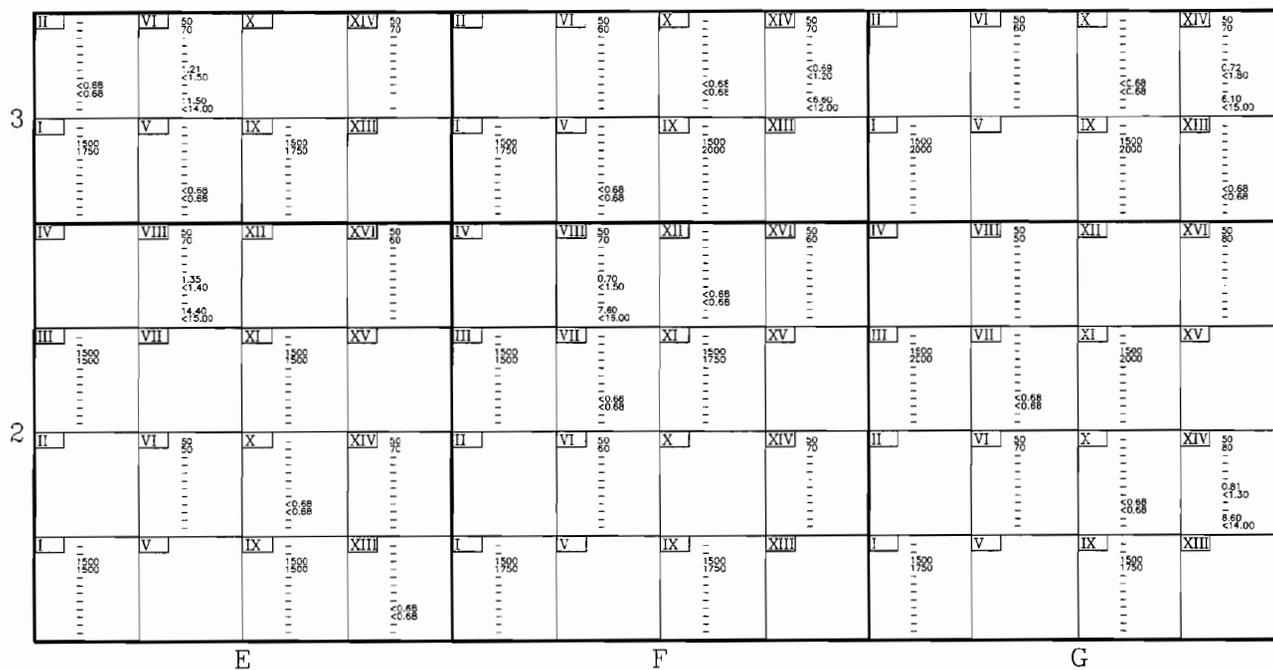
Data Legend:
 1 - M-247/P2 [Bq]
 2 - M-247/P3 [cpm]
 3 - M-253/P2 (W-1 PHA) [Bq]
 4 - M-253/P3 (W-1 PHA) [cpm]
 5 - M-253/P3 (W-2 GROSS) [Bq]
 6 - M-253/P3 (W-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [$\mu\text{Ci/g}$]; Regulator value: <math><5</math> above bkg. of 2.3 $\mu\text{Ci/g}</math>
 8 - Th-232 Solid Sample Radioactivity [$\mu\text{Ci/g}$]; Regulator value: <math><5</math> above bkg. of 3.2 $\mu\text{Ci/g}</math>
 9 - Ra-226 Removable Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]; Regulator value: <math><5</math>
 10 - Th-232 Removable Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]; Regulator value: <math><50</math>
 11 - Ra-226 Surface Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]; Regulator value: <math><45</math>
 12 - Th-232 Surface Radioactivity [$\mu\text{Ci}/100\text{cm}^2$]; Regulator value: <math><450</math>$$

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

e. Localized Grid Map



SHIPPING AND RECEIVING AREA FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:

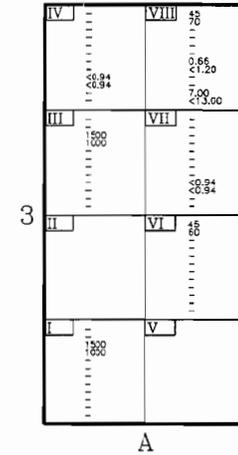
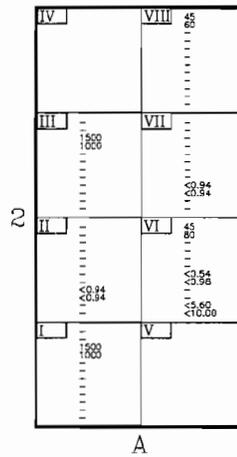
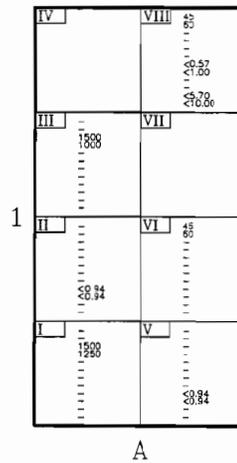
- 1 - W-247/Pb [bkg.]
- 2 - W-247/Pb [cpm]
- 3 - W-253/Pb (H-1 PHA) [bkg.]
- 4 - W-253/Pb (H-1 PHA) [cpm]
- 5 - W-253/Pb (H-2 GROSS) [bkg.]
- 6 - W-253/Pb (H-2 GROSS) [cpm]

- 7 - Re-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <math><5</math> above bkg. of 2.3 pCi/g
- 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <math><5</math> above bkg. of 3.2 pCi/g
- 9 - Re-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <math><9</math>
- 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <math><90</math>
- 11 - Re-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <math><45</math>
- 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <math><450</math>

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

e. Localized Grid Map



STORAGE AREA FLOOR

Note:
Entries 5 and 6 are not required for Class 'A' Localized
Grid Map pages. See the Discussion paragraph.

Data Legend:
1 - M-247/P3 [bkg.]
2 - M-247/P3 [cpm]
3 - M-253/P3 (H-1 PHA) [bkg.]
4 - M-253/P3 (H-1 PHA) [cpm]
5 - M-253/P3 (H-2 GROSS) [bkg.]
6 - M-253/P3 (H-2 GROSS) [cpm]

7 - Ra-226 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 2.3 pCi/g
8 - Th-232 Solid Sample Radioactivity [pCi/g]. Regulator value: <5 above bkg. of 3.2 pCi/g
9 - Ra-226 Removable Radioactivity [pCi/100cm²]. Regulator value: <9
10 - Th-232 Removable Radioactivity [pCi/100cm²]. Regulator value: <90
11 - Ra-226 Surface Radioactivity [pCi/100cm²]. Regulator value: <45
12 - Th-232 Surface Radioactivity [pCi/100cm²]. Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

f. Photographs



Shipping And Receiving Area

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

f. Photographs



Storage Area

NAVBASE G-RAM FINAL REPORT

Section 17. Building NSC-67

f. Photographs



Storage Cage

NAVBASE G-RAM FINAL REPORT

Section 18. Building X-10

a. Introduction:

Building X-10, located on Hobson Avenue, across from Pier N, was constructed in 1943.

(1) Description:

Building X-10 is comprised of 24,735 square feet of floor space. It is a one-story concrete block structure on a concrete slab with wood bow-string trusses and built up gravel and asphalt shingle roof.

(2) Brief History:

(a) **Use:** The building was divided in half with the northern part serving as the MWR vehicle maintenance shop and the southern part serving as a general warehouse supporting submarines. Both areas have been used in their present capacity since construction.

(b) **Radiological History:** This building had a Material Storage Cage located in the southeast section where sealed radioactive sources and RADIAC's were stored. In addition, an area was used for storage of a Portable Effluent Tank (PET) in 1982 during a hurricane. The PET storage area was surveyed and released for unrestricted use by the USS FRANK CABLE (AS-40) in 1994.

(3) Survey Requirements:

(a) Class A release survey.

b. Discussion:

The floor of the Material Storage Cage in Building X-10 consisted of one grid with a maximum size of 20' by 20'. This grid was subdivided into approximately 5' by 5' sub-grids. The size and configuration of this area only allowed for 12 sub-grids.

This grid and sub-grids were identified with unique designators.

A beta-gamma scan survey with the IM-247/PD was performed over at least 25% of the sub-grids in each grid.

A narrow gamma energy range scintillation scan survey with the IM-253/PD (PHA mode) was performed over at least 25% of the remaining sub-grids in each grid.

NAVBASE G-RAM FINAL REPORT

Section 18. Building X-10

A wide gamma energy range scintillation walk-through scan survey with the IM-253/PD (GROSS mode) was performed over the specific site. The walk-through survey is not grid specific therefore entries five and six are not used on the Class "A" localized grid maps. The survey results are reported in the Summary paragraph.

A minimum of two swipes/smears were taken from each grid.

A minimum of 10% of accessible cracks and crevices in the specific site were surveyed via swab surveys.

A minimum of one solid material sample was taken from the grid. The solid material sample was removed from the grid location having the highest potential for radioactivity.

Background levels used in the Building X-10 Material Storage Cage were determined from similar materials in Building 672.

c. Summary:

Surveys performed with the IM-247/PD did not detect any areas having surface radioactivity greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-1 PHA) did not detect areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

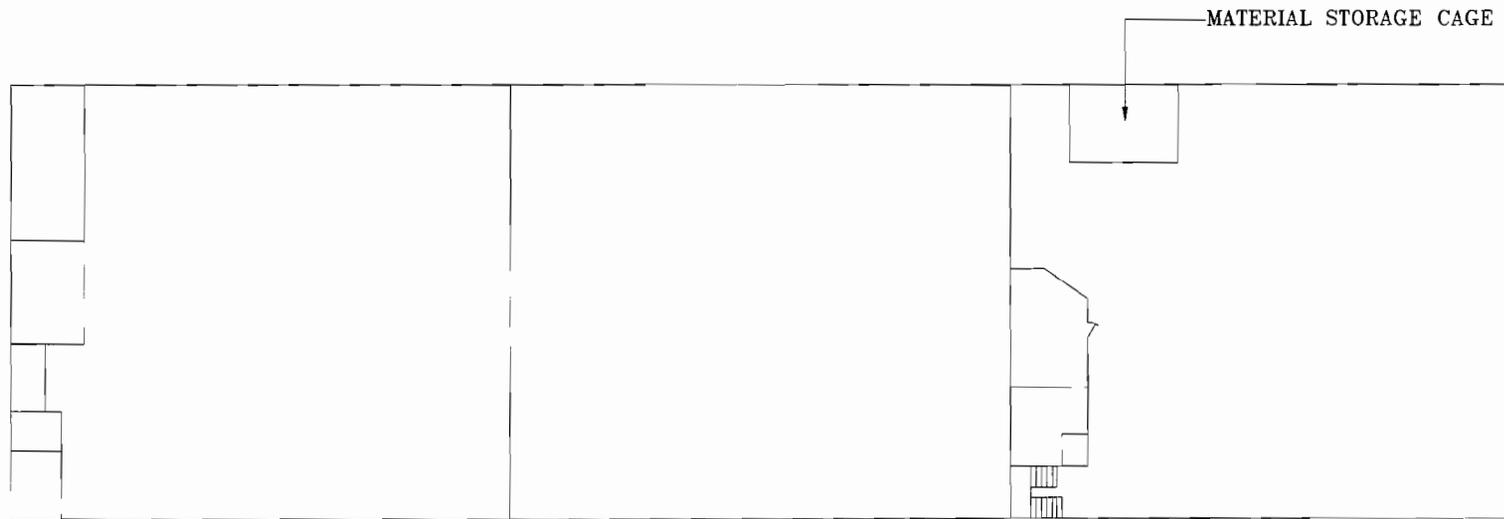
Analysis of swipes/smears and swab surveys with the alpha/beta analyzer indicated that removable Ra-226 levels were less than the limit of 9 pCi/100 cm² and removable Th-232 levels were less than the limit of 90 pCi/100 cm². The removable Ra-226 and Th-232 levels indicated less than 0.65 pCi/100 cm².

Analysis performed on solid material samples with the multi-channel analyzer (MCA) indicated Ra-226 and Th-232 levels were less than the limit of 5 pCi/g. MCA analysis performed for Ra-226 indicated 0.71 pCi/g and for Th-232 indicated less than 1.30 pCi/g.

Mathematical computation of the specific radioactivity of the solid material sample confirmed that the surface radioactivity of Ra-226 was less than the limit 45 pCi/100 cm², and that the surface radioactivity of Th-232 was less than the limit 450 pCi/100 cm². The mathematically computed Ra-226 levels indicated 6.40 pCi/100 cm² and the Th-232 levels indicated less than 12.00 pCi/100 cm².

Section 18. Building X-10

d. Site Map

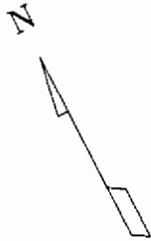


FIRST FLOOR

NAVBASE G-RAM FINAL REPORT

Section 18. Building X-10

e. Overall Grid Map



1

III	VII	XI	XV
II	VI	X	XIV
I	V	IX	XIII

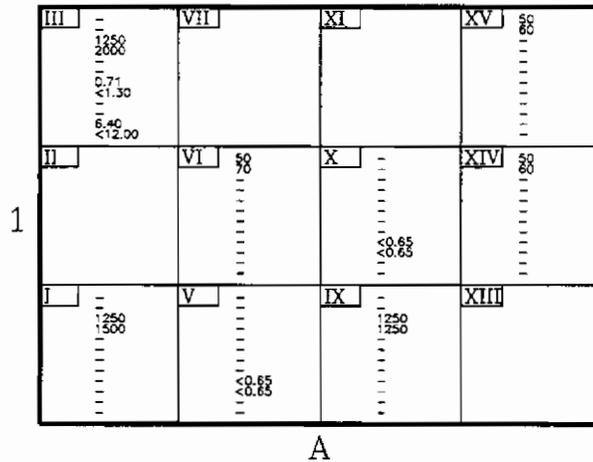
A

MATERIAL STORAGE CAGE
FLOOR

NAVBASE G-RAM FINAL REPORT

Section 18. Building X-10

e. Localized Grid Map



MATERIAL STORAGE CAGE FLOOR

Note:
 Entries 5 and 6 are not required for Class 'A' Localized
 Grid Map pages. See the Discussion paragraph.

- Data Legend:
- 1 - IM-247/PD [bkg.]
 - 2 - IM-247/PD [cpm]
 - 3 - IM-253/PD (HV-1 PHA) [bkg.]
 - 4 - IM-253/PD (HV-1 PHA) [cpm]
 - 5 - IM-253/PD (HV-2 GROSS) [bkg.]
 - 6 - IM-253/PD (HV-2 GROSS) [cpm]
 - 7 - Ra-226 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 2.3 pCi/g
 - 8 - Th-232 Solid Sample Radioactivity [pCi/g]; Regulator value: <5 above bkg. of 3.2 pCi/g
 - 9 - Ra-226 Removable Radioactivity [pCi/100cm²]; Regulator value: <9
 - 10 - Th-232 Removable Radioactivity [pCi/100cm²]; Regulator value: <90
 - 11 - Ra-226 Surface Radioactivity [pCi/100cm²]; Regulator value: <45
 - 12 - Th-232 Surface Radioactivity [pCi/100cm²]; Regulator value: <450

NAVBASE G-RAM FINAL REPORT

Section 18. Building X-10

f. Photograph



Material Storage Cage