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NAVAL NUCLEAR PROPULSION PROGRAM (NNPP) RADIOLOGICAL FINAL REPORT FOR DECOMMISSIONING VOLUME II SECTION G THRU SECTION I CNC CHARLESTON SC
4/1/1996
RADIOLOGICAL ENGINEERING DIVISION

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Volume 18

Asbestos-Containing Material Re-inspection For Building 1623 Charleston Naval Shipyard Charleston, South Carolina

Contract No. N2467-96-D-0998
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Prepared for:

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February 15, 2000

NAVAL NUCLEAR PROPULSION PROGRAM (NNPP)

RADIOLOGICAL FINAL REPORT

FOR THE DECOMMISSIONING OF

CHARLESTON NAVAL SHIPYARD

(VOLUME II)

SECTION G
THRU
SECTION I

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

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1. Pier A

a. Introduction:

Pier A is located in grid F-3 of the Charleston Naval Shipyard map (Figure 9 of Vol. II A.) and was constructed in 1943. Pier A is also identified as structure 321.

(1) Description:

Structure 321 is 866 feet long, oriented south into the Cooper River. The shape of Pier A is curved and it initially extends northeast, before turning to the south. Wood pilings support its wooded plank surface with wooded rails. Where the pier curves, round concrete pilings support its paved concrete surface. Portable crane railing extends the length of the pier.

(2) Brief History:

(a) **Use:** This structure was constructed as part of the U.S. naval shore establishment expansion programs implemented prior to and during World War II. In 1939, the shipyard became responsible for maintaining destroyers which were assigned to the Atlantic Fleet.

Later, prepackaged shipments of low level radioactive waste from submarine tenders deployed overseas were routinely handled on the pier.

(b) **Radiological History:** Areas on the pier have been controlled as radiation areas and radioactive material storage areas. Loose surface contamination surveys performed on material packaging prior to unloading have found loose surface contamination levels in the thousands of micro micro curies per one hundred centimeters squared. This material packaging was always decontaminated prior to unloading. However, on at least one occasion loose surface contamination was not identified until the material was transferred to the radioactive material storage facility at Building 101. Spread of contamination to the surfaces of the pier did not occur due to these occurrences.

(3) Survey Requirements:

(a) Nuclear Ship Berthing Area surveys. Group 2 surveys were performed on the pier and extended forty feet beyond the foot of the pier.

1. Pier A

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Each grid contained two, 3' by 3' subsections located in areas of highest potential for contamination. One subsection was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Additionally, solid material samples were taken from a minimum of 50% of the 10' by 10' grids and each 3' by 3' subsection that resulted in greater than 450μμCi/probe using the IM-247/PD or greater than twice background using the IM-253/PD (HV-1 PHA). The following naturally occurring radionuclides were identified during isotopic analysis of solid material samples: lead 212, lead 214, and potassium 40.

Pier A including the forty feet at the foot of the pier was divided into five-hundred and ten, 10' by 10' grids.

Surveys of the mooring extensions located at the north and south ends of the pier were not required because the transfer of radioactive material across these extensions did not occur on or over these structures.

Three different construction materials, providing different background radiation levels, were present in the areas surveyed on the pier and its land side approach. The approach to the pier is asphalt. The IM-247/PD and the IM-253/PD (HV-1 PHA) backgrounds used for the asphalt pours were 40 and 250 counts per minute respectively, based upon background radiation levels obtained from Pier U of the Charleston Naval Base. The section of the pier extending several hundred feet from the land side to the main section is of wood construction. The IM-247/PD and the IM-253/PD (HV-1 PHA) backgrounds used for the wooden areas were 40 and 75 counts per minute respectively, based upon background radiation levels obtained from the wood supports found in Building 246. The main section of the pier is constructed primarily of concrete. The IM-247/PD and the IM-253/PD (HV-1 PHA) backgrounds used for the concrete pours were 40 and 300 counts per minute respectively, based upon background radiation levels obtained from the Pier X parking area located on the Charleston Naval Base.

c. Summary:

Surveys performed with the IM-247/PD did not detect areas greater than 450μμCi/20cm^2.

1. Pier A

Surveys performed with the IM-253/PD (HV-1 PHA) detected 11 areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) were not required.

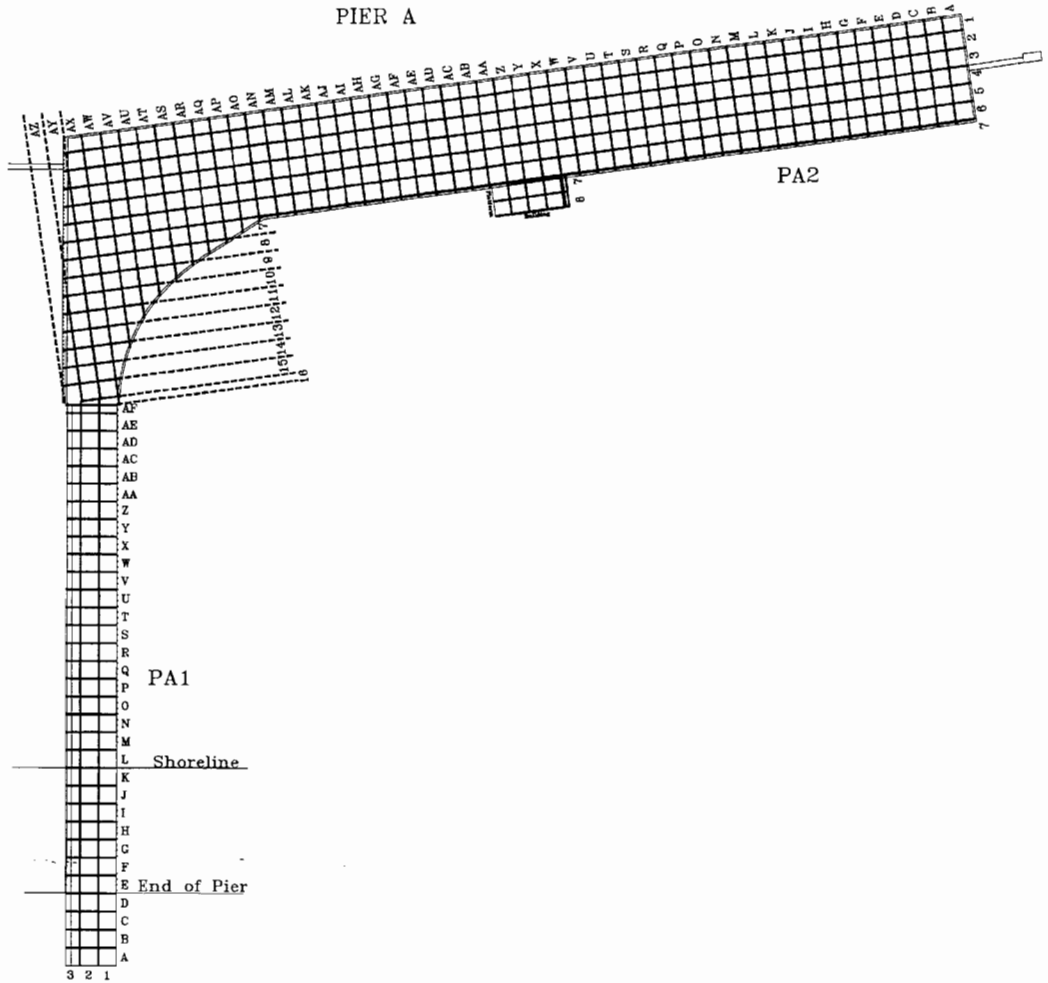
Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of 0.12 pCi/g to a high of 5.43 pCi/g with an average of 2.06 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60, indicated that all solid material samples were less than 1 pCi/g.

1. Pier A

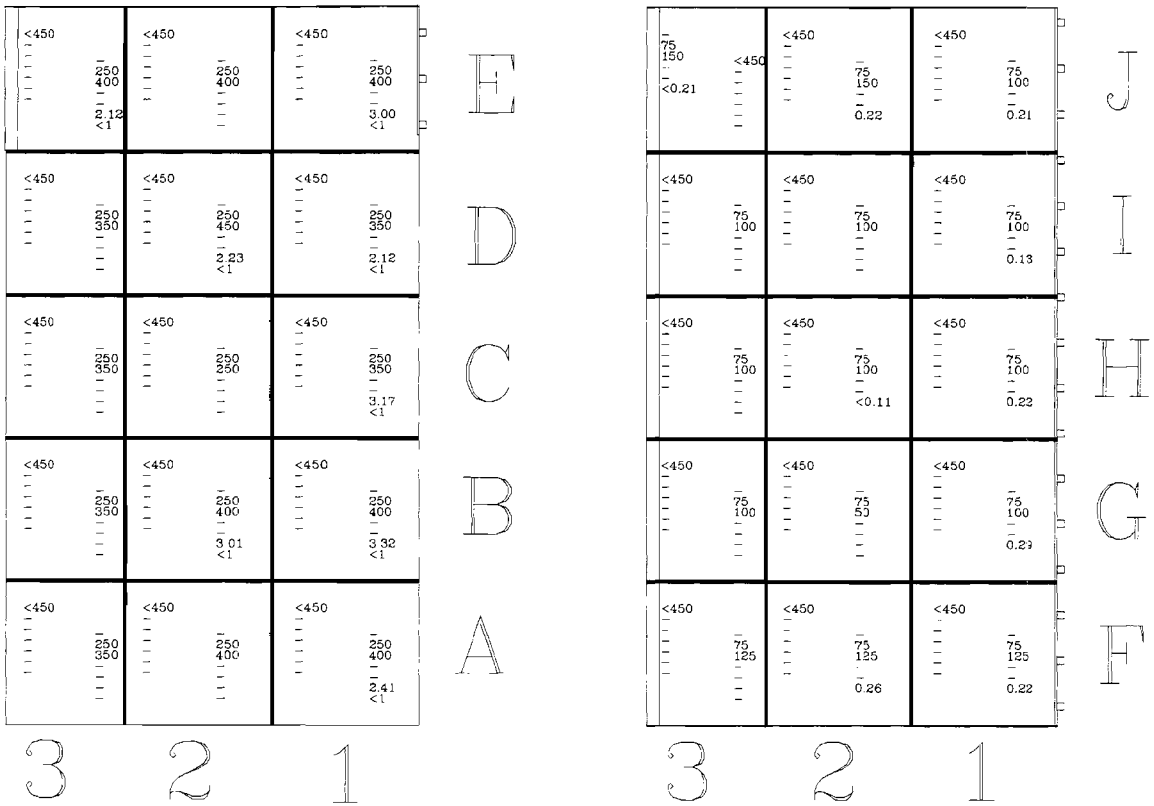
d. Overall Grid Map

SITE GRID MAP
PIER A



1. Pier A

e. Localized Grid Maps (PA1)

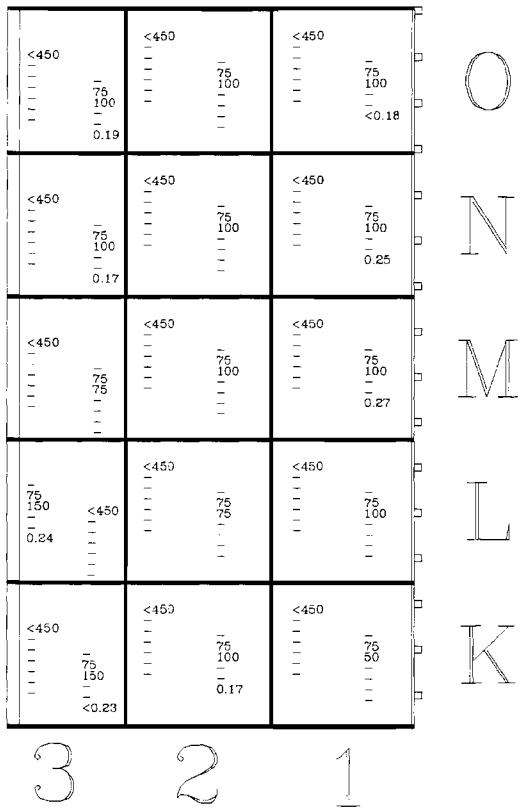


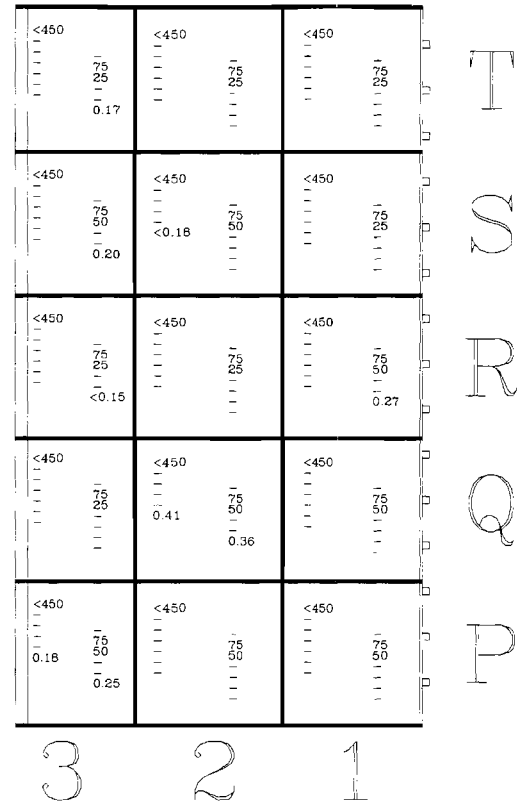
Sample Data

<450 – IM-247/PD Results [μμCi/2Ccm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA1)





Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
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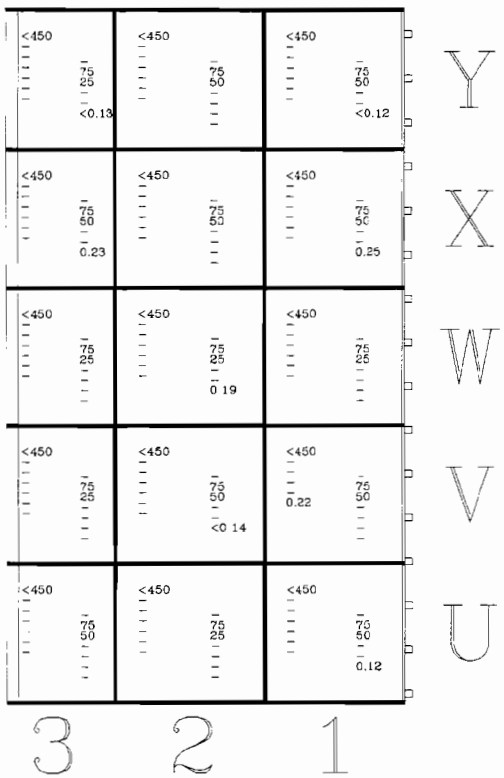
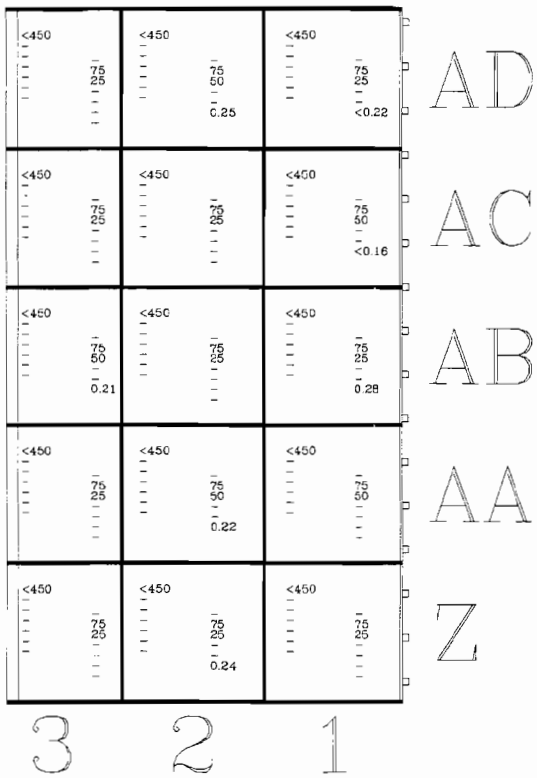
1. Pier A

e. Localized Grid Maps (PA1)





Sample Data

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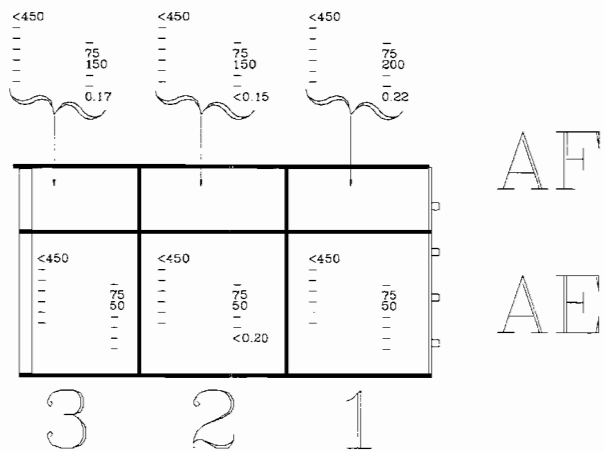
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA1)



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
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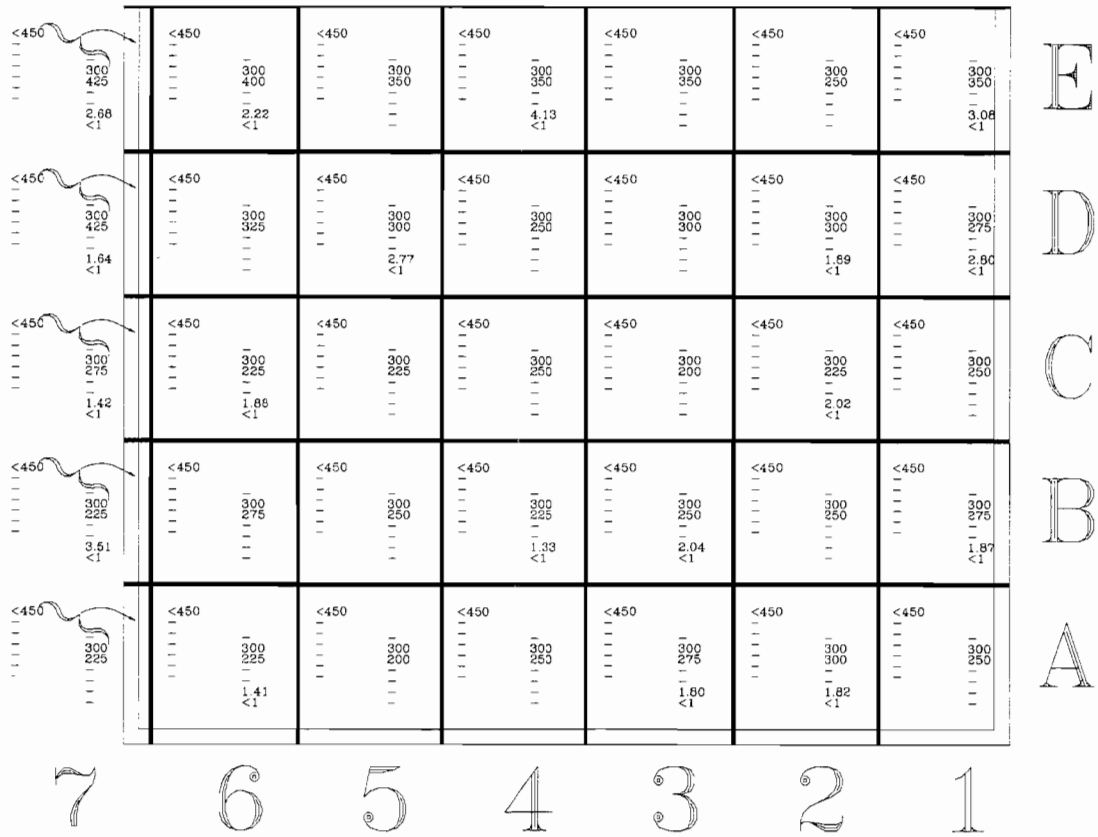
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. **Pier A**

   e. **Localized Grid Maps (PA2)**

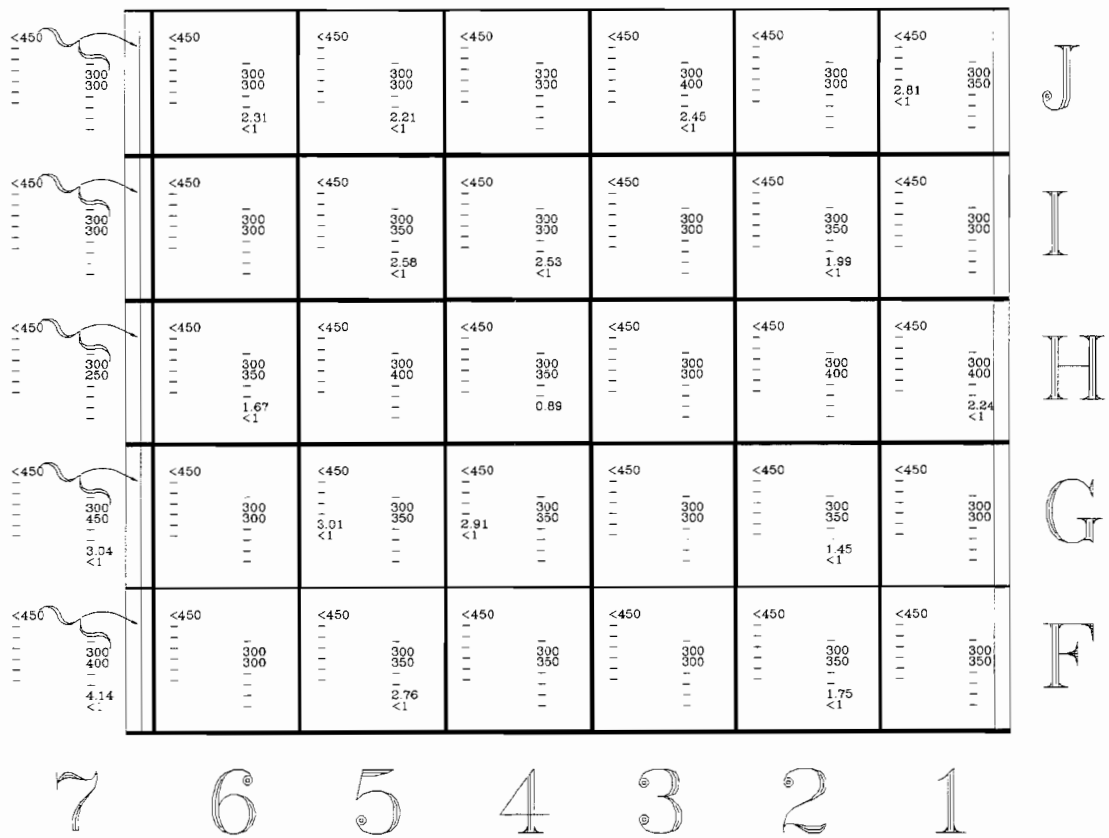


Sample Data

<450 – IM-247/PD Results [µµCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. **Pier A**

e. **Localized Grid Maps (PA2)**



Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)

	7	6	5	4	3	2	1
O	<450 – – – – – 300 350 – – 2.22 <1	<450 – – – – – 300 250 – – –	<450 – – – – – 300 300 – – 2.19 <1	<450 – – – – – 300 250 – – –	<450 – – – – – 300 250 – – 1.70 <1	<450 – – – – – 300 275 – – –	<450 – – – – – 300 300 – – 1.81 <1
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Sample Data

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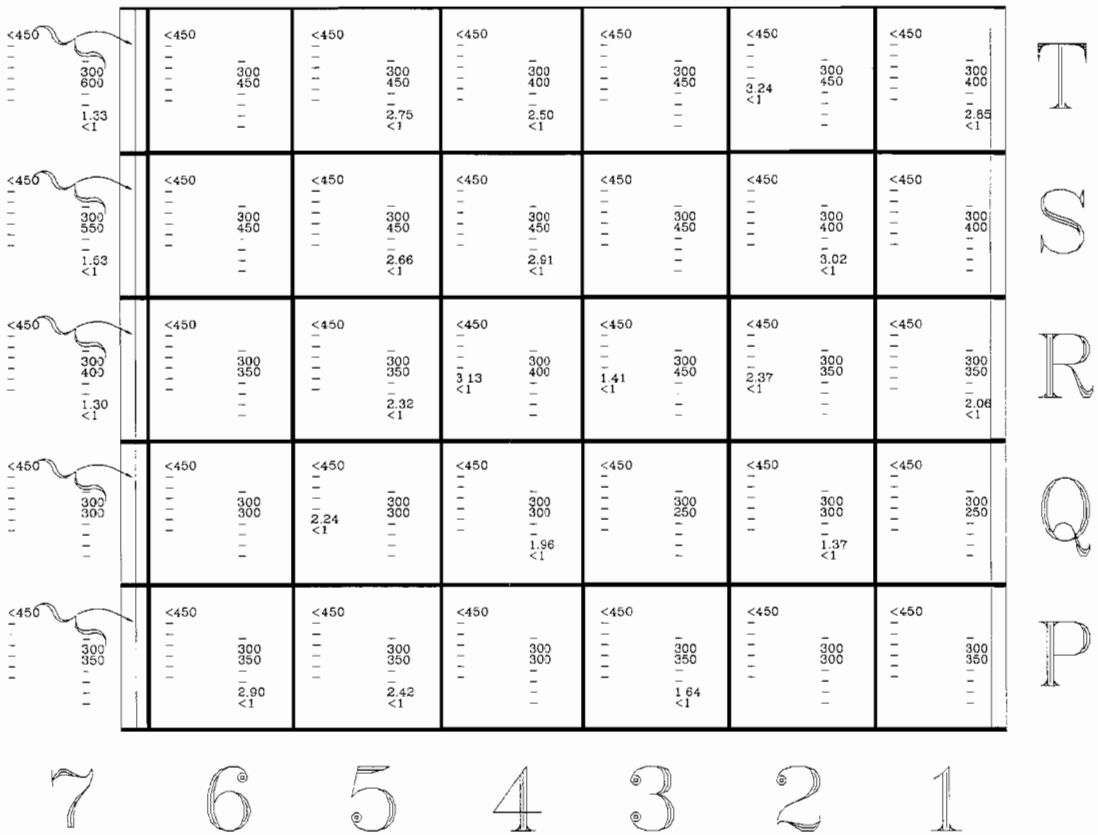
300 – IM-253/PD (HV-1 PHA) [cpm]
7300 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)



Sample Data

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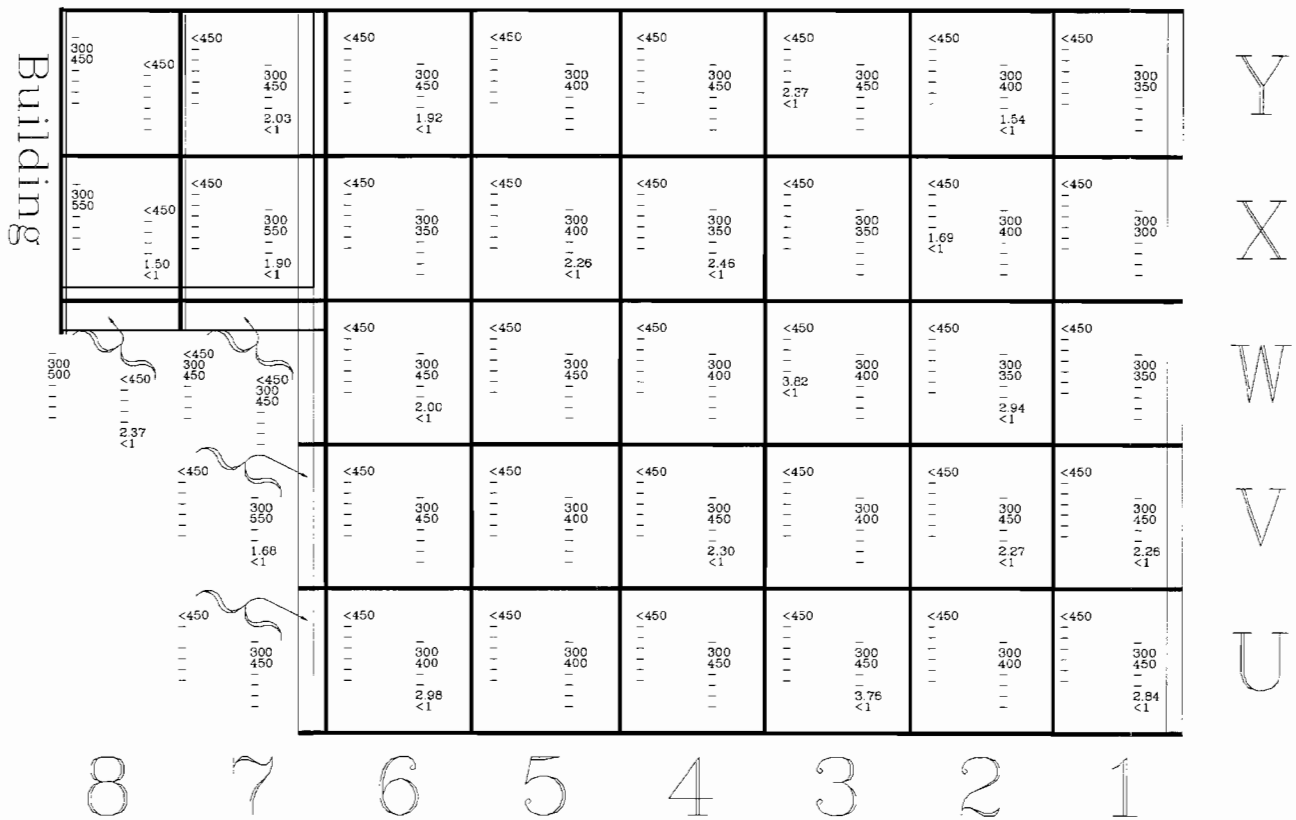
20C – IM-253/PD (HV-1 PHA) [bkg.]
30C – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)



Sample Data

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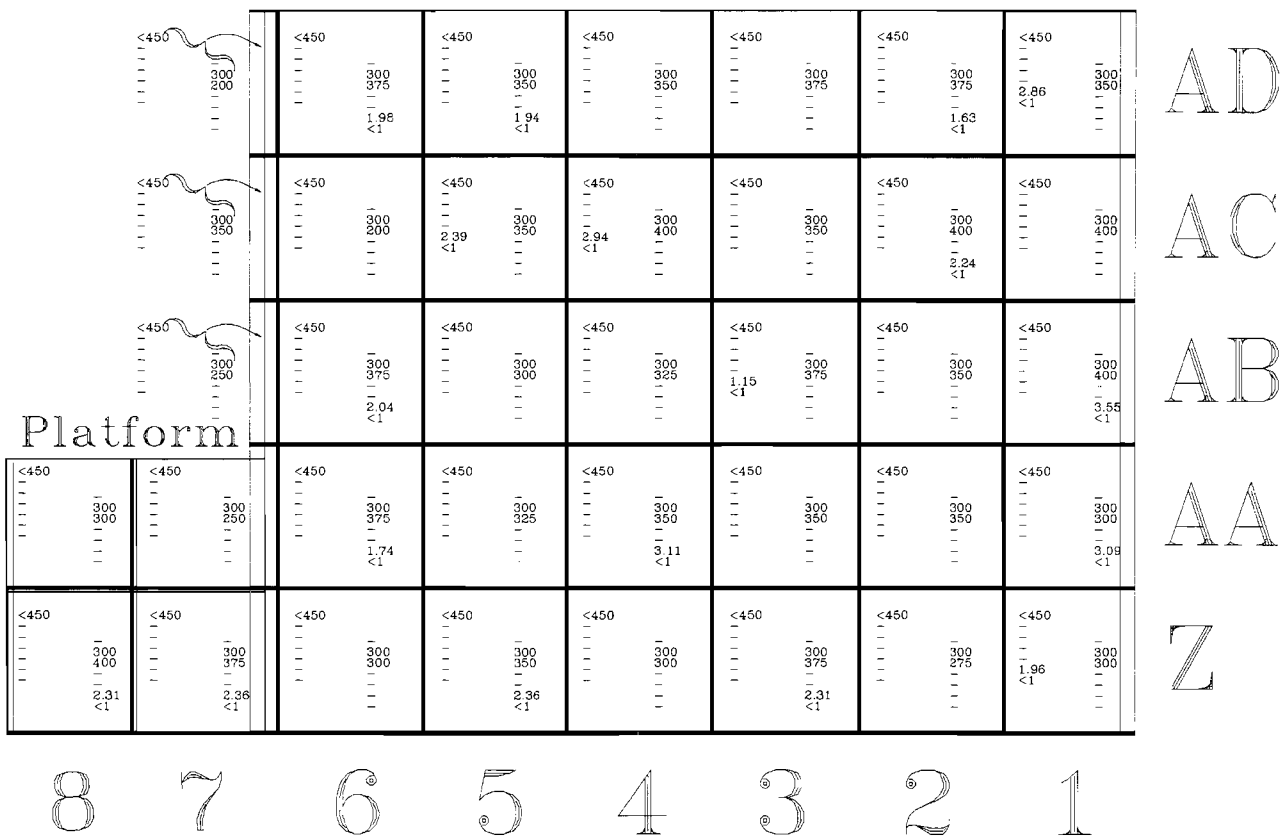
1. Pier A

e. Localized Grid Maps (PA2)



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<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)

	7	6	5	4	3	2	1
AI	<450 – – – – – – – 300 300 – – – – –	<450 – – – – – – – 300 400 – – – – 1.44 <1	<450 – – – – – – – 300 400 – – – – 2.73 <1	<450 – – – – – – – 300 400 – – – – –	<450 – – – – – – – 300 300 – – – – –	<450 – – – – – – – 300 350 – – – – 2.15 <1	<450 – – – – – – – 300 425 – – – – –
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Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)

	7	6	5	4	3	2	1
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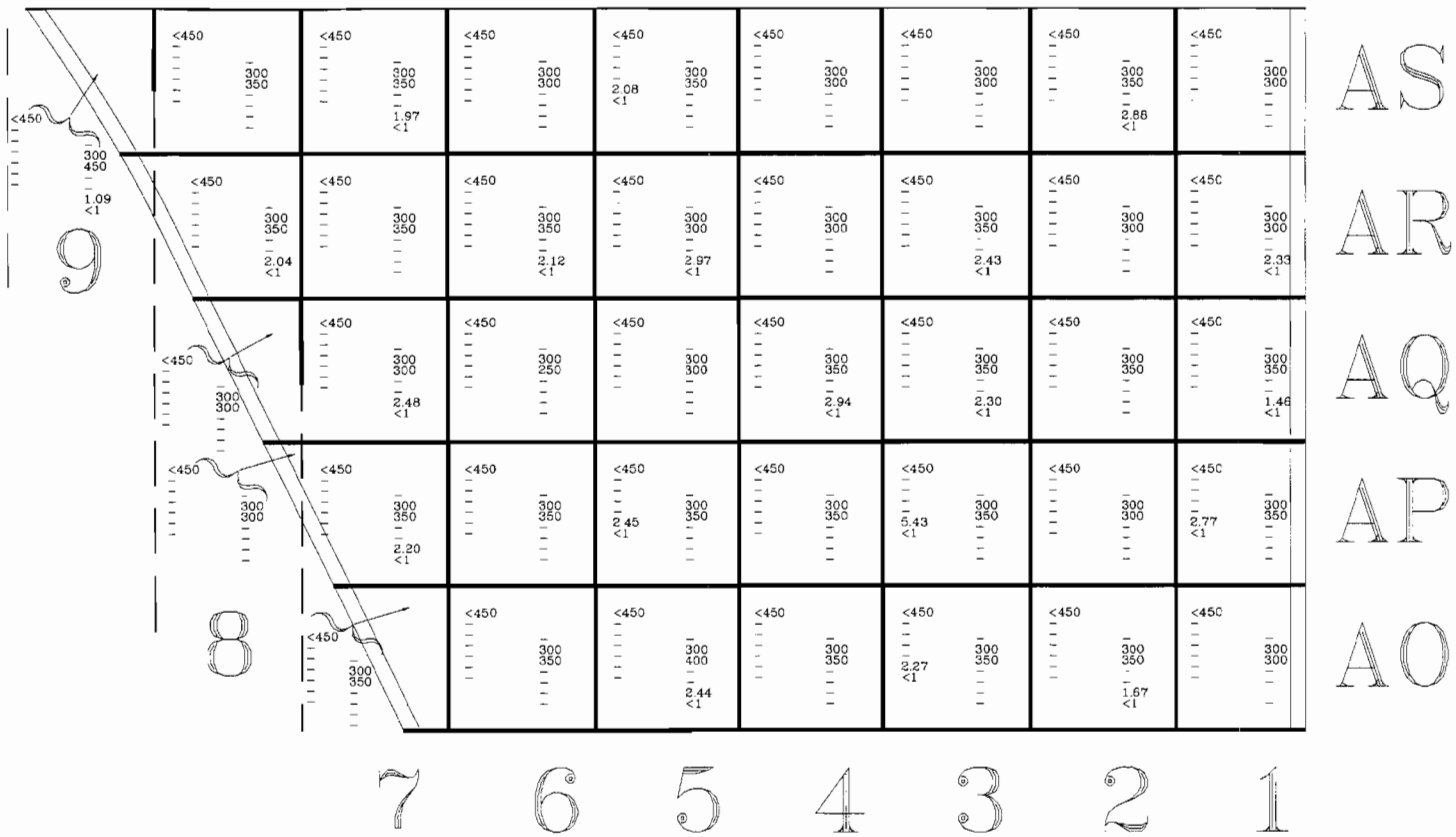
AJ	<450 – – – – – – – 300 250 – – –	<450 – – – – – – – 300 400 – – 2.06 <1	<450 – – – – – – – 300 300 – – –	<450 – – – – – – – 300 350 – – –	<450 – – – – – – 2.23 <1	<450 – – – – – – – 300 350 – – –	<450 – – – – – – 2.20 <1	<450 – – – – – – – 300 350 – – –

Sample Data

< 450 – IM-247/PD Results [$\mu\mu$C/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

e. Localized Grid Maps (PA2)



Sample Data
<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

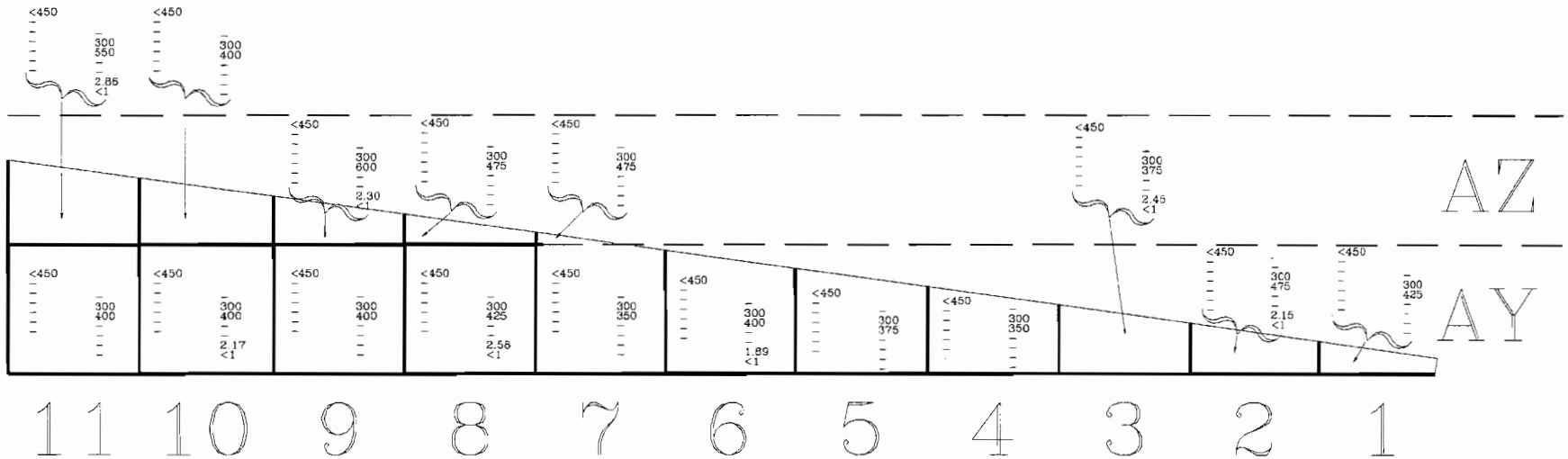
1. **Pier A**

e. **Localized Grid Maps (PA2)**

<450 – – –

1. Pier A

e. Localized Grid Maps (PA2)

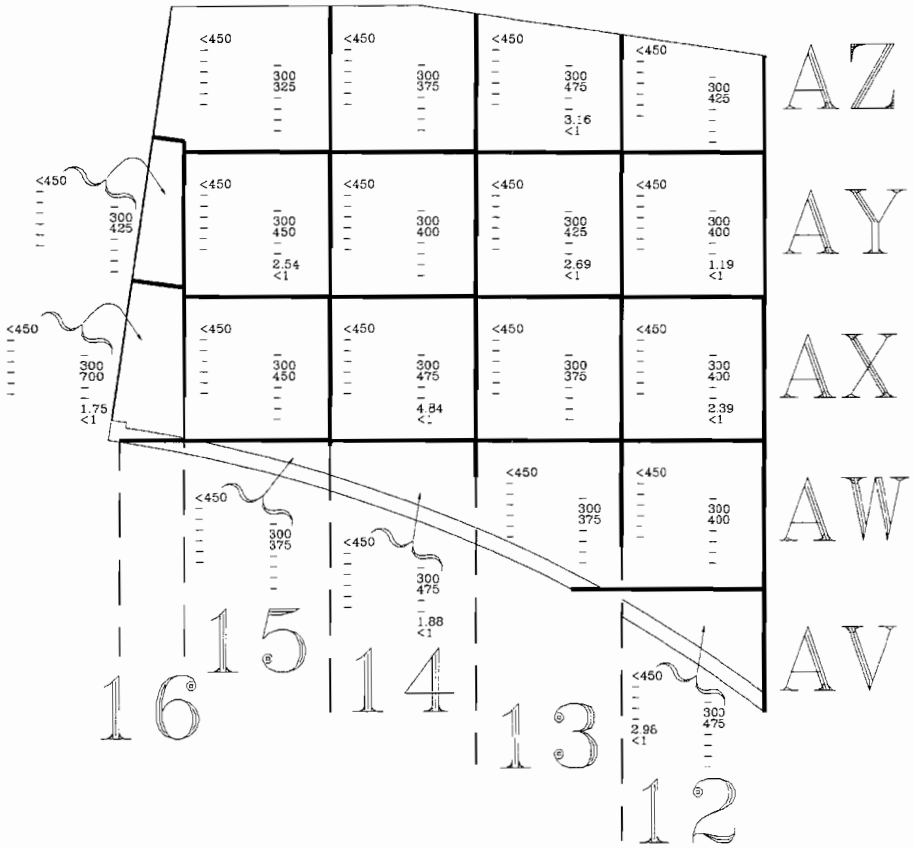


Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GRCSS) [bkg.]
7300 – IM-253/PD (HV-2 GRCSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. **Pier A**

   e. **Localized Grid Maps (PA2)**



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

1. Pier A

f. Prior Photograph

Entrance gate, viewing east, section PA1.

1. Pier A

f. Prior Photograph

Midway of PA1, facing east.

1. Pier A

f. Prior Photograph

Approaching PA2, viewing southeast.

1. Pier A

f. Prior Photograph

Section PA2, facing south.

1. Pier A

f. Prior Photograph

Midway of PA2, facing south.

1. Pier A

f. Prior To Photograph

South end of PA2, facing north.

1. Pier A

g. After Photograph

Entrance, facing east.

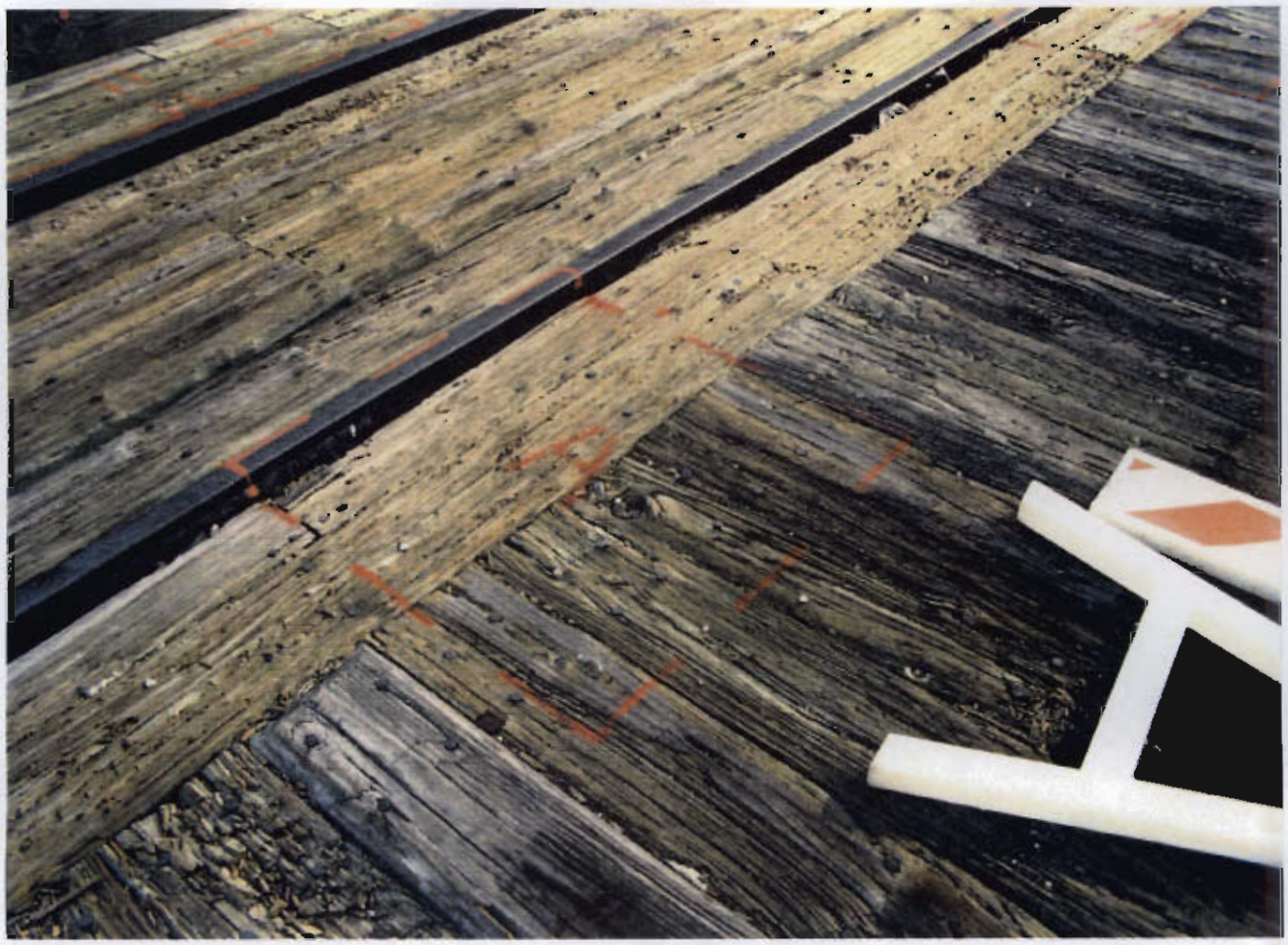
1. Pier A

g. After Photograph

Section PA1 intersection shore line.

1. Pier A

g. After Photograph



Section PA1, portable crane rails.

1. Pier A

g. After Photograph

Approaching PA2, viewing southeast.

1. Pier A

g. After Photograph

Pier office building on PA2, facing southwest.

1. Pier A

g. After Photograph

Interior, facing north entrance

1. Pier A

g. After Photograph

Interior, facing east wall.

2. Pier C

a. Introduction:

Pier C is located in grids D-5 and E-5 of the Charleston Naval Shipyard map (Figure 10).

(1) **Description:**

Pier C is a 1085' long by 121' wide wooden structure with an asphalt and cement covering. Included is an adjacent radioactive material (RAM) storage area (Chem Lab Area).

(2) **Brief History:**

(a) **Use:** Pier C was used as berths for nuclear powered ships undergoing repair at Charleston Naval Shipyard.

(b) **Radiological History:** Areas on Pier C were controlled as radiation areas and radioactive material storage areas. On several occasions minor spills of radioactive liquid occurred. Following these spills all areas were decontaminated to less than 450μμCi/100cm^2. Loose surface contamination levels were maintained less than 450μμCi/100cm^2.

(3) **Survey Requirements:**

(a) Pier and Berthing Area survey.
(b) Group 2 Survey.
(c) Group 3 Survey.

b. Discussion:

Pier C and the adjacent RAM storage area were divided into 760 grids approximately 10' by 10' for group 2 surveys and 2125 grids approximately 5' by 5' for group 3 surveys. Each grid had its own unique designator.

Where physically possible, each group 2 grid was subdivided into two 3' by 3' subsections which were located in areas of highest potential for contamination. One of these subsections was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Solid material samples were taken from a minimum of 50% of the 10' by 10' grids. Additionally, solid material samples were taken from each 3' by 3' subsection that resulted in levels greater than 450μμCi/20cm^2 with an IM-247/PD or greater than twice background with the IM-253/PD (HV-1 PHA).

Each group 3 grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). Then a minimum of 25% of these grids were surveyed using the IM-253/PD (HV-2 GROSS). Additionally, solid material samples were taken from

2. Pier C

each 5' by 5' grid.

A total of 2521 solid material samples were taken from Pier C. The solid material samples were removed from the location indicating the area of highest potential. The following typical naturally occurring radionuclides were identified during isotopic analysis of the solid material samples: lead 212, lead 214, and potassium 40.

Individual backgrounds were used for Pier C cement and asphalt. Due to variations in natural radioactivity among the construction materials, different background levels exist. In the wharf area (defined as grids A through FB) and RAM storage area, the IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds of 40, 175, and 5500 counts per minute used for the cement were based on the radiation levels obtained from Building NS 53; the IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds of 60, 300, and 8000 counts per minute used for the asphalt were based on the radiation levels obtained from Building 164. In the pier area (defined as grids FC through HE), the IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 (GROSS) backgrounds of 60, 375, and 6750 counts per minute used for the cement were based on the radiation levels obtained from Building 1884.

c. Summary:

Surveys performed with the IM-247/PD did not detect areas greater than 450μμCi/20cm^2.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 238 areas greater than or equal to twice background.

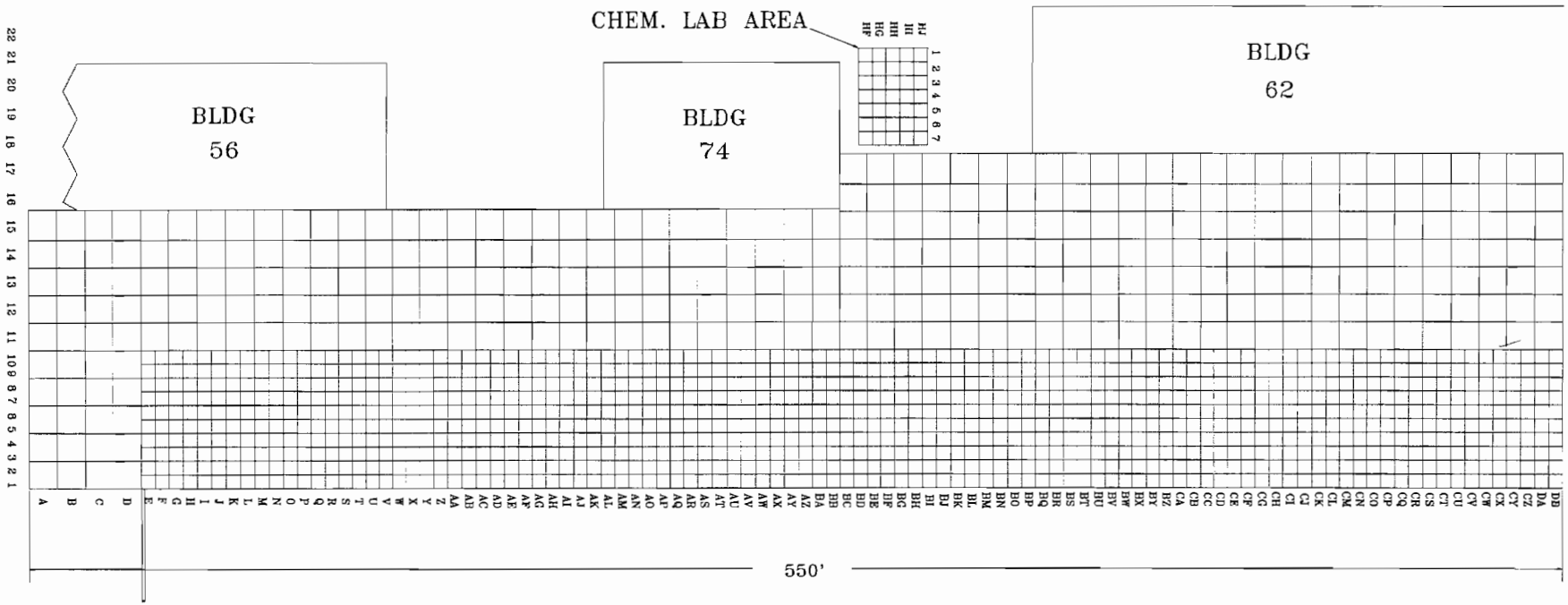
Surveys performed with the IM-253/PD (HV-2 GROSS) detected 134 areas greater than or equal to twice background.

Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from less than minimum detectable activity of 0.38 pCi/g to a high of 9.30 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that solid material samples were less than 1 pCi/g. However, 28 samples with traces of cobalt 60 greater than the minimum detectable activity were identified. For each sample, the extent of cobalt 60 radioactivity was identified by taking additional solid material samples in the surrounding vicinity. Due to the small effort involved, the shipyard remediated each area where cobalt 60 was identified. Remediation consisted of excavation of material in the identified areas. Following remediation, additional solid material samples were taken in the areas and all were less than 1 pCi/g specific cobalt 60. No traces of cobalt 60 were identified.

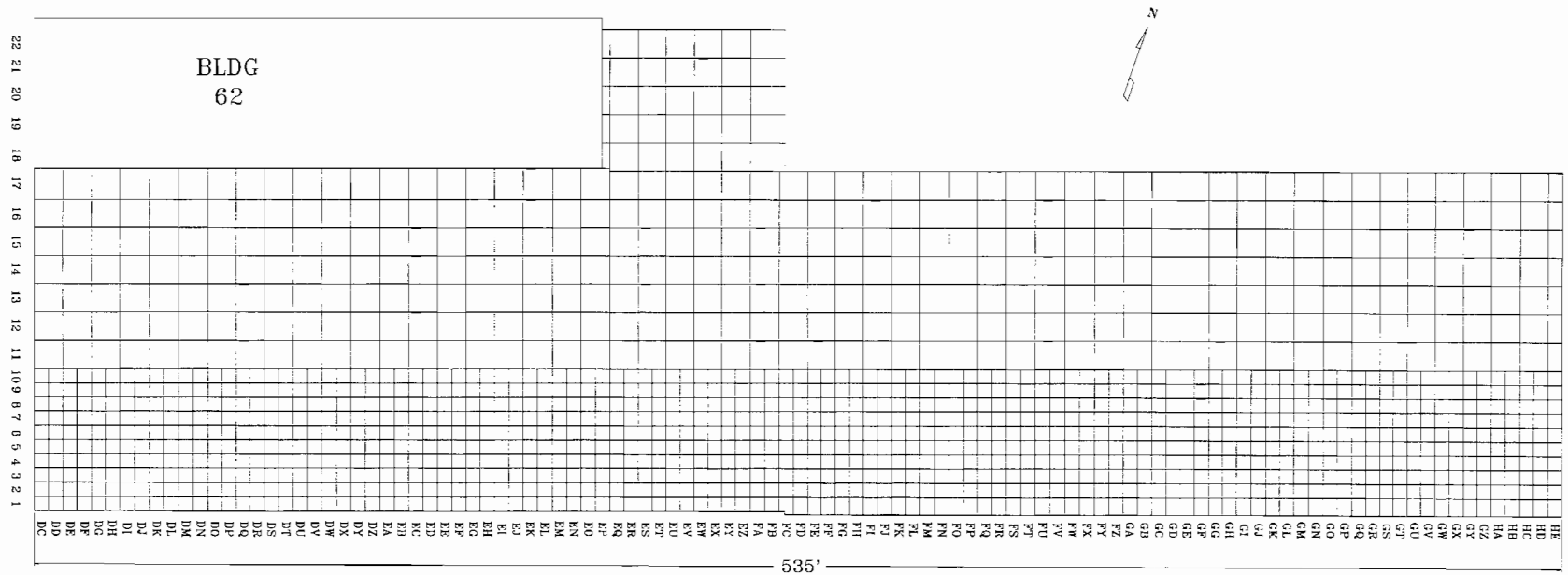
2. Pier C

d. Site Map



2. Pier C

d. Site Map



2. Pier C

e. Localized Grid Maps

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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D	<450 – – – – – 300 500 – – 4.22 <1	<450 – – – – – 300 500 – – –	<450 – – – – – 300 550 – – 4.00 <1	<450 – – – – – 300 525 – – –	<450 – – – – – 300 475 – – 3.13 <1	<450 – – – – – 300 550 – – –		<450 – – – – – 300 525 – – 4.66 <1		<450 – – – – – 300 475 – – –		<450 – – – – – 300 550 – – 4.78 <1		<450 – – – – – 300 550 – – –	
C	<450 – – – – – 300 500 – – –	<450 – – – – – 300 500 – – 3.94 <1	<450 – – – – – 300 550 – – –	<450 – – – – – 300 500 – – 3.74 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 475 – – 4.54 <1		<450 – – – – – 300 450 – – –		<450 – – – – – 300 555 – – 5.04 <1		<450 – – – – – 300 450 – – –		<450 – – – – – 175 600 – – 5.63 <1	
B	<450 – – – – – 300 500 – – 3.05 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 3.77 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 475 – – 3.19 <1	<450 – – – – – 300 500 – – –		<450 – – – – – 300 500 – – 4.58 <1		<450 – – – – – 300 525 – – –		<450 – – – – – 300 500 – – 4.56 <1		<450 – – – – – 300 450 – – –	
A	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 4.22 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 2.91 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 400 – – 5.31 <1		<450 – – – – – 300 400 – – –		<450 – – – – – 300 400 – – 6.08 <1		<450 – – – – – 300 400 – – –		<450 – – – – – 300 400 – – 2.78 <1	

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq Co-60 [pCi/g]
<1 – MCA Specifc Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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J	<450 – – – – 300 450 – – –	<450 – – – – 300 400 – – 4.23 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 450 – – 3.48 <1	<450 – – – – 300 400 – – –	<450 300 400 – – 4.37 <1	<450 300 450 – – 4.28 <1	<450 300 400 8000 9000 4.14 <1	<450 300 450 – – 4.18 <1	<450 300 450 – – 4.78 <1	<450 300 450 – – 4.70 <1	<450 300 450 – – 3.97 <1	<450 175 300 8000 9000 2.04 <1	<450 300 450 – – 4.16 <1	<450 175 450 – – 2.35 <1
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G						<450 300 400 8000 11000 4.17 <1	<450 300 400 – – 4.33 <1	<450 300 450 – – 4.19 <1	<450 300 450 – – 5.17 <1	<450 300 450 – – 4.73 <1	<450 300 450 8000 12500 4.44 <1	<450 300 450 – – 3.48 <1	<450 175 325 – – 3.14 <1	<450 300 550 – – 4.35 <1	<450 300 600 8000 20000 4.15 <1

Sample Data

<450 – IM-247/PD Results [μμCi/22cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

<450 – – – – – – – 300 225 – – – –	<450 – – – – – – – 300 350 – – – 2.95 <1	<450 – – – – – – – 300 350 – – – –	<450 – – – – – – – 300 300 – – – 3.54 <1	<450 – – – – – – – 300 350 – – – –	<450 300 450 – – – – – – – – – – 4.29 <1	<450 300 450 – – – – – – – – – – 4.73 <1	<450 300 450 6000 8500 – – – – – – – – 5.65 <1	<450 300 400 – – – – – – – – – – 5.34 <1	<450 300 400 – – – – – – – – – – 4.94 <1	<450 300 400 – – – – – – – – – – 4.21 <1	<450 300 450 – – – – – – – – – – 4.93 <1	<450 300 450 5500 10000 – – – – – – – – 4.14 <1	<450 300 400 – – – – – – – – – – 3.47 <1	<450 175 400 – – – – – – – – – – 2.83 <1	Z
					<450 300 450 8000 8000 – – – – – – – – 5.79 <1	<450 300 400 – – – – – – – – – – 6.10 <1	<450 300 400 – – – – – – – – – – 6.33 <1	<450 300 400 – – – – – – – – – – 5.47 <1	<450 300 450 – – – – – – – – – – 4.25 <1	<450 300 500 8000 8000 – – – – – – – – 3.93 <1	<450 300 425 – – – – – – – – – – 4.31 <1	<450 300 425 – – – – – – – – – – 3.85 <1	<450 300 500 – – – – – – – – – – 4.05 <1	<450 175 450 5500 15000 – – – – – – – – 2.44 <1	Y
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15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Sample Data

< 450 – IM-247/PD Results [μμC/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV 1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Ec. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-[illegible] PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
AT	<450 – – – – – – 300 400 – – – –	<450 – – – – – – 300 500 – – 4.63 <1	<450 – – – – – – 300 400 – – – –	<450 – – – – – – 300 400 – – 4.11 <1	<450 – – – – – – 300 400 – – – –	<450 300 400 – – 4.52 <1	<450 300 400 – – 5.05 <1	<450 300 350 8000 10000 4.99 <1	<450 300 325 – – 4.20 <1	<450 300 350 – – 4.64 <1	<450 300 350 – – 3.72 <1	<450 300 350 – – 4.24 <1	<450 175 300 8500 7500 3.50 <1	<450 175 450 – – 3.62 <1	<450 175 600 – – 3.64 <1
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AQ						<450 300 400 8000 12000 4.35 <1	<450 300 450 – – 4.45 <1	<450 300 400 – – 4.15 <1	<450 300 450 – – 5.02 <1	<450 300 500 – – 4.63 <1	<450 300 450 8000 10000 4.55 <1	<450 300 550 – – 5.5' <1	<450 175 350 – – 2.66 <1	<450 300 400 – – 3.64 <1	<450 175 600 5500 15000 2.18 <1
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AM						<450 300 400 8000 10000 4.24 <1	<450 300 300 – – 3.76 <1	<450 300 325 – – 4.5' <1	<450 300 300 – – 4.78 <1	<450 300 350 – – 4.72 <1	<450 300 350 8000 9500 4.62 <1	<450 300 350 – – 4.70 <1	<450 300 350 – – 4.09 <1	<450 300 400 – – 4.80 <1	<450 175 450 8000 9500 2.50 <1
AL	<450 – – – – – – 300 400 – – – –	<450 – – – – – – 300 500 – – 5.22 <1	<450 – – – – – – 300 500 – – – –	<450 – – – – – – 300 550 – – 4.50 <1	<450 – – – – – – 300 400 – – – –	<450 300 500 – – 3.79 <1	<450 300 450 – – 3.78 <1	<450 300 500 8000 12500 5.00 <1	<450 300 450 – – 4.83 <1	<450 300 400 – – 4.74 <1	<450 300 425 – – 6.21 <1	<450 300 450 – – 4.25 <1	<450 300 550 8000 9000 4.09 <1	<450 300 450 – – 5.80 <1	<450 175 650 – – 4.01 <1
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Sample Data

<450 – IM-247/PD Results (μμCi/20cm²)
200 – IM-253/PD (HV-' PHA) (b×g.)
300 – IM-253/PD (HV-' PHA) (cpm)
7000 – IM-253/PD (HV-2 GROSS) (b×g.)
7300 – IM-253/PD (HV-2 GROSS) (cpm)
1.82 – MCA Gross Gamma Eq. Co-60 (pCi/g)
<1 – MCA Specific Co-60 Results (pCi/g)

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
BD	<450 – – – – – 300 375 – – 3.10 <1	<450 – – – – – 300 350 – – – –	<450 – – – – – 300 450 – – 4.29 <1	<450 – – – – – 300 450 – – – –	<450 – – – – – 300 450 – – 4.43 <1	<450 – – – – – 300 450 – – – –	<450 – – – – – 300 475 – – 3.68 <1	<450 300 500 – – 3.98 <1	<450 300 450 – – 4.06 <1	<450 300 500 8000 10000 4.39 <1	<450 300 450 – – 5.36 <1	<450 300 450 – – 4.13 <1	<450 300 450 – – 4.15 <1	<450 300 450 – – 3.82 <1	<450 300 450 8000 9500 3.84 <1	<450 300 550 – – 4.19 <1	<450 175 450 – – 4.00 <1
BC								<450 300 450 8000 9500 3.74 <1	<450 300 450 – – 3.75 <1	<450 300 500 – – 5.68 <1	<450 300 550 – – 5.00 <1	<450 300 450 – – 4.65 <1	<450 300 500 8000 9000 3.96 <1	<450 300 500 – – 3.60 <1	<450 300 500 – – 3.72 <1	<450 300 550 – – 3.60 <1	<450 175 550 – – 2.23 <1
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BA								<450 300 555 8000 9500 4.09 <1	<450 300 500 – – 4.22 <1	<450 300 550 – – 5.33 <1	<450 300 550 – – 4.20 <1	<450 300 525 – – 3.35 <1	<450 300 500 8000 9500 3.63 <1	<450 300 550 – – 3.95 <1	<450 300 500 – – 4.05 <1	<450 300 500 – – 4.27 <1	<450 175 600 5500 15000 1.95 <1
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Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
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300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
BN	<450 – – – – 300 400 – – –	<450 – – – – 300 300 – 3.75 <1	<450 – – – – 300 350 – –	<450 – – – – 300 350 – 3.49 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 350 – 3.96 <1	<450 – – – – 300 300 – – –	<450 175 325 – – 2.97 <1	<450 300 400 – 4.23 <1	<450 300 450 8000 12500 5.71 <1	<450 300 450 – 5.24 <1	<450 300 400 – 4.31 <1	<450 300 400 – 2.63 <1	<450 300 400 – 3.34 <1	<450 300 450 8000 10000 2.85 <1	<450 175 450 – 2.98 <1	<450 175 400 – 3.00 <1
BM								<450 300 300 8000 9250 4.46 <1	<450 300 350 – 4.05 <1	<450 300 400 – 4.06 <1	<450 300 350 – 4.48 <1	<450 300 350 – 4.41 <1	<450 300 400 8000 10000 3.30 <1	<450 300 400 – 3.27 <1	<450 300 350 – 3.83 <1	<450 175 400 – 2.94 <1	<450 175 450 5500 15000 3.19 <1
BL	<450 – – – – 300 400 – 6.99 <1	<450 – – – – 300 450 – –	<450 – – – – 300 400 – 5.84 <1	<450 – – – – 300 450 – –	<450 – – – – 300 450 – 3.78 <1	<450 – – – – 300 475 – –	<450 – – – – 300 400 – 3.32 <1	<450 300 400 – 3.54 <1	<450 300 350 – 4.45 <1	<450 300 350 8000 12500 5.47 <1	<450 300 400 – 4.99 <1	<450 300 375 – 5.23 <1	<450 300 450 – 3.29 <1	<450 300 400 – 4.27 <1	<450 175 300 5500 6000 2.69 <1	<450 175 600 – 2.91 <1	<450 175 600 – 2.94 <1
BK								<450 300 350 8000 8000 4.12 <1	<450 300 350 – 3.49 <1	<450 300 350 – 4.99 <1	<450 300 400 – 4.64 <1	<450 300 350 – 3.82 <1	<450 300 450 5500 10000 2.42 <1	<450 300 400 – 4.08 <1	<450 300 325 – 2.94 <1	<450 300 400 – 4.61 <1	<450 75 450 5500 9000 2.59 <1
BJ	<450 – – – – 300 475 – – –	<450 – – – – 300 450 – 5.26 <1	<450 – – – – 300 475 – –	<450 – – – – 300 475 – 5.01 <1	<450 – – – – 300 400 – –	<450 – – – – 300 400 – 3.80 <1	<450 – – – – 300 400 – –	<450 300 500 – 4.39 <1	<450 300 500 – 3.72 <1	<450 300 550 8000 10000 4.26 <1	<450 300 550 – 5.19 <1	<450 300 450 – 4.15 <1	<450 300 450 – 2.57 <1	<450 300 450 – 3.27 <1	<450 300 450 8350 8000 3.11 <1	<450 300 400 – 3.57 <1	<450 75 400 – 4.53 <1
BI								<450 300 500 8000 10000 5.11 <1	<450 300 450 – 4.74 <1	<450 300 550 – 4.50 <1	<450 300 500 – 4.87 <1	<450 300 450 – 5.38 <1	<450 300 550 8000 9000 2.82 <1	<450 300 525 – 2.62 <1	<450 330 500 – 3.45 <1	<450 175 450 – 2.01 <1	<450 75 400 5500 12500 0.89
BH	<450 – – – – 300 350 – 4.22 <1	<450 – – – – 300 300 – –	<450 – – – – 300 375 – 3.80 <1	<450 – – – – 300 400 – –	<450 – – – – 175 500 – 3.79 <1	<450 – – – – 300 400 – –	<450 – – – – 300 475 – 3.05 <1	<450 300 350 – 3.93 <1	<450 300 350 – 3.66 <1	<450 300 400 8000 10000 4.52 <1	<450 300 350 – 2.96 <1	<450 300 350 – 4.64 <1	<450 300 350 – 3.15 <1	<450 300 450 – 3.71 <1	<450 300 400 8000 10000 4.84 <1	<450 175 400 – 2.70 <1	<450 75 400 – 1.13 <1
BG								<450 300 425 8000 8000 3.26 <1	<450 300 375 – 4.89 <1	<450 300 400 – 5.94 <1	<450 300 425 – 4.29 <1	<450 300 375 – 4.83 <1	<450 300 400 8000 9000 3.34 <1	<450 300 400 – 4.22 <1	<450 300 450 – 5.52 <1	<450 175 425 – 1.93 <1	<450 175 425 8500 10000 2.06 <1
BF	<450 – – – – 300 450 – –	<450 – – – – 300 400 – 4.03 <1	<450 – – – – 300 450 – –	<450 – – – – 300 475 – 4.31 <1	<450 – – – – 300 450 – –	<450 – – – – 300 400 – 3.79 <1	<450 – – – – 300 450 – –	<450 300 400 – 3.75 <1	<450 300 400 – 3.84 <1	<450 300 400 8000 8350 4.23 <1	<450 300 400 – 4.69 <1	<450 300 375 – 3.95 <1	<450 300 400 – 3.56 <1	<450 300 400 – 4.64 <1	<450 300 400 8000 8500 3.57 <1	<450 175 400 – 1.62 <1	<450 175 400 – 2.39 <1
BE								<450 300 400 8000 9000 3.69 <1	<450 300 400 – 4.43 <1	<450 300 500 – 4.70 <1	<450 300 300 – 4.64 <1	<450 300 300 – 4.71 <1	<450 300 300 8000 9000 4.44 <1	<450 300 300 – 4.10 <1	<450 300 300 – 2.23 <1	<450 300 550 – 4.80 <1	<450 300 550 8000 12500 2.10 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV 2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
BX	<450 – – – – 300 400 – – 2.51 <1	<450 – – – – 300 400 – – –	<450 – – – – 175 325 – – 2.66 <1	<450 – – – – 300 375 – – –	<450 – – – – 300 350 – – 4.30 <1	<450 – – – – 300 350 – – –	<450 – – – – 300 350 – – 4.27 <1	<450 300 400 – – 3.95 <1	<450 300 400 – – 4.24 <1	<450 300 425 8000 12500 5.38 <1	<450 300 400 – – 3.68 <1	<450 300 400 – – 3.69 <1	<450 300 430 – – 3.32 <1	<450 300 400 – – 2.50 <1	<450 300 400 8000 9500 3.34 <1	<450 300 500 – – 4.73 <1	<450 175 400 – – 2.43 <1
BW								<450 300 400 8000 10000 4.42 <1	<450 300 400 – – 4.58 <1	<450 300 500 – – 4.16 <1	<450 300 500 – – 3.34 <1	<450 300 450 – – 3.94 <1	<450 300 400 8000 8500 2.74 <1	<450 300 400 – – 2.94 <1	<450 300 500 – – 1.65 <1	<450 300 500 – – 4.16 <1	<450 175 500 5500 15000 2.43 <1
BV	<450 – – – – 300 350 – – –	<450 – – – – 300 300 – – 4.33 <1	<450 – – – – 175 250 – – –	<450 – – – – 300 325 – – 4.24 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 350 – – 4.44 <1	<450 – – – – 300 300 – – –	<450 300 400 – – 3.70 <1	<450 300 400 – – 2.71 <1	<450 300 500 8000 9500 4.10 <1	<450 300 450 – – 4.11 <1	<450 300 400 – – 3.21 <1	<450 300 400 – – 2.79 <1	<450 300 400 – – 2.91 <1	<450 300 550 8000 12000 1.98 <1	<450 300 550 – – 3.94 <1	<450 175 500 – – 3.00 <1
BU								<450 175 500 5500 9500 3.06 <1	<450 300 450 – – 4.74 <1	<450 300 450 – – 2.99 <1	<450 300 450 – – 4.31 <1	<450 300 450 – – 3.50 <1	<450 300 400 8000 8500 3.35 <1	<450 300 400 – – 3.14 <1	<450 300 450 – – 2.25 <1	<450 300 500 – – 4.89 <1	<450 175 500 5000 10000 2.49 <1
BT	<450 – – – – 300 350 – – 4.18 <1	<450 – – – – 300 450 – – –	<450 – – – – 175 325 – – 2.22 <1	<450 – – – – 300 300 – – –	<450 – – – – 300 350 – – 4.71 <1	<450 – – – – 300 325 – – –	<450 – – – – 300 350 – – 4.27 <1	<450 175 500 – – 2.41 <1	<450 300 350 – – 3.09 <1	<450 300 450 8000 9500 3.43 <1	<450 300 350 – – 4.23 <1	<450 300 350 – – 4.92 <1	<450 300 400 – – 3.06 <1	<450 300 400 – – 2.95 <1	<450 300 800 8000 11000 3.90 <1	<450 300 400 – – 4.67 <1	<450 175 500 – – 1.80 <1
BS								<450 300 400 8000 12000 4.42 <1	<450 300 400 – – 3.65 <1	<450 300 400 – – 4.22 <1	<450 300 450 – – 4.63 <1	<450 300 350 – – 4.58 <1	<450 300 400 8000 8000 3.13 <1	<450 300 400 – – 3.18 <1	<450 300 350 – – 2.81 <1	<450 300 350 – – 4.21 <1	<450 175 500 5500 10000 3.80 <1
BR	<450 – – – – 300 300 – – –	<450 – – – – 300 300 – – 3.65 <1	<450 – – – – 175 325 – – –	<450 – – – – 300 350 – – 2.52 <1	<450 – – – – 300 300 – – –	<450 – – – – 300 300 – – 3.61 <1	<450 – – – – 300 350 – – –	<450 300 400 – – 4.08 <1	<450 300 400 – – 2.84 <1	<450 300 450 8000 9500 4.02 <1	<450 300 500 – – 4.36 <1	<450 300 400 – – 4.58 <1	<450 300 400 – – 2.76 <1	<450 300 450 – – 3.52 <1	<450 300 500 8000 11000 2.42 <1	<450 300 500 – – 3.81 <1	<450 175 500 – – 2.04 <1
BQ								<450 300 450 8000 9500 3.86 <1	<450 300 450 – – 3.91 <1	<450 300 500 – – 5.08 <1	<450 300 450 – – 4.60 <1	<450 300 400 – – 3.04 <1	<450 300 450 8000 11000 3.33 <1	<450 300 450 – – 2.97 <1	<450 300 450 – – 2.88 <1	<450 300 450 – – 4.71 <1	<450 175 500 5500 9000 2.84 <1
BP	<450 – – – – 300 425 – – 4.68 <1	<450 – – – – 300 500 – – –	<450 – – – – 175 350 – – 2.12 <1	<450 – – – – 175 400 – – 2.72 <1	<450 – – – – 175 300 – – 1.83 <1	<450 – – – – 175 300 – – –	<450 – – – – 175 300 – – 2.37 <1	<450 175 300 – – 3.03 <1	<450 300 350 – – 3.76 <1	<450 175 375 5000 10000 1.77 <1	<450 175 325 – – 2.15 <1	<450 175 400 – – 1.73 <1	<450 175 400 – – 1.73 <1	<450 175 500 – – 2.10 <1	<450 175 500 5500 15000 2.10 <1	<450 175 450 – – 3.18 <1	<450 175 350 – – 1.55 <1
BO								<450 175 300 5500 7000 1.90 <1	<450 300 300 – – 3.51 <1	<450 175 400 – – 3.09 <1	<450 175 350 – – 2.80 <1	<450 175 400 – – 2.32 <1	<450 175 400 5500 8000 2.34 <1	<450 175 350 – – 1.99 <1	<450 175 500 – – 2.76 <1	<450 175 400 – – 2.21 <1	<450 175 450 5500 8000 0.67

Sample Data

<450 – IM-247/PD Results [μμC/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

RAM Storage Area
(Chem Lab Area)

	1	2	3	4	5	6	7
HJ	<450 300 375 – – 3.97 <1	<450 300 400 – – 3.34 <1	<450 300 350 8000 15000 3.55 <1	<450 300 375 – – 3.89 <1	<450 300 400 8000 12500 4.22 <1	<450 300 350 – – 4.20 <1	<450 300 425 – – 4.36 <1
HI	<450 300 400 8000 8500 5.34 <1	<450 300 375 – – 3.56 <1	<450 300 375 – – 4.07 <1	<450 300 350 – – 3.04 <1	<450 300 350 – – 2.91 <1	<450 300 400 – – 3.15 <1	<450 300 325 8000 8000 3.93 <1
HH	<450 300 400 – – 4.43 <1	<450 300 450 8000 9000 4.29 <1	<450 300 400 – – 4.42 <1	<450 300 400 – – 4.32 <1	<450 300 400 – – 3.93 <1	<450 300 400 8000 12500 4.58 <1	<450 300 400 – – 4.86 <1
HG	<450 300 450 – – 4.09 <1	<450 300 425 – – 4.35 <1	<450 300 450 8000 10000 3.78 <1	<450 300 450 – – 4.25 <1	<450 300 450 8000 10000 4.48 <1	<450 300 450 – – 5.47 <1	<450 300 450 – – 3.42 <1
HF	<450 300 500 8000 9500 5.41 <1	<450 300 500 – – 5.56 <1	<450 300 500 – – 4.99 <1	<450 300 500 – – 4.37 <1	<450 300 500 – – 3.57 <1	<450 300 500 – – 4.26 <1	<450 300 475 8000 12500 4.02 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CH	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 3.1[illegible] <1	<450 – – – – – 175 425 – 2.39 <1	<450 – – – – – 300 400 – 3.89 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 350 – 5.33 <1	<450 – – – – – 300 350 – – –	<450 300 500 – 3.83 <1	<450 300 450 – 4.98 <1	<450 300 450 8000 7500 4.56 <1	<450 300 500 – 5.01 <1	<450 300 450 – 4.00 <1	<450 300 400 – 5.19 <1	<450 300 400 – 4.11 <1	<450 300 500 5500 4000 4.52 <1	<450 175 450 – 2.05 <1	<450 175 500 – 2.06 <1
CG								<450 300 450 8000 8500 4.84 <1	<450 300 500 – 4.43 <1	<450 300 550 – 4.17 <1	<450 300 500 – 5.27 <1	<450 300 500 – 4.10 <1	<450 300 400 8000 12000 4.18 <1	<450 300 400 – 4.16 <1	<450 300 400 – 3.62 <1	<450 300 500 – 3.98 <1	<450 175 450 9500 12000 1.91 <1
CF	<450 – – – – – 300 400 – 3.69 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 175 300 – 2.37 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 4.19 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 3.98 <1	<450 300 400 – 5.94 <1	<450 300 450 – 3.89 <1	<450 300 450 8000 9000 4.26 <1	<450 300 450 – 5.45 <1	<450 300 450 – 3.94 <1	<450 300 400 – 4.37 <1	<450 300 450 – 3.87 <1	<450 300 400 6000 8000 3.64 <1	<450 300 400 – 4.33 <1	<450 175 450 – 1.82 <1
CE								<450 300 450 8000 8000 5.32 <1	<450 300 400 – 3.74 <1	<450 300 450 – 5.10 <1	<450 300 400 – 5.84 <1	<450 300 450 – 4.15 <1	<450 300 400 8000 11000 3.63 <1	<450 300 450 – 2.20 <1	<450 300 400 – 2.74 <1	<450 300 425 – 4.68 <1	<450 175 575 5500 17500 1.32 <1
CD	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 4.58 <1	<450 – – – – – 175 300 – – –	<450 – – – – – 300 400 – 4.09 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 350 – 3.49 <1	<450 – – – – – 300 350 – – –	<450 300 400 – 4.15 <1	<450 300 500 – 4.18 <1	<450 300 500 8000 9000 5.06 <1	<450 300 500 – 4.82 <1	<450 300 400 – 4.64 <1	<450 300 400 – 2.45 <1	<450 300 400 – 2.48 <1	<450 300 425 8500 8500 4.20 <1	<450 300 500 – 4.50 <1	<450 175 400 – 5.29 <1
CC								<450 300 400 8000 8500 4.31 <1	<450 300 350 – 4.92 <1	<450 300 400 – 4.58 <1	<450 300 400 – 4.29 <1	<450 300 400 – 3.82 <1	<450 300 450 8000 13000 3.73 <1	<450 300 400 – 3.08 <1	<450 300 500 – 4.33 <1	<450 300 500 – 3.68 <1	<450 175 500 5500 15000 2.27 <1
CB	<450 – – – – – 300 350 – 2.82 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 175 325 – 2.35 <1	<450 – – – – – 300 375 – – –	<450 – – – – – 300 400 – 3.95 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 400 – 4.67 <1	<450 300 400 – 4.66 <1	<450 300 350 – 4.65 <1	<450 300 350 8000 9500 4.50 <1	<450 300 500 – 4.92 <1	<450 300 500 – 5.58 <1	<450 300 400 – 3.74 <1	<450 300 400 – 2.34 <1	<450 300 400 5500 8200 3.84 <1	<450 300 400 – 4.89 <1	<450 175 500 – 2.10 <1
CA								<450 300 400 8000 8500 5.87 <1	<450 300 350 – 4.52 <1	<450 300 400 – 4.10 <1	<450 300 400 – 4.14 <1	<450 175 300 – 2.97 <1	<450 300 400 8500 9500 4.82 <1	<450 300 400 – 3.37 <1	<450 175 300 – 2.92 <1	<450 300 550 – 4.42 <1	<450 175 550 5500 15000 2.57 <1
BZ	<450 – – – – – 300 350 – – –	<450 – – – – – 300 350 – 3.35 <1	<450 – – – – – 175 325 – – –	<450 – – – – – 300 400 – 3.95 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 425 – 3.62 <1	<450 – – – – – 300 450 – – –	<450 300 450 – 3.69 <1	<450 300 450 – 3.29 <1	<450 300 400 8000 8500 4.11 <1	<450 300 500 – 4.37 <1	<450 175 350 – 2.98 <1	<450 300 400 – 4.22 <1	<450 300 400 – 3.66 <1	<450 300 450 8500 9500 3.36 <1	<450 300 450 – 4.13 <1	<450 175 500 – 6.21 <1
BY								<450 300 400 8000 9000 4.57 <1	<450 300 500 – 4.19 <1	<450 300 500 – 3.79 <1	<450 300 500 – 4.18 <1	<450 300 500 – 2.91 <1	<450 300 400 8000 9500 3.80 <1	<450 300 400 – 2.82 <1	<450 300 350 – 5.38 <1	<450 300 400 – 4.78 <1	<450 175 400 5500 12500 2.55 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7500 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CR	<450 – – – – – – 300 400 – – 3.87 <1	<450 – – – – – 300 450 – – – –	<450 – – – – – 300 425 – – – 4.35 <1	<450 – – – – – 300 425 – – – –	<450 – – – – – 300 450 – – – 3.85 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 400 – – – 3.85 <1	<450 300 500 – – 4.20 <1	<450 300 500 – – 4.47 <1	<450 300 500 8000 8000 3.72 <1	<450 300 500 – – 3.35 <1	<450 300 500 – – 2.70 <1	<450 300 400 – – 4.45 <1	<450 300 400 – – 3.05 <1	<450 175 475 5500 7000 4.02 <1	<450 300 400 – – 3.91 <1	<450 175 550 – – 2.40 <1
CQ								<450 300 450 – – 4.26 <1	<450 300 400 – – 3.65 <1	<450 300 450 – – 4.03 <1	<450 300 450 – – 4.27 <1	<450 300 400 – – 4.45 <1	<450 300 400 8000 9000 3.81 <1	<450 300 400 – – 3.00 <1	<450 175 450 – – 3.79 <1	<450 300 450 – – 3.73 <1	<450 175 650 5500 15000 3.18 <1
CP	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 400 – – 4.04 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 400 – – 4.35 <1	<450 – – – – – 300 300 – – – –	<450 – – – – – 300 300 – – 3.97 <1	<450 – – – – – 300 300 – – – –	<450 300 350 – – 3.31 <1	<450 300 450 – – 4.77 <1	<450 300 450 8000 10000 4.56 <1	<450 300 450 – – 5.20 <1	<450 300 400 – – 4.12 <1	<450 300 400 – – 3.59 <1	<450 300 400 – – 3.67 <1	<450 300 400 8000 9500 2.80 <1	<450 300 450 – – 3.92 <1	<450 175 500 – – 1.82 <1
CO								<450 300 400 8000 9000 3.90 <1	<450 300 400 – – 3.20 <1	<450 300 400 – – 4.43 <1	<450 300 375 – – 4.65 <1	<450 300 350 – – 4.22 <1	<450 300 400 8000 9000 3.89 <1	<450 300 400 – – 3.60 <1	<450 300 450 – – 3.66 <1	<450 300 400 – – 4.11 <1	<450 175 450 5500 12500 2.17 <1
CN	<450 – – – – – 300 400 – – – 4.80 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 400 – – 3.50 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 350 – – 4.60 <1	<450 – – – – – 300 375 – – – –	<450 – – – – – 300 300 – – 4.19 <1	<450 300 400 – – 3.71 <1	<450 300 350 – – 3.80 <1	<450 300 400 8000 10000 4.40 <1	<450 300 400 – – 3.38 <1	<450 300 350 – – 3.96 <1	<450 300 400 – – 4.25 <1	<450 300 400 – – 4.36 <1	<450 300 400 80000 10000 3.77 <1	<450 300 400 – – 3.70 <1	<450 175 500 – – 2.27 <1
CM								<450 300 300 8000 10000 3.88 <1	<450 300 300 – – 3.94 <1	<450 300 300 – – 4.47 <1	<450 300 300 – – 4.45 <1	<450 300 300 – – 4.13 <1	<450 300 400 8000 10000 4.39 <1	<450 300 400 – – 4.45 <1	<450 300 400 – – 3.83 <1	<450 300 450 – – 4.95 <1	<450 175 450 5500 10000 2.50 <1
CL	<450 – – – – – 175 300 – – – –	<450 – – – – – 175 275 – – 2.22 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 400 – – 3.52 <1	<450 – – – – – 300 450 – – – –	<450 – – – – – 300 450 – – 3.80 <1	<450 – – – – – 300 400 – – – –	<450 300 400 – – 3.89 <1	<450 300 350 – – 4.51 <1	<450 300 400 8000 10000 4.14 <1	<450 300 350 – – 4.31 <1	<450 300 350 – – 3.60 <1	<450 300 400 – – 4.32 <1	<450 300 400 – – 4.27 <1	<450 300 400 8000 10000 3.89 <1	<450 300 400 – – 5.17 <1	<450 175 450 – – 2.09 <1
CK								<450 300 400 8000 10000 3.96 <1	<450 300 350 – – 3.47 <1	<450 300 350 – – 4.63 <1	<450 300 350 – – 4.96 <1	<450 300 400 – – 4.74 <1	<450 300 400 8000 9500 4.43 <1	<450 300 450 – – 4.42 <1	<450 300 400 – – 4.17 <1	<450 175 450 – – 2.60 <1	<450 175 500 5500 15000 1.26 <1
CJ	<450 – – – – – 175 325 – – – 2.19 <1	<450 – – – – – 175 350 – – 4.69 <1	<450 – – – – – 175 350 – – 2.04 <1	<450 – – – – – 300 400 – – – –	<450 – – – – – 300 450 – – 3.75 <1	<450 – – – – – 300 500 – – – –	<450 – – – – – 300 400 – – 4.23 <1	<450 300 300 – – 5.17 <1	<450 300 300 – – 4.51 <1	<450 300 300 8000 9000 4.46 <1	<450 300 300 – – 4.74 <1	<450 300 300 – – 3.38 <1	<450 300 400 – – 2.99 <1	<450 300 400 – – 3.92 <1	<450 300 400 5500 7000 3.24 <1	<450 175 450 – – 9.30 <1	<450 175 525 – – 2.38 <1
CI								<450 300 400 8000 9000 3.62 <1	<450 300 400 – – 4.24 <1	<450 300 400 – – 3.87 <1	<450 300 400 – – 3.73 <1	<450 300 400 – – 3.86 <1	<450 300 400 8000 10000 3.93 <1	<450 300 400 – – 3.83 <1	<450 300 450 – – 3.84 <1	<450 175 400 – – 2.32 <1	<450 175 500 5500 15000 1.80 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
DB	<450 – – – – – 300 575 – – –	<450 – – – – – 300 450 – – 3.26 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 350 – – 6.25 <1	<450 – – – – – 300 300 – – –	<450 – – – – – 300 400 – – 4.47 <1	<450 – – – – – 300 300 – – –	<450 300 400 – – 4.14 <1	<450 300 400 – – 3.59 <1	<450 300 400 8000 10000 4.15 <1	<450 300 400 – – 4.43 <1	<450 300 400 – – 4.54 <1	<450 300 450 – – 3.88 <1	<450 300 450 – – 3.51 <1	<450 300 450 8000 10000 3.53 <1	<450 300 300 – – 3.35 <1	<450 175 500 – – 2.17 <1
DA								<450 300 300 8000 8000 3.94 <1	<450 300 400 – – 3.81 <1	<450 300 400 – – 4.96 <1	<450 300 500 – – 5.91 <1	<450 300 500 – – 4.54 <1	<450 300 400 8000 10000 3.68 <1	<450 300 400 – – 4.52 <1	<450 175 475 – – 2.90 <1	<450 300 350 – – 3.41 <1	<450 175 500 5500 15000 2.52 <1
CZ	<450 – – – – – 300 425 – – 3.88 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 4.27 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 375 – – 3.78 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 300 – – 3.43 <1	<450 300 350 – – 4.97 <1	<450 300 350 – – 2.74 <1	<450 300 350 8000 9000 5.45 <1	<450 300 375 – – 5.29 <1	<450 300 375 – – 3.98 <1	<450 300 450 – – 3.94 <1	<450 300 500 – – 4.17 <1	<450 300 500 8000 10000 2.75 <1	<450 300 550 – – 3.34 <1	<450 175 550 – – 4.08 <1
CY								<450 300 350 8000 10000 5.79 <1	<450 300 350 – – 4.34 <1	<450 300 300 – – 4.98 <1	<450 300 450 – – 4.50 <1	<450 300 400 – – 4.44 <1	<450 300 400 8000 9500 4.27 <1	<450 300 400 – – 3.66 <1	<450 300 350 – – 4.59 <1	<450 300 400 – – 4.67 <1	<450 175 500 5500 15000 1.53 <1
CX	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 3.93 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 4.81 <1	<450 – – – – – 300 300 – – –	<450 – – – – – 300 350 – – 4.49 <1	<450 – – – – – 300 300 – – –	<450 300 375 – – 4.42 <1	<450 300 400 – – 3.59 <1	<450 300 400 8000 9000 4.93 <1	<450 300 400 – – 4.27 <1	<450 300 400 – – 4.98 <1	<450 300 450 – – 4.68 <1	<450 300 500 – – 3.83 <1	<450 300 500 5500 7000 4.20 <1	<450 300 500 – – 4.73 <1	<450 175 450 – – 2.48 <1
CW								<450 300 300 8000 7750 4.56 <1	<450 300 350 – – 4.33 <1	<450 300 300 – – 4.48 <1	<450 300 300 – – 4.77 <1	<450 300 300 – – 3.81 <1	<450 300 400 8000 9500 3.33 <1	<450 300 400 – – 4.36 <1	<450 300 500 – – 5.52 <1	<450 300 550 – – 4.19 <1	<450 175 450 5500 15000 2.36 <1
CV	<450 – – – – – 300 450 – – 5.35 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 400 – – 4.74 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 400 – – 5.54 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 400 – – 4.67 <1	<450 300 400 – – 3.36 <1	<450 300 400 – – 3.86 <1	<450 300 400 8000 10000 5.41 <1	<450 300 500 – – 4.81 <1	<450 175 300 – – 2.56 <1	<450 175 300 – – 3.65 <1	<450 300 400 – – 4.09 <1	<450 300 400 8000 9500 4.90 <1	<450 300 400 – – 4.12 <1	<450 175 500 – – 7.98 <1
CU								<450 300 350 8000 8500 4.06 <1	<450 300 350 – – 4.78 <1	<450 300 400 – – 4.65 <1	<450 300 450 – – 5.40 <1	<450 300 375 – – 3.85 <1	<450 175 375 8500 9500 2.79 <1	<450 300 450 – – 4.63 <1	<450 300 450 – – 4.17 <1	<450 300 500 – – 4.09 <1	<450 175 500 5500 15000 2.25 <1
CT	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.18 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 3.97 <1	<450 – – – – – 300 300 – – –	<450 – – – – – 300 300 – – 4.42 <1	<450 – – – – – 300 350 – – –	<450 300 350 – – 3.86 <1	<450 300 350 – – 3.39 <1	<450 300 350 8000 8500 4.64 <1	<450 300 350 – – 4.47 <1	<450 300 375 – – 3.29 <1	<450 300 350 – – 3.90 <1	<450 300 350 – – 3.13 <1	<450 300 350 5500 7000 4.06 <1	<450 300 400 – – 4.24 <1	<450 175 450 – – 2.41 <1
CS								<450 300 450 8000 17500 4.30 <1	<450 300 450 – – 3.70 <1	<450 300 400 – – 5.16 <1	<450 300 400 – – 5.19 <1	<450 300 450 – – 4.18 <1	<450 300 350 8000 9000 3.90 <1	<450 300 400 – – 3.98 <1	<450 300 450 – – 4.76 <1	<450 300 450 – – 4.04 <1	<450 175 550 5500 15000 2.99 <1

Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
DL	<450 – – – – 300 425 – 4.09 <1	<450 – – – – 300 425 – – –	<450 – – – – 300 400 – 4.83 –	<450 – – – – 300 375 – – –	<450 – – – – 300 400 – 3.88 <1	<450 – – – – 300 350 – – –	<450 – – – – 300 400 – 3.71 <1	<450 300 400 – – 3.80 <1	<450 300 400 – – 3.30 <1	<450 300 400 8000 8500 4.56 <1	<450 300 375 – – 3.96 <1	<450 300 375 – – 3.60 <1	<450 300 400 – – 3.98 <1	<450 300 400 – – 4.36 <1	<450 300 400 8000 9000 3.46 <1	<450 300 400 – – 3.55 <1	<450 175 450 – – 3.19 <1
DK								<450 300 350 8000 7500 3.67 <1	<450 300 350 – – 3.02 <1	<450 300 400 – – 4.92 <1	<450 300 350 – – 6.26 <1	<450 300 450 – – 4.43 <1	<450 300 400 8000 9000 4.55 <1	<450 300 400 – – 3.96 <1	<450 300 400 – – 3.58 <1	<450 300 450 – – 4.20 <1	<450 175 575 5500 15000 1.97 <1
DJ	<450 – – – – 300 400 – – –	<450 – – – – 300 375 – 4.17 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 375 – 3.99 <1	<450 – – – – 300 430 – – –	<450 – – – – 300 350 – 4.47 <1	<450 – – – – 300 350 – – –	<450 300 400 – – 3.05 <1	<450 300 400 – – 4.75 <1	<450 300 400 8000 9000 3.93 <1	<450 300 400 – – 3.67 <1	<450 300 400 – – 4.59 <1	<450 300 250 – – 4.29 <1	<450 300 300 – – 3.83 <1	<450 300 250 8000 8000 3.27 <1	<450 300 450 – – 3.58 <1	<450 175 500 – – 2.81 <1
DI								<450 300 400 8000 9000 4.47 <1	<450 300 400 – – 3.76 <1	<450 300 400 – – 4.60 <1	<450 300 400 – – 3.21 <1	<450 300 400 – – 4.97 <1	<450 300 400 8000 9500 4.31 <1	<450 300 350 – – 3.16 <1	<450 300 300 – – 3.30 <1	<450 300 450 – – 4.05 <1	<450 175 450 5500 15000 2.24 <1
DH	<450 – – – – 300 400 – 4.42 <1	<450 – – – – 300 425 – – –	<450 – – – – 300 400 – 4.55 <1	<450 – – – – 300 350 – – –	<450 – – – – 300 400 – 4.58 <1	<450 – – – – 300 450 – – –	<450 – – – – 300 350 – 3.94 <1	<450 300 400 – – 2.90 <1	<450 300 400 – – 3.59 <1	<450 300 400 8000 9000 4.64 <1	<450 300 350 – – 4.28 <1	<450 300 450 – – 3.92 <1	<450 300 400 – – 5.26 <1	<450 300 400 – – 4.61 <1	<450 300 400 5500 6500 4.47 <1	<450 300 400 – – 3.22 <1	<450 175 500 – – 1.81 <1
DG								<450 300 400 8000 9000 2.85 <1	<450 300 400 – – 2.70 <1	<450 300 400 – – 4.49 <1	<450 300 400 – – 4.45 <1	<450 300 400 – – 3.88 <1	<450 300 400 8000 9500 4.40 <1	<450 300 400 – – 3.06 <1	<450 300 400 – – 2.82 <1	<450 300 375 – – 2.75 <1	<450 175 500 5500 15000 1.48 <1
DF	<450 – – – – 300 450 – – –	<450 – – – – 300 450 – 4.11 <1	<450 – – – – 300 350 – – –	<450 – – – – 300 400 – 4.94 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 350 – 5.11 <1	<450 – – – – 300 400 – – –	<450 300 450 – – 3.56 <1	<450 300 400 – – 4.31 <1	<450 300 400 8000 10000 4.25 <1	<450 300 450 – – 3.08 <1	<450 300 400 – – 4.29 <1	<450 300 400 – – 4.14 <1	<450 300 400 – – 4.74 <1	<450 300 450 5500 7000 2.36 <1	<450 300 500 – – 2.81 <1	<450 300 500 – – 2.99 <1
DE								<450 300 350 8000 9000 3.81 <1	<450 300 350 – – 3.25 <1	<450 300 350 – – 4.64 <1	<450 300 375 – – 3.59 <1	<450 300 375 – – 3.91 <1	<450 300 400 8000 9500 3.85 <1	<450 300 400 – – 4.12 <1	<450 300 400 – – 2.48 <1	<450 300 450 – – 2.97 <1	<450 175 500 5500 15000 1.63 <1
DD	<450 – – – – 300 500 – 5.23 <1	<450 – – – – 300 450 – – –	<450 – – – – 300 400 – 3.50 <1	<450 – – – – 300 400 – – –	<450 – – – – 300 300 – 3.89 <1	<450 – – – – 300 450 – – –	<450 – – – – 300 350 – 3.79 <1	<450 300 400 – – 3.26 <1	<450 300 400 – – 3.00 <1	<450 300 450 8000 9000 4.82 <1	<450 300 450 – – 4.13 <1	<450 300 400 – – 3.68 <1	<450 300 450 – – 4.52 <1	<450 300 400 – – 3.46 <1	<450 300 400 5500 7500 2.66 <1	<450 300 400 – – 4.28 <1	<450 175 500 – – 1.97 <1
DC								<450 300 400 8000 9000 3.59 <1	<450 300 300 – – 4.08 <1	<450 300 300 – – 4.15 <1	<450 300 300 – – 4.87 <1	<450 300 300 – – 4.80 <1	<450 300 400 8000 11000 5.31 <1	<450 300 400 – – 5.30 <1	<450 175 250 – – 2.84 <1	<450 300 350 – – 2.70 <1	<450 175 500 5500 15000 3.83 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Ec. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
DV	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 3.87 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.82 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 350 – – 4.10 <1	<450 – – – – – 300 400 – – –	<450 300 350 – – – 3.25 <1	<450 300 400 – – – 3.22 <1	<450 300 400 8000 8500 – 3.02 <1	<450 300 400 – – – 2.75 <1	<450 300 400 – – – 3.83 <1	<450 300 400 – – – 4.37 <1	<450 300 450 – – – 3.73 <1	<450 175 250 5500 6000 – 3.64 <1	<450 300 450 – – – 3.21 <1	<450 175 400 – – – 1.54 <1
DU								<450 300 400 8000 10000 – 3.28 <1	<450 300 400 – – – 3.62 <1	<450 300 400 – – – 3.74 <1	<450 300 350 – – – 3.77 <1	<450 300 400 – – – 5.62 <1	<450 300 400 8000 8500 – 5.06 <1	<450 300 400 – – – 6.09 <1	<450 300 450 – – – 3.24 <1	<450 300 500 – – – 2.75 <1	<450 175 550 5500 12500 – 1.01 <1
DT	<450 – – – – – 300 400 – – 4.48 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 5.24 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.41 <1	<450 – – – – – 300 300 – – –	<450 – – – – – 300 400 – – 4.90 <1	<450 300 350 – – – 3.13 <1	<450 300 350 – – – 2.34 <1	<450 300 350 8500 10000 – 3.88 <1	<450 300 400 – – – 2.82 <1	<450 300 400 – – – 4.41 <1	<450 300 400 – – – 4.17 <1	<450 300 400 – – – 3.18 <1	<450 300 500 600 8500 8500 2.38 <1	<450 300 500 – – – 2.96 <1	<450 175 550 – – – 2.10 <1
DS								<450 300 450 8000 13000 – 3.56 <1	<450 300 450 – – – 2.98 <1	<450 300 450 – – – 2.90 <1	<450 300 400 – – – 3.40 <1	<450 300 400 – – – 4.46 <1	<450 300 400 8000 8500 – 4.20 <1	<450 300 400 – – – 2.72 <1	<450 300 500 – – – 1.94 <1	<450 300 450 – – – 2.98 <1	<450 175 550 5500 12500 – 3.37 <1
DR	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 4.67 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 4.61 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 300 – 4.84 <1	<450 – – – – – 300 400 – – –	<450 300 400 – – – 3.29 <1	<450 300 350 – – – 3.77 <1	<450 300 400 8000 9000 – 2.86 <1	<450 300 350 – – – 3.03 <1	<450 300 400 – – – 4.07 <1	<450 300 400 – – – 4.72 <1	<450 300 400 – – – 4.11 <1	<450 300 400 5500 7000 – 3.22 <1	<450 300 500 – – – 3.58 <1	<450 175 550 – – – 1.68 <1
DQ								<450 300 400 8000 8500 – 2.98 <1	<450 300 400 – – – 3.83 <1	<450 300 450 – – – 3.44 <1	<450 300 350 – – – 3.45 <1	<450 300 350 – – – 4.43 <1	<450 300 400 8000 8500 9250 5.28 <1	<450 300 400 – – – 3.58 <1	<450 300 400 – – – 3.03 <1	<450 300 400 – – – 3.46 <1	<450 175 400 5500 20000 – 2.15 <1
DP	<450 – – – – – 300 400 – – 4.38 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.20 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.93 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 3.54 <1	<450 300 400 – – – 3.64 <1	<450 300 400 – – – 4.06 <1	<450 300 400 8000 10000 – 3.31 <1	<450 300 400 – – – 3.43 <1	<450 175 325 – – – 3.41 <1	<450 300 400 – – – 4.63 <1	<450 300 400 – – – 3.45 <1	<450 300 400 8000 9500 – 3.89 <1	<450 300 425 – – – 3.27 <1	<450 175 600 – – – 2.39 <1
DO								<450 300 400 8000 9000 – 3.79 <1	<450 300 400 – – – 3.30 <1	<450 300 400 – – – 3.31 <1	<450 300 400 – – – 2.89 <1	<450 300 400 – – – 3.78 <1	<450 175 300 8000 8500 – 3.96 <1	<450 175 300 – – – 4.01 <1	<450 175 300 – – – 3.87 <1	<450 300 450 – – – 3.55 <1	<450 175 550 5500 16000 – 1.84 <1
DN	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 4.63 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – 5.36 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 350 – 4.11 <1	<450 – – – – – 300 400 – – –	<450 300 500 – – – 3.27 <1	<450 300 450 – – – 4.98 <1	<450 300 500 8000 10000 – 4.74 <1	<450 300 450 – – – 3.29 <1	<450 250 450 – – – 5.08 <1	<450 300 450 – – – 3.83 <1	<450 300 450 – – – 3.75 <1	<450 300 400 8000 9000 – 3.43 <1	<450 300 400 – – – 2.75 <1	<450 175 525 – – – 2.46 <1
DM								<450 300 350 8000 10000 – 4.24 <1	<450 300 350 – – – 2.82 <1	<450 300 400 – – – 4.67 <1	<450 300 350 – – – 3.87 <1	<450 300 350 – – – 4.74 <1	<450 175 300 8000 9000 – 4.79 <1	<450 175 300 – – – 3.86 <1	<450 175 300 – – – 2.70 <1	<450 300 350 – – – 3.48 <1	<450 175 500 5500 17500 – 0.83 <1

Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
EF	<450 – – – – – 300 500 – – 4.95 <1	<450 – – – – – 300 500 – – –	<450 – – – – – 300 450 – – 4.67 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 450 – – 5.01 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 450 – – 3.73 <1	<450 300 400 – – 3.11 <1	<450 300 325 – – 3.94 <1	<450 300 375 5000 9000 – 3.87 <1	<450 300 400 – – 3.76 <1	<450 300 400 – – 4.69 <1	<450 300 450 – – 4.01 <1	<450 300 450 – – 3.98 <1	<450 300 375 5500 6000 4.02 <1	<450 300 350 – – 4.01 <1	<450 175 400 – – 2.44 <1
EE								<450 300 425 8000 9000 3.57 <1	<450 300 450 – – 2.28 <1	<450 300 400 – – 4.21 <1	<450 300 400 – – 4.27 <1	<450 300 500 – – 3.43 <1	<450 300 450 8000 8000 3.56 <1	<450 300 400 – – 3.42 <1	<450 300 400 – – 4.26 <1	<450 300 400 – – 3.00 <1	<450 175 400 5500 9500 1.88 <1
ED	<450 – – – – – 300 500 – – –	<450 – – – – – 300 450 – – 4.94 <1	<450 – – – – – 300 500 – – –	<450 – – – – – 300 350 – – 4.29 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 4.04 <1	<450 – – – – – 300 325 – – –	<450 300 450 – – 3.44 <1	<450 300 450 – – 3.64 <1	<450 300 400 9000 10000 3.12 <1	<450 300 400 – – 2.85 <1	<450 300 400 – – 4.73 <1	<450 300 350 – – 3.43 <1	<450 300 350 – – 3.68 <1	<450 300 375 5500 9000 3.49 <1	<450 300 400 – – 3.41 <1	<450 175 400 – – 2.10 <1
EC								<450 300 300 8000 8500 3.41 <1	<450 300 250 – – 3.64 <1	<450 300 300 – – 3.14 <1	<450 300 300 – – 2.90 <1	<450 300 300 – – 4.28 <1	<450 300 500 8000 12500 4.09 <1	<450 300 450 – – 3.78 <1	<450 300 400 – – 3.82 <1	<450 300 400 – – 4.15 <1	<450 175 400 5500 15000 1.98 <1
EB	<450 – – – – – 300 400 – – 4.76 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 500 – – 4.60 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.78 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.48 <1	<450 300 400 – – 3.31 <1	<450 300 400 – – 2.83 <1	<450 300 400 8000 8000 3.71 <1	<450 300 450 – – 3.08 <1	<450 300 450 – – 3.88 <1	<450 300 350 – – 4.77 <1	<450 300 350 – – 3.47 <1	<450 300 300 5500 10000 4.39 <1	<450 300 350 – – 2.41 <1	<450 175 600 – – 2.50 <1
EA								<450 300 400 8000 8500 3.07 <1	<450 300 350 – – 3.18 <1	<450 300 400 – – 3.31 <1	<450 300 400 – – 3.37 <1	<450 300 450 – – 3.56 <1	<450 300 400 8000 12500 4.70 <1	<450 300 400 – – 4.06 <1	<450 175 300 – – 2.65 <1	<450 300 400 – – 2.19 <1	<450 175 500 5500 15000 2.14 <1
DZ	<450 – – – – – 300 550 – – –	<450 – – – – – 300 425 – – 4.43 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.42 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.17 <1	<450 – – – – – 300 400 – – –	<450 300 400 – – 3.02 <1	<450 300 350 – – 3.39 <1	<450 300 400 8000 8000 3.37 <1	<450 300 400 – – 3.60 <1	<450 300 400 – – 3.95 <1	<450 300 400 – – 4.84 <1	<450 300 400 – – 3.77 <1	<450 175 250 5500 6500 2.48 <1	<450 175 250 – – 2.80 <1	<450 175 600 – – 1.49 <1
DY								<450 300 450 8000 10000 2.83 <1	<450 300 250 – – 3.91 <1	<450 300 250 – – 5.01 <1	<450 300 300 – – 3.08 <1	<450 300 450 – – 4.12 <1	<450 300 450 8000 9500 4.31 <1	<450 300 500 – – 4.76 <1	<450 175 275 – – 2.82 <1	<450 175 275 – – 3.08 <1	<450 175 450 5500 8250 1.17 <1
DX	<450 – – – – – 300 300 – – 4.03 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.02 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.71 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 400 – – 3.90 <1	<450 300 455 – – 2.92 <1	<450 300 400 – – 2.39 <1	<450 300 400 8000 8500 3.13 <1	<450 300 400 – – 3.25 <1	<450 300 450 – – 3.72 <1	<450 300 500 – – 4.39 <1	<450 300 550 – – 3.75 <1	<450 175 300 5500 6500 3.10 <1	<450 300 450 – – 4.98 <1	<450 175 400 – – 1.09 <1
DW								<450 300 400 8000 9000 2.64 <1	<450 350 400 – – 2.51 <1	<450 300 350 – – 2.77 <1	<450 300 400 – – 3.03 <1	<450 300 350 – – 2.71 <1	<450 300 350 8000 12500 4.81 <1	<450 300 350 – – 4.40 <1	<450 175 250 – – 2.89 <1	<450 300 350 – – 4.03 <1	<450 175 500 5500 8250 1.72 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
EP	<450 – – – – – – 300 450 – – –	<450 – – – – – – 300 450 – – 4.42 <1	<450 – – – – – 175 375 – – 2.95 <1	<450 – – – – – – 300 450 – – 6.41 <1	<450 – – – – – 300 400 – – –	<450 – – – – – – 300 400 – – 4.84 <1	<450 – – – – – – 300 275 – – –	<450 300 500 – – – 3.48 <1	<450 300 450 – – 4.06 <1	<450 300 500 8000 15000 3.37 <1	<450 300 450 – – 3.80 <1	<450 300 475 – – 4.35 <1	<450 300 500 – – 5.20 <1	<450 300 400 – – 3.86 <1	<450 300 400 5500 5000 3.13 <1	<450 300 400 – – 4.80 <1	<450 175 400 – – 2.57 <1
EO								<450 300 450 8000 9000 3.52 <1	<450 300 450 – – 4.05 <1	<450 300 450 – – 2.89 <1	<450 300 450 – – 3.36 <1	<450 300 475 – – 4.20 <1	<450 300 500 8000 8000 3.39 <1	<450 300 450 – – 4.12 <1	<450 300 450 – – 3.61 <1	<450 175 200 – – 3.62 <1	<450 175 450 5500 5000 4.52 <1
EN	<450 – – – – – – 175 300 – – 2.45 <1	<450 – – – – – 175 400 – – 3.38 <1	<450 – – – – – 175 400 – – 2.86 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 300 – – 4.37 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 300 – – 3.77 <1	<450 300 400 – – 3.42 <1	<450 300 450 – – 2.31 <1	<450 300 400 8000 9000 2.65 <1	<450 300 500 – – 2.22 <1	<450 300 400 – – 3.55 <1	<450 300 500 – – 3.95 <1	<450 300 450 – – 3.95 <1	<450 300 450 8000 8000 3.49 <1	<450 300 500 – – 3.06 <1	<450 175 500 – – 2.35 <1
EM								<450 300 400 8000 9000 2.45 <1	<450 300 400 – – 3.29 <1	<450 300 400 – – 3.65 <1	<450 300 400 – – 3.11 <1	<450 300 400 – – 3.78 <1	<450 300 400 8000 9500 4.08 <1	<450 300 400 – – 4.79 <1	<450 300 400 – – 3.12 <1	<450 300 400 – – 4.13 <1	<450 175 500 5500 15000 2.54 <1
EL	<450 – – – – – – 175 450 – – 2.61 <1	<450 – – – – – 300 450 – – 4.85 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 400 – – 5.08 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 350 – – 4.19 <1	<450 – – – – – 300 300 – – –	<450 300 375 – – 3.63 <1	<450 300 375 – – 3.52 <1	<450 300 175 8000 10000 3.65 <1	<450 300 375 – – 3.55 <1	<450 300 450 – – 9.02 <1	<450 300 450 – – 3.99 <1	<450 300 450 – – 3.88 <1	<450 300 400 8000 8500 3.60 <1	<450 300 450 – – 3.32 <1	<450 175 500 – – 2.95 <1
EK								<450 300 400 8000 10000 3.39 <1	<450 300 400 – – 4.20 <1	<450 300 400 – – 3.25 <1	<450 300 400 – – 3.99 <1	<450 175 400 – – 2.67 <1	<450 300 450 8000 9500 4.33 <1	<450 300 400 – – 3.28 <1	<450 300 350 – – 3.42 <1	<450 300 350 – – 3.44 <1	<450 175 250 5500 3000 1.21 <1
EJ	<450 – – – – – – 300 475 – – 4.78 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 5.16 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 5.13 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 450 – – 4.37 <1	<450 300 400 – – 3.09 <1	<450 300 400 – – 3.21 <1	<450 300 400 8000 15000 4.01 <1	<450 300 400 – – 3.47 <1	<450 300 400 – – 3.97 <1	<450 300 500 – – 4.08 <1	<450 300 500 – – 3.65 <1	<450 300 375 5500 4500 4.67 <1	<450 300 425 – – 3.94 <1	<450 175 550 – – 1.76 <1
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EG								<450 300 400 8000 9500 3.37 <1	<450 300 425 – – 3.74 <1	<450 300 400 – – 4.67 <1	<450 300 400 – – 3.87 <1	<450 300 400 – – 4.30 <1	<450 300 400 8000 8500 3.32 <1	<450 300 400 – – 4.02 <1	<450 300 400 – – 4.59 <1	<450 300 400 – – 5.07 <1	<450 175 600 5500 20000 2.34 <1

Sample Data

< 450 – IM-247/PD Results [μaCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

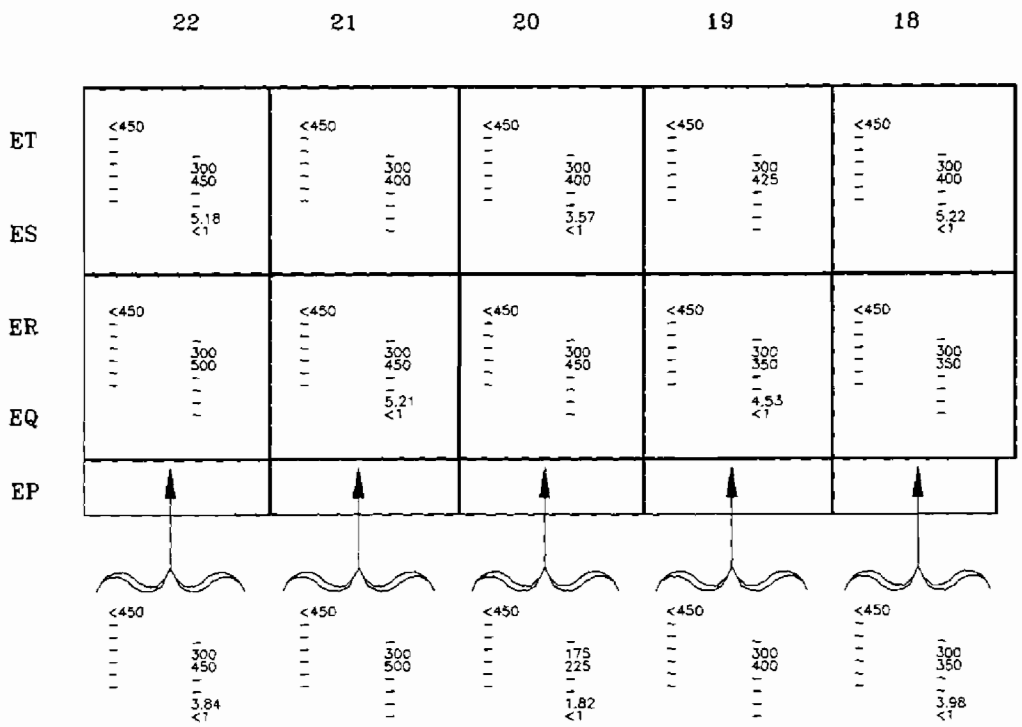
	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
EZ	<450 – – – – – 300 550 – – 3.98 <1	<450 – – – – – 300 350 – – –	<450 – – – – – 300 450 – – 4.38 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 175 300 – – 4.31 <1	<450 – – – – – 175 300 – – –	<450 – – – – – 175 300 – – 4.06 <1	<450 300 350 – – 3.43 <1	<450 300 350 – – 4.44 <1	<450 300 400 8000 8500 4.08 <1	<450 300 400 – – 4.49 <1	<450 175 300 – – 2.31 <1	<450 300 450 – – 3.09 <1	<450 300 450 – – 3.05 <1	<450 175 400 8000 9500 3.44 <1	<450 175 450 – – 2.99 <1	<450 175 450 – – 3.22 <1
EY								<450 300 400 8000 9000 4.08 <1	<450 300 450 – – 3.33 <1	<450 300 400 – – 4.74 <1	<450 300 400 – – 3.84 <1	<450 175 300 – – 2.43 <1	<450 300 400 5500 7500 4.27 <1	<450 300 400 – – 3.69 <1	<450 175 400 – – 2.54 <1	<450 175 400 – – 2.49 <1	<450 175 400 5500 15000 2.48 <1
EX	<450 – – – – – 300 350 – – –	<450 – – – – – 300 400 – – 4.20 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 450 – – 5.12 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 175 425 – – 4.14 <1	<450 – – – – – 300 400 – – –	<450 300 400 – – 3.35 <1	<450 300 400 – – 4.27 <1	<450 300 375 8000 10000 2.67 <1	<450 300 375 – – 3.90 <1	<450 300 375 – – 3.34 <1	<450 300 450 – – 3.82 <1	<450 300 500 – – 5.02 <1	<450 175 400 8000 9000 2.55 <1	<450 175 400 – – 3.14 <1	<450 175 450 – – 2.80 <1
EW								<450 300 400 8000 9000 3.29 <1	<450 300 350 – – 3.92 <1	<450 300 350 – – 4.29 <1	<450 300 350 – – 3.59 <1	<450 300 400 – – 3.88 <1	<450 300 400 8000 9000 4.56 <1	<450 300 400 – – 3.56 <1	<450 175 300 – – 3.02 <1	<450 175 400 – – 2.58 <1	<450 175 450 5500 15000 2.97 <1
EV	<450 – – – – – 300 425 – – 3.21 <1	<450 – – – – – 300 500 – – –	<450 – – – – – 300 550 – – 2.73 <1	<450 – – – – – 300 500 – – –	<450 – – – – – 300 400 – – 5.41 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 4.34 <1	<450 300 475 – – 2.51 <1	<450 300 500 – – 3.93 <1	<450 300 450 8000 9000 3.44 <1	<450 300 500 – – 3.27 <1	<450 300 475 – – 3.95 <1	<450 300 500 – – 4.27 <1	<450 300 500 – – 4.68 <1	<450 300 550 5500 7500 4.20 <1	<450 175 400 – – 2.95 <1	<450 175 400 – – 1.53 <1
EU								<450 300 450 8000 9000 3.50 <1	<450 300 450 – – 2.60 <1	<450 300 450 – – 4.67 <1	<450 300 450 – – 4.24 <1	<450 300 450 – – 4.04 <1	<450 300 400 8000 9000 3.80 <1	<450 300 400 – – 4.60 <1	<450 300 400 – – 3.74 <1	<450 175 400 – – 2.76 <1	<450 175 400 5500 9000 1.86 <1
ET	<450 – – – – – 300 400 – – –	<450 – – – – – 300 400 – – 2.66 <1	<450 – – – – – 175 400 – – 4.40 <1	<450 – – – – – 175 400 – – 2.44 <1	<450 – – – – – 175 325 – – –	<450 – – – – – 175 325 – – 2.23 <1	<450 – – – – – 175 325 – – –	<450 175 300 – – 1.31 <1	<450 175 300 – – 3.80 <1	<450 175 350 5500 8000 2.22 <1	<450 175 400 – – 2.41 <1	<450 175 400 – – 1.71 <1	<450 175 400 – – 3.85 <1	<450 175 400 – – 2.75 <1	<450 175 400 5500 10000 1.52 <1	<450 175 400 – – 2.70 <1	<450 175 400 – – 1.40 <1
ES								<450 175 300 5500 8500 1.99 <1	<450 300 350 – – 3.96 <1	<450 175 350 – – 2.29 <1	<450 175 350 – – 2.26 <1	<450 175 400 – – 2.65 <1	<450 175 425 5500 9000 2.20 <1	<450 175 375 – – 2.36 <1	<450 175 400 – – 2.19 <1	<450 175 425 – – 1.87 <1	<450 175 400 5500 10000 2.86 <1
ER	<450 – – – – – 300 450 – – 4.92 <1	<450 – – – – – 300 400 – – –	<450 – – – – – 175 450 – – 2.65 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 300 – – 4.79 <1	<450 – – – – – 300 300 – – –	<450 – – – – – 300 300 – – 4.00 <1	<450 300 400 – – 2.45 <1	<450 300 400 – – 3.12 <1	<450 300 400 8000 10000 2.43 <1	<450 300 430 – – 4.29 <1	<450 300 400 – – 4.17 <1	<450 175 400 – – 2.89 <1	<450 175 400 – – 2.56 <1	<450 175 300 8000 10000 2.86 <1	<450 175 450 – – 2.75 <1	<450 175 450 – – 2.44 <1
EQ								<450 300 350 8000 10000 3.63 <1	<450 300 350 – – 2.94 <1	<450 300 400 – – 3.50 <1	<450 300 350 – – 3.03 <1	<450 300 400 – – 3.03 <1	<450 300 400 8000 12500 3.99 <1	<450 300 400 – – 3.82 <1	<450 300 400 – – 3.31 <1	<450 175 600 – – 1.93 <1	<450 175 550 5500 15000 2.17 <1

Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
FJ	<450 – – – – – 375 425 – – –	<450 – – – – 2.00 <1 375 400 – – –	<450 – – – – – 375 400 – – –	<450 – – – – 1.92 <1 375 375 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 2.27 <1 375 350 – – –	<450 – – – – – 375 400 – – –	<450 375 425 – – 2.20 <1	<450 375 400 – – 2.39 <1	<450 375 400 6750 7500 2.79 <1	<450 375 425 – – 3.14 <1	<450 375 400 – – 2.88 <1	<450 375 375 – – 2.58 <1	<450 375 400 – – 1.92 <1	<450 375 350 6750 8000 2.12 <1	<450 375 450 – – 2.33 <1	<450 375 400 – – 2.56 <1
FI								<450 375 450 6750 7500 1.85 <1	<450 375 400 – – 2.47 <1	<450 375 425 – – 2.56 <1	<450 375 425 – – 2.87 <1	<450 375 400 – – 2.57 <1	<450 375 350 6750 7500 2.47 <1	<450 375 300 – – 2.02 <1	<450 375 350 – – 1.61 <1	<450 375 375 – – 2.52 <1	<450 375 400 6750 7000 2.34 <1
FH	<450 – – – – 2.27 <1 375 400 – – –	<450 – – – – – 375 400 – – –	<450 – – – – 2.20 <1 375 350 – – –	<450 – – – – – 375 300 – – –	<450 – – – – 2.86 <1 375 300 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 2.40 <1 375 400 – – –	<450 375 300 – – 2.24 <1	<450 375 350 – – 2.58 <1	<450 375 300 6750 7500 2.44 <1	<450 375 275 – – 3.33 <1	<450 375 300 – – 2.35 <1	<450 375 350 – – 2.37 <1	<450 375 375 – – 2.48 <1	<450 375 350 6750 7500 2.13 <1	<450 375 375 – – 2.44 <1	<450 375 300 – – 2.75 <1
FG								<450 375 400 6750 7500 1.82 <1	<450 375 400 – – 2.35 <1	<450 375 400 – – 2.20 <1	<450 375 375 – – 3.79 <1	<450 375 400 – – 2.07 <1	<450 375 375 6750 8250 1.93 <1	<450 375 375 – – 2.61 <1	<450 375 300 – – 2.02 <1	<450 375 375 – – 2.05 <1	<450 375 425 6750 7000 2.29 <1
FF	<450 – – – – – 375 400 – – –	<450 – – – – 2.37 <1 375 350 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 1.65 <1 375 400 – – –	<450 – – – – – 375 400 – – –	<450 – – – – 2.49 <1 375 350 – – –	<450 – – – – – 375 350 – – –	<450 375 400 – – 2.26 <1	<450 375 400 – – 2.37 <1	<450 375 400 6750 8000 2.23 <1	<450 375 375 – – 4.82 <1	<450 375 300 – – 1.92 <1	<450 375 375 – – 2.72 <1	<450 375 375 – – 2.52 <1	<450 375 300 6750 7000 1.42 <1	<450 375 325 – – 2.10 <1	<450 375 400 – – 2.22 <1
FE								<450 375 400 6750 8000 3.34 <1	<450 375 400 – – 2.73 <1	<450 375 400 – – 2.01 <1	<450 375 375 – – 2.16 <1	<450 375 400 – – 2.35 <1	<450 375 375 6750 8000 2.04 <1	<450 375 375 – – 2.38 <1	<450 375 300 – – 2.02 <1	<450 375 350 – – 2.54 <1	<450 375 400 6750 9000 2.66 <1
FD	<450 – – – – 1.88 <1 375 400 – – –	<450 – – – – – 375 400 – – –	<450 – – – – 2.03 <1 375 400 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 2.46 <1 375 350 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 2.48 <1 375 400 – – –	<450 375 400 – – 2.41 <1	<450 375 400 – – 3.57 <1	<450 375 400 6750 7000 2.77 <1	<450 375 375 – – 2.40 <1	<450 375 375 – – 2.07 <1	<450 375 375 – – 2.08 <1	<450 375 375 – – 1.95 <1	<450 375 300 6750 7000 2.28 <1	<450 375 350 – – 2.80 <1	<450 375 400 – – 2.95 <1
FC								<450 375 450 6750 8000 1.95 <1	<450 375 400 – – 2.89 <1	<450 375 450 – – 7.03 <1	<450 375 375 – – 1.97 <1	<450 375 375 – – 2.21 <1	<450 375 350 6750 8000 2.44 <1	<450 375 350 – – 2.14 <1	<450 375 300 – – 1.92 <1	<450 375 325 – – 2.68 <1	<450 375 450 6750 12500 5.87 <1
FB	<450 – – – – – 300 300 – – –	<450 – – – – – 300 300 – – 5.35 <1	<450 – – – – – 175 600 – – 4.28 <1	<450 – – – – – 300 450 – – 4.67 <1	<450 – – – – – 300 450 – – –	<450 – – – – – 300 500 – – 3.75 <1	<450 – – – – – 300 500 – – –	<450 175 300 – – 2.24 <1	<450 175 300 – – 2.43 <1	<450 175 300 5500 10000 2.32 <1	<450 175 300 – – 2.12 <1	<450 175 300 – – 1.85 <1	<450 175 430 – – 2.40 <1	<450 175 400 – – 2.92 <1	<450 175 400 5500 10000 2.52 <1	<450 175 400 – – 2.11 <1	<450 175 450 – – 2.82 <1
FA								<450 300 300 8000 8500 3.71 <1	<450 300 350 – – 3.11 <1	<450 300 300 – – 2.93 <1	<450 300 450 – – 4.09 <1	<450 300 400 – – 3.80 <1	<450 300 550 8000 15000 3.21 <1	<450 300 425 – – 4.44 <1	<450 175 425 – – 3.17 <1	<450 175 450 – – 1.84 <1	<450 175 425 5500 7500 3.79 <1

Sample Data

<450 – IM-247/PD Results [μμC/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	22	21	20	19	18
FB	<450 – – – – – – – 300 400 – – 4.19 <1	<450 – – – – – – – 300 375 – – –	<450 – – – – – – – 300 300 – – 4.19 <1	<450 – – – – – – – 300 375 – – –	<450 – – – – – – – 300 300 – – 4.27 <1
FA					
EZ	<450 – – – – – – – 300 375 – – –	<450 – – – – – – – 300 400 – – 4.67 <1	<450 – – – – – – – 300 400 – – –	<450 – – – – – – – 300 350 – – 3.67 <1	<450 – – – – – – – 300 350 – – –
EY					
EX	<450 – – – – – – – 300 350 – – 4.14 <1	<450 – – – – – – – 300 350 – – –	<450 – – – – – – – 300 400 – – 4.98 <1	<450 – – – – – – – 300 350 – – –	<450 – – – – – – – 300 300 – – 4.83 <1
EW					
EV	<450 – – – – – – – 300 400 – – –	<450 – – – – – – – 300 375 – – 5.33 <1	<450 – – – – – – – 300 375 – – –	<450 – – – – – – – 300 300 – – 5.08 <1	<450 – – – – – – – 300 300 – – –
EU					

Sample Data

< 450 – IM-247/PD Results [µµCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
FT	<450 – – – – 2.39 <1	<450 – – – –

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GD	<450 – – – – – 375 375 – – –	<450 – – – – 2.21 375 375 – – –	<450 – – – – – 375 375 – – –	<450 – – – – 2.70 375 400 – – –	<450 – – – – – 375 375 – – –	<450 – – – – 2.53 375 375 – – –	<450 – – – – – 375 400 – – –	<450 375 400 – – 4.79 <1	<450 375 400 – – 3.01 <1	<450 375 400 6750 9000 2.04 <1	<450 375 400 – – 2.37 <1	<450 375 450 – – 3.08 <1	<450 375 400 – – 2.15 <1	<450 375 400 – – 2.29 <1	<450 375 450 6750 9000 1.66 <1	<450 375 400 – – 2.02 <1	<450 375 450 – – 2.52 <1
GC								<450 375 450 6750 9000 2.01 <1	<450 375 375 – – 2.99 <1	<450 375 400 – – 2.50 <1	<450 375 375 – – 2.49 <1	<450 375 400 – – 2.04 <1	<450 375 400 6750 10000 2.42 <1	<450 375 450 – – 3.05 <1	<450 375 400 – – 2.84 <1	<450 375 425 – – 2.59 <1	<450 375 450 6750 9750 2.96 <1
GB	<450 – – – – 2.70 375 550 – – –	<450 – – – – 375 525 – – –	<450 – – – – 3.02 375 500 – – –	<450 – – – – 375 550 – – –	<450 – – – – 2.98 375 550 – – –	<450 – – – – 375 600 – – –	<450 – – – – 375 575 – – –	<450 375 450 – – 2.38 <1	<450 375 400 – – 2.38 <1	<450 375 400 6750 9000 2.45 <1	<450 375 400 – – 2.31 <1	<450 375 400 – – 3.08 <1	<450 375 500 – – 2.33 <1	<450 375 500 – – 2.39 <1	<450 375 350 6750 9000 2.47 <1	<450 375 425 – – 2.32 <1	<450 375 400 – – 2.43 <1
GA								<450 375 450 6750 9000 3.10 <1	<450 375 500 – – 2.49 <1	<450 375 475 – – 2.66 <1	<450 375 450 – – 2.61 <1	<450 375 400 – – 1.50 <1	<450 375 500 6750 9750 2.13 <1	<450 375 500 – – 2.38 <1	<450 375 400 – – 1.91 <1	<450 375 450 – – 3.18 <1	<450 375 600 6750 20000 4.74 <1
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FY								<450 375 400 6750 9000 3.02 <1	<450 375 425 – – 1.85 <1	<450 375 400 – – 2.25 <1	<450 375 375 – – 1.94 <1	<450 375 425 – – 1.65 <1	<450 375 425 6750 8000 1.96 <1	<450 375 450 – – 2.90 <1	<450 375 350 – – 2.13 <1	<450 375 425 – – 2.35 <1	<450 375 600 6750 10000 2.54 <1
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Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GN	<450 – – – – – – 1.81 <1	<450 – – – – – – – –	<450 – – – – – – 1.56 <1	<450 – – – – – – – –	<450 – – – – – – 2.24 <1	<450 – – – – – – – –	<450 – – – – – – 2.24 <1	<450 375 400 – – – – 1.35 <1	<450 375 400 – – – – 2.13 <1	<450 375 400 6750 7000 – – 1.74 <1	<450 375 400 – – – – 2.12 <1	<450 375 400 – – – – 1.89 <1	<450 375 400 – – – – 1.83 <1	<450 375 400 – – – – 2.85 <1	<450 375 400 6750 10000 – – 2.42 <1	<450 375 450 – – – – 2.08 <1	<450 375 450 – – – – 2.25 <1
GM								<450 375 400 6750 7000 – – 2.26 <1	<450 375 400 – – – – 2.06 <1	<450 375 400 – – – – 1.98 <1	<450 375 375 – – – – 2.05 <1	<450 375 400 – – – – 1.85 <1	<450 375 425 6750 7500 – – 1.94 <1	<450 375 400 – – – – 2.47 <1	<450 375 450 – – – – 2.52 <1	<450 375 425 – – – – 2.40 <1	<450 375 450 6750 7000 – – 2.97 <1
GL	<450 – – – – – – 375 375	<450 – – – – – – 375 325	<450 – – – – – – 375 350	<450 – – – – – – 375 325	<450 – – – – – – 375 350	<450 – – – – – – 375 300	<450 – – – – – – 375 300	<450 375 375 – – – – 2.16 <1	<450 375 375 – – – – 2.34 <1	<450 375 350 6750 7500 – – 2.26 <1	<450 375 375 – – – – 2.87 <1	<450 375 300 – – – – 2.44 <1	<450 375 300 – – – – 1.88 <1	<450 375 300 – – – – 2.23 <1	<450 375 350 6750 7000 – – 2.16 <1	<450 375 300 – – – – 2.52 <1	<450 375 300 – – – – 1.81 <1
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Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps

	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
GX	<450 – – – – – 375 350 – – –	<450 – – – – 2.42 <1 375 400 – – 1.95 <1	<450 – – – – – 375 300 – – –	<450 – – – – 2.34 <1 375 300 – – –	<450 – – – – – 375 300 – – –	<450 – – – – 2.70 <1 375 300 – – –	<450 – – – – – 375 300 – – –	<450 375 350 – – 2.03 <1	<450 375 350 – – 2.49 <1	<450 375 300 6750 7000 1.99 <1	<450 375 300 – – 2.00 <1	<450 375 400 – – 2.58 <1	<450 375 375 – – 2.61 <1	<450 375 375 – – 2.04 <1	<450 375 400 6750 8000 2.26 <1	<450 375 500 – – 2.17 <1	<450 375 400 – – 2.17 <1
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GV	<450 – – – – 2.28 <1 375 350 – – –	<450 – – – – – 375 350 – – 1.95 <1	<450 – – – – 2.43 375 350 – – –	<450 – – – – – 375 350 – – –	<450 – – – – 2.71 <1 375 350 – – –	<450 – – – – – 375 375 – – –	<450 – – – – 2.21 <1 375 350 – – –	<450 375 300 – – 2.81 <1	<450 375 350 – – 2.23 <1	<450 375 300 6750 7500 2.43 <1	<450 375 300 – – 3.15 <1	<450 375 400 – – 1.45 <1	<450 375 450 – – 2.05 <1	<450 375 400 – – 2.04 <1	<450 375 350 6750 8000 2.34 <1	<450 375 350 – – 1.97 <1	<450 375 400 – – 2.07 <1
GU								<450 375 275 6750 8000 2.33 <1	<450 375 300 – – 4.26 <1	<450 375 400 – – 3.24 <1	<450 375 300 – – 2.35 <1	<450 375 300 – – 2.25 <1	<450 375 300 6750 8000 1.09 <1	<450 375 300 – – 2.03 <1	<450 375 300 – – 3.54 <1	<450 375 300 – – 2.13 <1	<450 375 300 6750 8000 2.56 <1
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GS								<450 375 400 6750 9000 2.34 <1	<450 375 400 – – 2.19 <1	<450 375 400 – – 2.55 <1	<450 375 400 – – 2.40 <1	<450 375 350 – – 2.20 <1	<450 375 300 6750 10000 1.56 <1	<450 375 350 – – 2.32 <1	<450 375 350 – – 1.87 <1	<450 375 350 – – 1.92 <1	<450 375 350 6750 10000 1.66 <1
GR	<450 – – – – – 375 400 – – 2.52 <1	<450 – – – – – 375 400 – – –	<450 – – – – 2.51 <1 375 425 – – –	<450 – – – – 2.73 <1 375 400 – – 2.12 <1	<450 – – – – 2.75 <1 375 400 – – 2.59 <1	<450 – – – – – 375 375 – – –	<450 – – – – 2.13 <1 375 400 – – 2.45 <1	<450 375 400 – – 3.01 <1	<450 375 400 – – 2.31 <1	<450 375 425 6750 7250 2.61 <1	<450 375 300 – – 1.95 <1	<450 375 400 – – 2.34 <1	<450 375 400 – – 1.14 <1	<450 375 400 – – 2.28 <1	<450 375 400 6750 7000 1.85 <1	<450 375 400 – – 2.26 <1	<450 375 500 – – 1.50 <1
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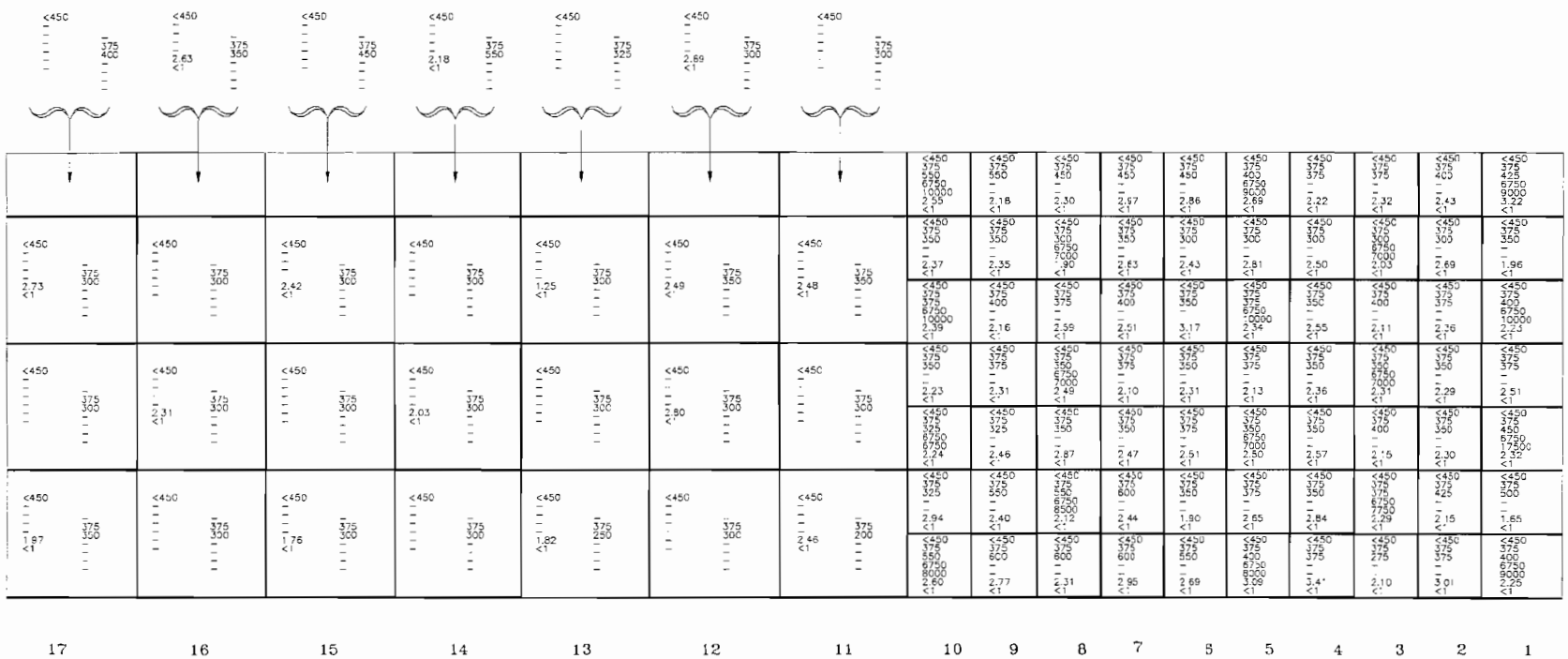
GO								<450 375 400 6750 8000 1.89 <1	<450 375 400 – – 1.72 <1	<450 375 400 – – 2.09 <1	<450 375 400 – – 2.35 <1	<450 375 400 – – 1.60 <1	<450 375 425 6750 7500 1.57 <1	<450 375 350 – – 1.63 <1	<450 375 400 – – 1.99 <1	<450 375 400 – – 2.46 <1	<450 375 400 6750 8500 2.59 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

e. Localized Grid Maps



Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

2. Pier C

f. Prior Photograph

Looking West

2. Pier C

g. After Photograph

Looking East

2. Pier C

g. After Photograph

Looking East

3. Pier D

a. Introduction:

Pier D is located in grid D-6 of the Charleston Naval Shipyard map (figure 9 of Vol. II A.) and was constructed in 1942. Pier D is also identified as structure 314.

(1) Description:

Structure 314 is rectangular and is 1100 feet long by 80 feet wide by 11 feet high. It is oriented east into the Cooper River. The pier is constructed of concrete pilings that support a concrete slab surface. Along the sides of the pier are wood post and beams bolted into the concrete. The upper surface of the pier is coated with asphalt and contains three sets of crane rails.

(2) Brief History:

(a) **Use:** This structure was constructed as part of the U.S. Naval shore establishment expansion program implemented prior to and during World War II. In 1939, the shipyard became responsible for maintaining destroyers which were assigned to the Atlantic Fleet.

Afterwards this pier was used as berths for nuclear powered ships undergoing repair at Charleston. Temporary radioactive material storage areas have been established on this structure to support work on these vessels as well as support craft, such as tenders and barges.

(b) **Radiological History:** Areas on the pier have been controlled as radiation areas and radioactive material storage areas. Temporary radioactive material storage areas were used for temporary storage of radioactive material including ships components, and portable radioactive liquid collection tanks. Radioactive material was transported regularly over the pier.

On several occasions minor spills of radioactive liquid occurred, however all spill areas were decontaminated to less than $450\mu\mu Ci/100cm^2$. Contamination levels were otherwise maintained to levels less than $450\mu\mu Ci/100cm^2$.

(3) Survey Requirements:

Nuclear Ship Berthing Area surveys. Group 2 and Group 3 surveys were performed on the pier and extended forty feet beyond the foot of the pier.

3. Pier D

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Each grid contained two 3' by 3' subsections located in areas of highest potential for contamination. One subsection was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Additionally, solid material samples were taken from a minimum of 50% of the 10' by 10' grids and each 3' by 3' subsection that resulted in greater than 450μμCi/20cm^2 using the IM-247/PD or greater than twice background using the IM-253/PD (HV-1 PHA).

Group 3 survey areas were divided into approximately 5' by 5' grids. Each grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). Then a minimum of 25% of the grids were surveyed using the IM-253/PD (HV-2 GROSS). Additionally, solid material samples were taken from each 5' by 5' grid.

Pier D including the forty-foot extension at the foot of the pier was divided into a total of 2334 grids.

Surveys of an approximate 703 ft.^{2} area, surrounding the electrical substation at the east end of the pier, were not required because the transfer of radioactive material through or over these areas did not occur.

This pier consisted of multiple pours of concrete. Some of these areas were overlaid with asphalt, particularly in areas with crane and rail tracks. The results are that several different background levels exist on this pier, because of the variation in the natural radioactivity among the various pours of concrete and asphalt. The IM-247/PD and IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for varying asphalt pours were 80, 500, 10000 and 60, 150, 3500 counts per minute. These radiation levels were based upon backgrounds obtained from the cement at Building 220 parking area and the floor of Building 132 respectively. The IM-247/PD, IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for varying asphalt pours were 60, 400, 8500, and 60, 300, 8000 counts per minute. These radiation levels were based upon background levels obtained from the asphalt of Building 233 roadway and the Building 1601A parking area respectively.

c. Summary:

Surveys performed with the IM-247/PD detected five areas greater than 450μμCi/20cm^2.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 46 areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) detected 23 areas greater than or equal to twice background.

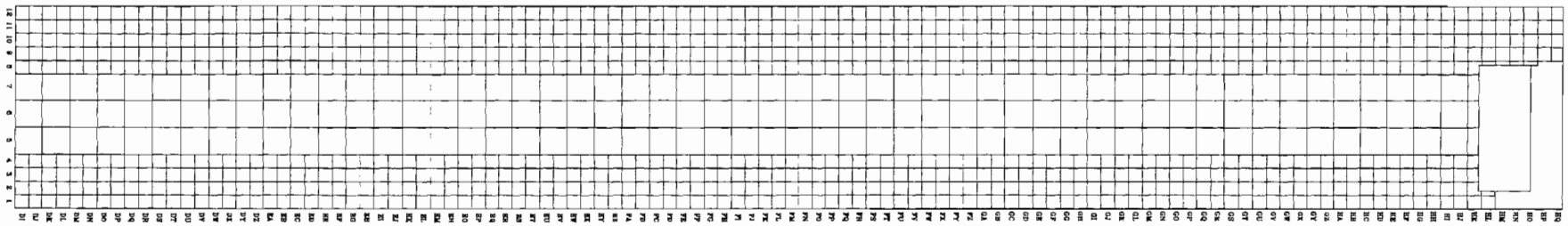
3. Pier D

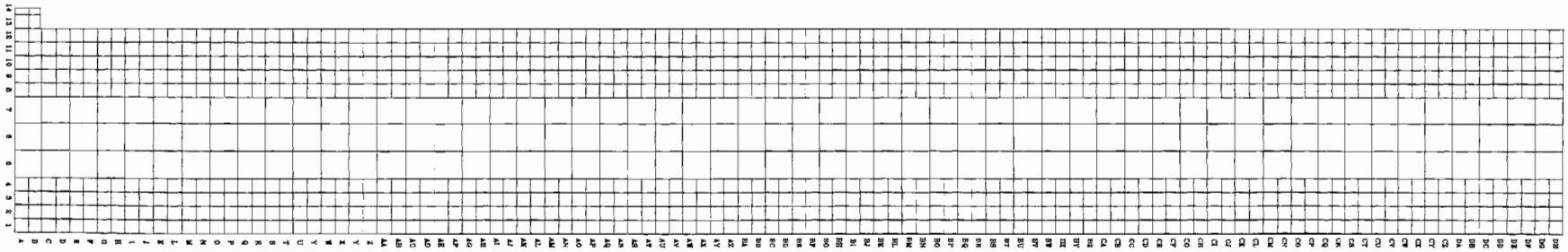
Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of less than 0.32 pCi/g to a high of 16.61 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all solid material samples were less than 1 pCi/g.

3. Pier D

d. Overall Grid Map





3. Pier D

e. Localized Grid Maps

	14	13	12	11	10	9	8	7	6	5	4	3	2	1
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3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
T	<450 500 450 – – 2.41 <1	<450 500 550 – – 7.58 <1	<450 500 550 10000 15000 2.64 <1	<450 500 550 – – 6.84 <1	<450 500 600 – – 2.71 <1	<450 – – – – 2.62 <1	<450 – – – – –	<450 – – – – 5.17 <1	<450 500 400 10000 13000 6.97 <1	<450 500 400 – – 0.76	<450 500 550 – – 2.39 <1	<450 500 600 – – 0.98
	<450 500 450 10000 15000 1.89 <1	<450 500 600 – – 1.69 <1	<450 500 600 – – 2.69 <1	<450 500 650 – – 1.94 <1	<450 500 625 10000 14000 2.41 <1	500 600 – – –	500 650 – – –	500 650 – – –	<450 500 550 – – 0.83	<450 500 600 – – 0.75	<450 500 650 – – 2.44 <1	<450 500 610 10000 15000 2.48 <1
S	<450 500 500 – – 2.19 <1	<450 500 600 – – 1.61 <1	<450 500 600 10000 15000 3.24 <1	<450 500 600 – – 1.64 <1	<450 500 550 – – 2.89 <1	<450 – – – – –	<450 – – – – –	<450 – – – – 3.83 <1	<450 500 450 10000 15000 1.62 <1	<450 500 650 – – 5.12 <1	<450 500 550 – – 2.95 <1	<450 500 650 – – 1.89 <1
	<450 500 425 10000 15000 3.02 <1	<450 500 600 – – 1.60 <1	<450 500 550 – – 2.20 <1	<450 500 550 – – 6.05 <1	<450 500 550 10000 15000 1.30 <1	500 600 – – –	500 650 – – –	500 650 – – –	<450 500 450 – – 0.80	<450 500 600 – – 5.33 <1	<450 500 450 – – 2.38 <1	<450 500 460 10000 15000 2.64 <1
R	<450 500 550 – – 1.37 <1	<450 500 550 – – 1.36 <1	<450 500 550 10000 15000 4.22 <1	<450 500 600 – – 2.27 <1	<450 500 550 – – 3.38 <1	<450 – – – – 1.73 <1	<450 – – – – –	<450 – – – – 4.11 <1	<450 500 400 10000 14000 4.88 <1	<450 500 450 – – 5.34 <1	<450 500 600 – – 2.74 <1	<450 500 600 – – 2.04 <1
	<450 500 500 10000 12000 1.48 <1	<450 500 600 – – 1.89 <1	<450 500 600 – – 6.05 <1	<450 500 600 – – 6.84 <1	<450 500 600 10000 12000 <0.52	500 450 – – –	500 550 – – –	500 650 – – –	<450 500 400 – – 5.91 <1	<450 500 400 – – 0.98	<450 500 575 – – 2.64 <1	<450 500 500 10000 17000 1.98 <1
P	<450 500 550 – – 1.98 <1	<450 500 600 – – 1.83 <1	<450 500 650 10000 14000 2.59 <1	<450 500 700 – – 5.67 <1	<450 500 500 – – 2.72 <1	<450 – – – – –	<450 – – – – –	<450 – – – – 2.82 <1	<450 500 450 10000 11000 3.07 <1	<450 500 650 – – 2.74 <1	<450 500 650 – – 2.26 <1	<450 500 700 – – 2.45 <1
	<450 500 575 10000 13000 1.16 <1	<450 500 600 – – 1.66 <1	<450 500 600 – – 1.97 <1	<450 500 600 – – 5.62 <1	<450 500 650 10000 13000 2.39 <1	500 400 – – –	500 400 – – –	500 600 – – –	<450 500 450 – – 2.14 <1	<450 500 450 – – 2.86 <1	<450 500 500 – – 2.35 <1	<450 500 450 10000 10000 2.95 <1
O	<450 500 550 – – 1.95 <1	<450 500 600 – – 1.59 <1	<450 500 550 10000 12000 6.53 <1	<450 500 650 – – 1.40 <1	<450 500 600 – – 2.56 <1	<450 – – – – –	<450 – – – – 2.66 <1	<450 – – – – –	<450 500 550 10000 10000 2.30 <1	<450 500 550 – – 0.55	<450 500 500 – – 2.85 <1	<450 500 450 – – 1.59 <1
	<450 500 550 – 10000 8000 2.21 <1	<450 500 700 – – 7.17 <1	<450 500 550 – – 4.60 <1	<450 500 700 – – 2.30 <1	<450 500 600 10000 10000 1.58 <1	500 400 – – –	500 450 – – –	500 650 – – –	<450 200 450 – – 1.01 <1	<450 500 700 – – 2.60 <1	<450 500 600 – – 2.68 <1	<450 500 650 10000 11000 2.84 <1
N												
M												
L												
K												

Sample Data

<450 – IM-247/PD Results [$\mu\mu$C/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pC/g]
<1 – MCA Specific Co-60 Results [pC/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
AD	<450 500 450 – – 2.15 <1	<450 500 550 – – 5.48 <1	<450 500 550 10000 13000 2.83 <1	<450 500 500 – – 3.36 <1	<450 500 500 – – 2.74 <1	<450 – – – – – 500 550	<450 – – 2.85 <1 – 500 500	<450 – – – – – 500 550	<450 500 550 10000 12000 1.00 <1	<450 500 500 – – 0.76	<450 500 500 – – 2.93 <1	<450 500 500 – – 2.40 <1
AC	<450 500 500 10000 12000 2.30 <1	<450 500 550 – – 2.36 <1	<450 500 600 – – 3.19 <1	<450 500 600 – – 1.27 <1	<450 500 500 10000 13000 1.66 <1				<450 500 500 – – <0.48	<450 500 450 – – 0.76	<450 500 500 – – 3.57 <1	<450 500 500 10000 11000 2.25 <1
AB	<450 500 550 – – 1.85 <1	<450 500 550 – – 1.62 <1	<450 500 550 10000 11000 1.87 <1	<450 500 450 – – 2.01 <1	<450 500 450 – – 1.14 <1	<450 – – – – 1.60 <1 – 500 500	<450 – – – – – 500 450	<450 – – – – 5.65 <1 – 500 600	<450 500 450 10000 10000 <0.58	<450 500 450 – – 3.60	<450 500 500 – – 2.85 <1	<450 500 500 – – 2.42 <1
AA	<450 500 500 10000 12000 2.12 <1	<450 500 600 – – 1.43 <1	<450 500 600 – – 1.92 <1	<450 500 600 – – 4.29 <1	<450 500 550 10000 10000 1.66 <1				<450 500 450 – – <0.48	<450 500 450 – – 1.01 <1	<450 500 450 – – 3.77 <1	<450 500 450 10000 10000 3.23 <1
Z	<450 500 525 – – 2.26 <1	<450 500 500 – – 2.20 <1	<450 500 425 10000 12000 3.03 <1	<450 500 500 – – 1.56 <1	<450 500 450 – – 3.15 <1	<450 – – – – – 500 550	<450 – – – – – 500 450	<450 – – – – 5.23 <1 – 500 550	<450 500 550 10000 10000 <0.48	<450 500 500 – – 0.79	<450 500 550 – – 2.83 <1	<450 500 500 – – 2.82 <1
Y	<450 500 500 10000 12000 2.34 <1	<450 500 425 – – 2.00 <1	<450 500 425 – – 3.49 <1	<450 500 450 – – 5.30 <1	<450 500 425 10000 10000 3.29 <1				<450 500 500 – – 0.75	<450 500 450 – – 1.44 <1	<450 500 500 – – 5.85 <1	<450 500 500 10000 10000 1.44 <1
X	<450 500 500 – – 1.36 <1	<450 500 550 – – 1.82 <1	<450 500 500 10000 15000 2.22 <1	<450 500 500 – – 2.08 <1	<450 500 450 – – 2.98 <1	<450 – – – – 2.17 <1 – 500 600	<450 – – – – – 500 550	<450 – – – – – 500 500	<450 500 550 10000 12000 0.6[illegible]	<450 500 500 – – <0.43	<450 500 550 – – 1.69 <1	<450 500 600 – – 1.8[illegible] <1
W	<450 500 500 10000 10000 1.71 <1	<450 500 500 – – 1.15 <1	<450 500 650 – – 4.06 <1	<450 500 600 – – 2.91 <1	1800 500 500 10000 14000 2.83 <1				<450 500 450 – – 5.24 <1	<450 500 450 – – <0.45	<450 500 500 – – 2.87 <1	<450 500 500 10000 10000 1.95 <1
V	<450 500 550 – – 1.58 <1	<450 500 550 – – 1.00 <1	<450 500 650 10000 11000 2.94 <1	<450 500 600 – – 1.14 <1	<450 500 425 – – 2.65 <1	<450 – – – – 2.04 <1 – 500 400	<450 – – – – – 500 300	<450 – – – – 3.67 <1 – 500 600	<450 500 400 10000 12000 0.47	<450 500 400 – – <0.45	<450 500 400 – – 2.56 <1	<450 500 400 – – 1.37 <1
U	<450 500 550 10000 15000 2.95 <1	<450 500 550 – – 2.50 <1	<450 500 550 – – 5.51 <1	<450 500 550 – – 1.18 <1	<450 500 550 10000 15000 2.25 <1				<450 500 500 – – 5.51 <1	<450 500 350 – – 1.42 <1	<450 500 455 – – 2.61 <1	<450 500 450 10000 12000 1.95 <1

Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to <50μCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
AN	<450 500 550 – – 1.95 <1	<450 500 550 – – 2.19 <1	<450 500 600 10000 14000 2.69 <1	<450 500 550 – – 2.23 <1	<450 500 550 – – 3.87 <1	<450 – – – – – – 500 550 – – –	<450 – – – – – – 500 350 – – 2.93 <1	<450 – – – – – – 500 – – – –	<450 500 600 10000 11000 1.45 <1	<450 500 450 – – <0.46	<450 500 500 – – 3.19 <1	<450 500 500 – – 1.69 <1
AM	<450 500 550 10000 13000 1.91 <1	<450 500 500 – – 2.14 <1	<450 500 600 – – 5.43 <1	<450 500 500 – – 2.31 <1	<450 500 600 10000 12000 2.78 <1				<450 500 550 – – <0.58	<450 500 450 – – 0.76	<450 500 500 – – 3.12 <1	<450 500 450 10000 10000 2.00 <1
AL	<450 500 600 – – 1.93 <1	<450 500 500 – – 1.67 <1	<450 500 600 10000 9000 2.82 <1	<450 500 550 – – 2.29 <1	<450 500 600 – – 3.67 <1	<450 – – – – – – 500 550 – – 2.22 <1	<450 – – – – – – 500 450 – – –	<450 – – – – – – 500 550 – – 5.09 <1	<450 500 550 10000 12000 1.27 <1	<450 500 450 – – <0.41	<450 500 500 – – 2.69 <1	<450 500 500 – – 1.89 <1
AK	<450 500 650 10000 12000 4.06 <1	<450 500 600 – – 2.92 <1	<450 500 625 – – 2.03 <1	<450 500 550 – – 2.68 <1	<450 500 600 10000 13000 3.59 <1				<450 500 600 – – 1.06 <1	<450 500 450 – – <0.51	<450 500 500 – – 2.62 <1	<450 500 450 10000 10000 2.26 <1
AJ	<450 500 550 – – 1.98 <1	<450 500 500 – – 2.62 <1	<450 500 500 10000 14000 3.20 <1	<450 500 500 – – 2.37 <1	<450 500 450 – – 2.42 <1	<450 – – – – – – 500 450 – – –	<450 – – – – – – 500 450 – – 2.89 <1	<450 – – – – – – 500 600 – – –	<450 500 450 10000 12000 0.67	<450 500 450 – – 0.63	<450 500 450 – – 2.83 <1	<450 500 500 – – 2.02 <1
AI	<450 500 450 10000 12000 2.34 <1	<450 500 450 – – 2.92 <1	<450 500 450 – – 5.73 <1	<450 500 500 – – 2.35 <1	<450 500 450 10000 10000 3.52 <1				<450 500 450 – – 4.66 <1	<450 500 450 – – 0.90	<450 500 500 – – 1.48 <1	<450 500 450 10000 10000 1.79 <1
AH	<450 500 450 – – 2.79 <1	<450 500 500 – – 1.95 <1	<450 500 600 10000 11000 2.75 <1	<450 500 600 – – 1.30 <1	<450 500 600 – – 2.88 <1	<450 – – – – – – 500 500 – – 1.63 <1	<450 – – – – – – 500 500 – – 2.15 <1	<450 – – – – – – 500 600 – – –	<450 500 500 10000 9000 <0.56	<450 500 450 – – 0.77	<450 500 600 – – 3.30 <1	<450 500 500 – – 1.68 <1
AG	<450 500 450 10000 11000 2.19 <1	<450 500 450 – – 2.31 <1	<450 500 450 – – 2.63 <1	<450 500 600 – – 1.98 <1	<450 500 900 11000 11000 2.50 <1				<450 500 450 – – 0.67	<450 500 450 – – 0.92	<450 500 600 – – 2.97 <1	<450 500 450 10000 9500 1.52 <1
AF	<450 500 450 – – 2.24 <1	<450 500 450 – – 2.93 <1	<450 500 450 10000 9000 2.66 <1	<450 500 600 – – 2.39 <1	<450 500 600 – – 3.26 <1	<450 – – – – – – 500 600 – – 2.95 <1	<450 – – – – – – 500 500 – – –	<450 – – – – – – 500 600 – – 3.98 <1	<450 500 500 10000 12000 <0.58	<450 500 450 – – 0.53	<450 500 500 – – 1.39 <1	<450 500 500 – – 1.84 <1
AE	<450 500 600 10000 12000 1.36 <1	<450 500 550 – – 1.58 <1	<450 500 550 – – 3.09 <1	<450 500 600 – – 1.96 <1	<450 500 600 10000 10000 2.98 <1				<450 500 500 – – <0.55	<450 500 450 – – 0.71	<450 500 600 – – 1.56 <1	<450 500 550 10000 10000 3.39 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
AX	<450 500 500 – – 2.39 <1	<450 500 500 – – 2.27 <1	<450 500 600 10000 12000 7.11 <1	<450 500 550 – – 2.65 <1	<450 500 500 – – 2.48 <1	<450 – – – – 2.63 <1	<450 – – – – 500 500	<450 – – – – 5.43 <1	<450 500 625 10000 12000 0.95	<450 500 450 – – 0.88	<450 500 450 – – 1.47 <1	<450 500 450 – – 2.03 <1
AW	<450 500 500 10000 12000 2.76 <1	<450 500 600 – – 2.46 <1	<450 500 500 – – 3.54 <1	<450 500 600 – – 5.04 <1	<450 500 550 10000 12000 2.21 <1				<450 500 600 – – 1.06 <1	<450 500 450 – – 5.00 <1	<450 500 450 – – 3.54 <1	<450 500 450 10000 12000 1.79 <1
AV	<450 500 500 – – 2.86 <1	<450 500 550 – – 2.22 <1	<450 500 500 10000 12000 3.81 <1	<450 500 600 – – 6.90 <1	<450 500 625 – – 3.18 <1	<450 – – – – 3.26 <1	<450 – – – – 500 500	<450 – – – – 5.64 <1	<450 500 525 10000 12000 0.58	<450 500 450 – – 0.70	<450 500 500 – – 2.70 <1	<450 500 525 – – 3.10 <1
AU	<450 500 550 10000 12000 2.85 <1	<450 500 500 – – 2.47 <1	<450 500 600 – – 4.82 <1	<450 500 450 – – 1.28 <1	<450 500 600 12000 12000 2.53 <1				<450 500 650 – – 0.52	<450 500 450 – – 0.46	<450 500 500 – – 3.10 <1	<450 500 625 10000 10000 2.73 <1
AT	<450 500 500 – – 1.85 <1	<450 500 550 – – 2.71 <1	<450 500 550 10000 12000 3.90 <1	<450 500 650 – – 1.77 <1	<450 500 550 – – 2.40 <1	<450 – – – – 500 500	<450 – – – – 500 500	<450 – – – – 2.19 <1	<450 500 500 10000 12000 <0.54	<450 500 450 – – <0.5[illegible]	<450 500 450 – – 2.87 <1	<450 500 500 – – 2.75 <1
AS	<450 500 550 10000 12000 2.21 <1	<450 500 500 – – 2.35 <1	<450 500 600 – – 3.65 <1	<450 500 550 – – 1.52 <1	<450 500 600 10000 12000 1.68 <1				<450 500 550 – – 0.51	<450 500 450 – – <0.49	<450 500 450 – – 3.04 <1	<450 500 450 10000 12000 1.29 <1
AR	<450 500 600 – – 2.44 <1	<450 500 500 – – 2.40 <1	<450 500 650 10000 13000 5.80 <1	<450 500 550 – – 6.19 <1	<450 500 600 – – 1.72 <1	<450 – – – – 500 500	<450 – – – – 2.89 <1	<450 – – – – 500 500	<450 500 500 10000 12000 2.14 <1	<450 500 450 – – 0.67	<450 500 450 – – <1.33	<450 500 450 – – 1.21 <1
AQ	<450 500 600 10000 12000 2.28 <1	<450 500 700 – – 3.45 <1	<450 500 800 – – 7.36 <1	<450 500 500 – – 2.04 <1	<450 500 500 10000 13000 2.90 <1				<450 500 500 – – 1.71 <1	<450 500 450 – – 0.58	<450 500 450 – – 1.15 <1	<450 500 450 10000 12000 1.43 <1
AP	<450 500 500 – – 2.69 <1	<450 500 500 – – 2.62 <1	<450 500 550 10000 12000 2.32 <1	<450 500 550 – – 2.87 <1	<450 500 600 – – 2.74 <1	<450 – – – – 2.5[illegible] <1	<450 – – – – 500 550	<450 – – – – 5.49 <1	<450 500 450 10000 12000 0.81	<450 500 450 – – 0.79	<450 500 450 – – 2.0[illegible] <1	<450 500 450 – – 1.45 <1
AO	<450 500 500 10000 12000 2.19 <1	<450 500 550 – – 2.63 <1	<450 500 650 – – 3.82 <1	<450 500 550 – – 1.83 <1	<450 500 550 10000 12000 2.05 <1				<450 500 550 – – 0.75	<450 500 450 – – 0.66	<450 500 450 – – 2.73 <1	<450 500 450 10000 12000 2.03 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
BH	<450 500 550 – – 2.53 <1	<450 500 450 – – 3.17 <1	<450 500 500 10000 12000 2.93 <1	<450 500 550 – – 5.39 <1	<450 500 800 – – 2.38 <1	<450 – – – – – 500 600 – – – 2.57 <1	<450 – – – – – 500 150 – – – –	<450 – – – – – 500 300 – – – –	<450 500 400 10000 9000 – – 0.75	<450 500 200 – – 0.94	<450 500 225 – – 2.91 <1	<150 500 300 – – 2.09 <1
BG	<450 500 600 10000 12000 1.35 <1	<450 500 450 – – 4.78 <1	<450 500 500 – – 4.97 <1	<450 500 550 – – 10.59 <1	<450 500 850 10000 12000 4.30 <1				<450 500 150 – – <0.53	<450 500 150 – – 1.30 <1	<450 500 125 – – 1.93 <1	<450 500 125 10000 7000 1.38 <1
BF	<450 500 550 – – 2.74 <1	<450 500 500 – – 2.65 <1	<450 500 500 10000 12000 3.09 <1	<450 500 550 – – 5.69 <1	<450 500 800 – – 2.67 <1	<450 – – – – – 500 550 – – – 2.56 <1	<450 – – – – – 500 200 – – – –	<450 – – – – – 500 500 – – – 5.81 <1	<450 500 300 10000 8000 0.99	<450 500 200 – – 1.91 <1	<450 500 300 – – 1.96 <1	<450 500 300 – – 0.59
BE	<450 500 450 10000 12000 2.06 <1	<450 500 450 – – 2.47 <1	<450 500 600 – – 2.60 <1	<450 500 600 – – 1.85 <1	<450 500 800 10000 12000 2.33 <1				<450 500 350 – – <0.52	<450 500 250 – – <0.51	<450 500 125 – – 2.01 <1	<450 500 125 10000 8000 1.50 <1
BD	<450 500 550 – – 2.21 <1	<450 500 500 – – 1.72 <1	<450 500 550 10000 15000 2.22 <1	<450 500 600 – – 2.01 <1	<450 500 800 – – 2.18 <1	<450 – – – – – 500 450 – – – 2.51 <1	<450 – – – – – 500 200 – – – –	<450 – – – – – 500 500 – – – –	<450 500 400 10000 10000 2.09 <1	<450 500 175 – – <0.50	<450 500 200 – – 2.30 <1	<450 500 500 – – 2.48 <1
BC	<450 500 550 10000 15000 2.07 <1	<450 500 500 – – 2.38 <1	<450 500 550 – – 2.93 <1	<450 500 550 – – 6.84 <1	<450 500 500 10000 12000 1.65 <1				<450 500 250 – – 1.94 <1	<450 500 450 – – 0.56	<450 500 450 – – 2.34 <1	<450 500 450 10000 11000 2.90 <1
BB	<450 500 600 – – 3.04 <1	<450 500 450 – – 2.28 <1	<450 500 550 10000 12000 3.25 <1	<450 500 600 – – 2.07 <1	<450 500 550 – – 1.63 <1	<450 – – – – – 500 600 – – – 2.47 <1	<450 – – – – – 500 200 – – – –	<450 – – – – – 500 150 – – – 4.83 <1	<450 500 350 10000 10000 5.00 <1	<450 500 450 – – 0.68	<450 500 500 – – 2.57	<450 500 450 – – 3.03 <1
BA	<450 500 550 10000 12000 1.39 <1	<450 500 650 – – 1.81 <1	<450 500 600 – – 2.80 <1	<450 500 600 – – 6.47 <1	<450 500 500 10000 12000 2.19 <1				<450 500 450 – – <0.44	<450 500 450 – – 0.92	<450 500 450 – – 2.65 <1	<450 500 450 10000 10000 2.41 <1
AZ	<450 500 650 – – 1.87 <1	<450 500 450 – – 2.87 <1	<450 500 600 10000 10000 3.21 <1	<450 500 800 – – 1.88 <1	<450 500 500 – – 2.06 <1	<450 – – – – – 500 600 – – – –	<450 – – – – – 500 450 – – – 2.00 <1	<450 – – – – – 500 450 – – – –	<450 500 450 10000 10000 0.91	<450 500 450 – – 1.07 <1	<450 500 200 – – 1.79 <1	<450 500 250 – – 1.67 <1
AY	<450 500 600 10000 10000 2.27 <1	<450 500 500 – – 1.41 <1	<450 500 600 – – 2.58 <1	<450 500 550 – – 7.40 <1	<450 500 500 15000 15000 3.04 <1				<450 500 250 – – 2.77 <1	<450 500 450 – – <0.52	<450 500 450 – – 2.82 <1	<450 500 450 10000 8000 2.81 <1

Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
192 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
BR	<450 500 500 – – 3.88 <1	<450 500 450 – – 3.44 <1	<450 500 500 10000 11500 4.32 <1	<450 500 550 – – 7.09 <1	<450 500 600 – – 3.41 <1	<450 – – – – 500 400 – – –	<450 – – – – 500 400 – – –	<450 – – – 4.08 <1 500 400 – – –	<450 500 400 10000 12500 0.48	<450 500 300 – – 0.72	<450 500 500 – – 1.90 <1	<450 500 450 – – 2.40 <1
BQ	<450 500 450 10000 13000 2.16 <1	<450 500 400 – – 3.32 <1	<450 500 550 – – 1.99 <1	<450 500 500 – – 2.12 <1	<450 500 550 10000 11500 2.67 <1				<450 500 500 – – 3.82 <1	<450 500 450 – – 1.71 <1	<450 500 450 – – 2.28 <1	<450 500 450 10000 12500 1.93 <1
BP	<450 500 400 – – 2.58 <1	<450 500 400 – – 2.13 <1	<450 500 550 10000 12500 3.22 <1	<450 500 450 – – 5.40 <1	<450 500 400 – – 2.76 <1	<450 – – – – 500 400 – – –	<450 – – – 2.28 <1 500 400 – – –	<450 – – – – 500 350 – – –	<450 500 350 10000 10000 <0.48	<450 500 400 – – 1.40 <1	<450 500 450 – – 3.67 <1	<450 500 450 – – 4.17 <1
BO	<450 500 350 10000 10300 2.29 <1	<450 500 500 – – 3.60 <1	<450 500 450 – – 4.03 <1	<450 500 400 – – 4.43 <1	<450 500 550 10000 12000 2.57 <1				<450 500 300 – – 0.78	<450 500 250 – – 1.02 <1	<450 500 300 – – 4.96 <1	<450 500 350 10000 12000 6.19 <1
BN	<450 500 500 – – 2.61 <1	<450 500 500 – – 4.29 <1	<450 500 550 10000 14000 3.93 <1	<450 500 500 – – 2.63 <1	<450 500 450 – – 2.50 <1	<450 – – – – 500 550 – – –	<450 – – – 1.96 <1 500 150 – – –	<450 – – – – 500 300 – – –	<450 500 450 10000 12000 2.37 <1	<450 500 250 – – <0.56	<450 500 300 – – 3.14 <1	<450 500 250 – – 2.20 <1
BM	<450 500 500 10000 15500 1.75 <1	<450 500 550 – – 2.59 <1	<450 500 550 – – 2.70 <1	<450 500 500 – – 0.98	<450 500 550 10000 14000 1.92 <1				<450 500 400 – – 1.69 <1	<450 500 200 – – 0.65	<450 500 250 – – 3.12 <1	<450 500 350 10000 15500 2.62 <1
BL	<450 500 550 – – 2.64 <1	<450 500 550 – – 2.38 <1	<450 500 500 10000 15000 2.08 <1	<450 500 500 – – 2.70 <1	<450 500 550 – – 4.52 <1	<450 – – – – 500 400 – – –	<450 – – – 2.87 <1 500 500 – – –	<450 – – – – 500 200 – – –	<450 500 300 10000 17000 2.77 <1	<450 500 400 – – 2.96 <1	<450 500 400 – – 3.32 <1	<450 500 450 – – 3.73 <1
BK	<450 500 520 10000 17000 2.00 <1	<450 500 450 – – 3.80 <1	<450 500 500 – – 3.03 <1	<450 500 550 – – 2.54 <1	<450 500 600 10000 13000 2.87 <1				<450 500 350 – – 1.07 <1	<450 500 300 – – 2.69 <1	<450 500 400 – – 3.37 <1	<450 500 400 10000 12000 2.08 <1
BJ	<450 500 550 – – 2.45 <1	<450 500 500 – – 2.77 <1	<450 500 600 10000 11000 2.99 <1	<450 500 550 – – 1.53 <1	<450 500 650 – – 2.80 <1	<450 – – – – 500 500 – – –	<450 – – – – 500 225 – – –	<450 – – – 5.24 <1 500 500 – – –	<450 500 250 10000 13000 3.36 <1	<450 500 300 – – 5.68 <1	<450 500 350 – – 3.33 <1	<450 500 300 – – 3.86 <1
BI	<450 500 590 10000 12000 2.34 <1	<450 500 550 – – 2.61 <1	<450 500 600 – – 2.99 <1	<450 500 550 – – 2.00 <1	<450 500 600 10000 12000 2.78 <1				<450 500 250 – – 1.96 <1	<450 500 200 – – 0.88	<450 500 250 – – 2.31 <1	<450 500 300 10000 12000 2.50 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) bkg.]
300 – IM-253/PD (HV-1 PHA) cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
192 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
CB	<450 500 500 — — 1.95 <1	<450 500 500 — — 4.81 <1	<450 500 500 10000 15000 3.91 <1	<450 500 500 — — 1.32 <1	<450 500 500 — — 1.87 <1	<450 — — — — — 500 450 — — —	<450 — — — — 2.35 <1 500 450 — — —	<450 — — — — — 500 450 — — —	<450 300 350 10000 15000 0.54	<450 500 500 — — 0.61	<450 300 350 — — 2.71 <1	<450 500 450 — — 2.44 <1
CA	<450 500 450 10000 15000 6.06 <1	<450 500 450 — — 2.61 <1	<450 500 500 — — 2.68 <1	<450 500 500 — — 6.12 <1	<450 500 450 10000 15000 2.60 <1				<450 500 450 — — 6.98 <1	<450 500 500 — — <0.51	<450 300 450 — — 1.91 <1	<450 500 450 10000 15000 2.84 <1
BZ	<450 500 450 — — 2.49 <1	<450 500 450 — — 2.62 <1	<450 500 500 10000 15000 3.40 <1	<450 500 450 — — 6.56 <1	<450 500 450 — — 1.99 <1	<450 — — — — — 500 450 — — —	<450 — — — — 3.54 <1 500 450 — — —	<450 — — — — — 500 450 — — —	<450 500 350 10000 15000 0.35	<450 500 450 — — 0.91	<450 500 400 — — 1.32 <1	<450 500 400 — — 1.51 <1
BY	<450 500 410 10000 15000 2.75 <1	<450 500 410 — — 3.33 <1	<450 500 400 — — 3.55 <1	<450 500 400 — — 2.51 <1	<450 500 400 10000 15000 2.62 <1				<450 500 450 — — 0.70	<450 500 500 — — 0.61	<450 500 400 — — 2.16 <1	<450 500 400 10000 15000 2.37 <1
BX	<450 500 500 — — 3.15 <1	<450 500 500 — — 4.25 <1	<450 500 500 10000 12500 4.31 <1	<450 500 450 — — 2.67 <1	<450 500 450 — — 1.78 <1	<450 — — — — — 500 450 — — —	<450 — — — — — 500 450 — — —	<450 — — — — — 500 450 — — —	<450 500 450 10000 12500 <0.39	<450 500 500 — — 0.92	<450 500 450 — — 2.77 <1	<450 500 450 — — 3.74 <1
BW	<450 500 450 10000 15000 2.87 <1	<450 500 450 — — 2.17 <1	<450 500 400 — — 3.08 <1	<450 500 400 — — 2.11 <1	<450 500 450 10000 12500 2.84 <1				<450 500 400 — — <0.42	<450 500 400 — — 0.88	<450 500 400 — — 2.10 <1	<450 500 400 10000 17500 1.66 <1
BV	<450 500 400 — — 1.08 <1	<450 500 400 — — 3.58 <1	<450 500 450 10000 15000 5.05 <1	<450 500 400 — — 2.42 <1	<450 500 400 — — 1.38 <1	<450 — — — — — 500 450 — — —	<450 — — — — 2.40 <1 500 450 — — —	<450 — — — — — 500 450 — — —	<450 500 400 10000 12500 0.46	<450 500 450 — — 0.84	<450 500 400 — — 2.00 <1	<450 500 410 — — 1.43 <1
BU	<450 500 400 10000 15000 3.63 <1	<450 500 450 — — 4.08 <1	<450 500 400 — — 6.64 <1	<450 500 450 — — 6.08 <1	<450 500 400 10000 15000 2.22 <1				<450 500 350 — — 0.71	<450 500 450 — — 4.81 <1	<450 500 350 — — 2.53 <1	<450 500 350 10000 12500 2.47 <1
BT	<450 500 450 — — 2.37 <1	<450 500 500 — — 2.56 <1	<450 500 500 10000 15000 3.05 <1	<450 500 500 — — 2.45 <1	<450 500 400 — — 1.37 <1	<450 — — — — — 500 450 — — —	<450 — — — — 2.38 <1 500 450 — — —	<450 — — — — 2.76 <1 500 450 — — —	<450 500 500 10000 11000 0.62	<450 500 350 — — 0.98	<450 500 350 — — 1.44 <1	<450 500 350 — — 1.95 <1
BS	<450 500 450 10000 15000 3.13 <1	<450 500 450 — — 3.12 <1	<450 500 450 — — 3.22 <1	<450 500 500 — — 4.21 <1	<450 500 450 10000 12000 2.97 <1				<450 500 350 — — <0.60	<450 500 350 — — 0.65	<450 500 400 — — 1.19 <1	<450 500 450 10000 15000 2.13 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
CL	<450 500 450 10000 10000 2.41 <1	<450 500 450 – – 2.83 <1	<450 500 455 – – 6.26 <1	<450 500 450 – – 6.51 <1	<450 500 400 – – 2.42 <1	<450 – – – – 3.54 <1 500 450 – – – –	<450 – – – – – 500 500 – – – –	<450 – – – – 1.86 <1 500 450 – – – –	<450 500 500 10000 10000 0.91	<450 500 450 – – 1.03 <1	<450 500 450 – – 1.76 <1	<450 500 400 – – 1.31 <1
CK	<450 500 400 – – 3.32 <1	<450 500 400 10000 12500 2.65 <1	<450 500 450 – – 2.14 <1	<450 500 400 10000 12500 7.43 <1	<450 500 500 – – 3.43 <1				<450 500 450 – – 0.83	<450 500 450 – – 0.54	<450 500 450 10000 10000 1.50 <1	<450 500 450 – – 1.47 <1
CJ	<450 500 450 – – 3.16 <1	<450 500 450 – – 2.93 <1	<450 500 450 – – 3.46 <1	<450 500 450 – – 2.29 <1	<450 500 450 10000 12500 2.60 <1	<450 – – – – – 500 450 – – – –	<450 – – – – 4.86 <1 500 450 – – – –	<450 – – – – 2.35 <1 500 450 – – – –	<450 500 400 – – 3.27 <1	<450 500 400 10000 15000 0.41	<450 500 400 – – 2.27 <1	<450 500 400 – – 1.42 <1
CI	<450 500 450 – – 2.51 <1	<450 500 450 – – 3.37 <1	<450 500 400 10000 12500 5.80 <1	<450 500 400 – – 1.91 <1	<450 500 450 – – 2.12 <1				<450 500 400 10000 15000 <0.35	<450 500 400 – – 1.98 <1	<450 500 400 – – 3.20 <1	<450 500 400 10000 10000 1.84 <1
CH	<450 500 450 10000 12500 2.56 <1	<450 500 450 – – 2.14 <1	<450 500 500 – – 3.15 <1	<450 500 500 10000 10000 9.72 <1	<450 500 450 – – 2.32 <1	<450 – – – – – 500 450 – – – –	<450 – – – – – 500 450 – – – –	<450 – – – – 2.11 <1 500 450 – – – –	<450 500 450 – – 5.35 <1	<450 500 450 – – 0.69	<450 500 450 10000 9000 2.92 <1	<450 500 450 – – 2.59 <1
CG	<450 500 400 – – 1.80 <1	<450 500 400 10000 10000 1.12 <1	<450 500 450 – – 2.78 <1	<450 500 400 – – 2.15 <1	<450 500 400 – – 2.75 <1				<450 500 500 10000 15000 2.02 <1	<450 500 500 – – 15.22 <1	<450 500 400 – – 3.43 <1	<450 500 410 – – 2.34 <1
CF	<450 500 450 – – 3.22 <1	<450 500 450 – – 1.74 <1	<450 500 450 10000 10000 3.07 <1	<450 500 450 – – 2.18 <1	<450 500 500 – – 2.60 <1	<450 – – – – – 500 450 – – – –	<450 – – – – 2.10 <1 500 450 – – – –	<450 – – – – – 500 450 – – – –	<450 500 450 10000 10000 <0.43	<450 500 500 – – 0.52	<450 500 500 – – 3.29 <1	<450 500 450 – – 1.99 <1
CE	<450 500 500 10000 10000 1.39 <1	<450 500 550 – – 2.31 <1	<450 500 420 – – <0.40	<450 500 400 – – 2.75 <1	<450 500 400 10000 10000 2.44 <1				<450 500 500 – – 1.09 <1	<450 500 550 – – 15.27 <1	<450 500 400 – – 2.12 <1	<450 500 400 10000 10000 2.89 <1
CD	<450 500 450 – – 1.64 <1	<450 500 450 – – 3.93 <1	<450 500 450 10000 15000 5.40 <1	<450 500 450 – – 4.82 <1	<450 500 450 – – 1.90 <1	<450 – – – – – 500 455 – – – –	<450 – – – – – 500 450 – – – –	<450 – – – – 3.71 <1 500 430 – – – –	<450 500 450 10000 15000 4.36 <1	<450 500 400 – – 0.58	<450 500 450 – – 2.36 <1	<450 500 500 – – 2.60 <1
CC	<450 500 450 10000 10000 2.70 <1	<450 500 400 – – 2.20 <1	<450 500 450 – – 2.17 <1	<450 500 450 – – 1.72 <1	<450 500 400 10000 10000 2.03 <1				<450 500 500 – – 4.55 <1	<450 500 400 – – 10.98 <1	<450 500 450 – – 2.68 <1	<450 500 450 10000 10000 1.96 <1

Sample Data

< 450 – IM-247/PD Results [μCi/2Ccm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
DF	<450 500 400 – – 2.33 <1	<450 500 400 10000 10000 2.09 <1	<450 500 400 – – 2.15 <1	<450 500 400 – – 3.03 <1	<450 150 100 – – 1.13 <1	<450 – – – – 3.34 <1	<450 – – – – –	<450 – – – – 4.50 <1	<450 150 100 3500 3000 0.53	<450 150 100 – – <0.45	<450 150 100 – – 1.09 <1	<450 150 100 – – <0.48
DE	<450 500 400 10000 12000 2.49 <1	<450 500 400 – – 1.53 <1	<450 500 700 – – 5.17 <1	945 500 800 10000 12000 2.09 <1	<450 150 250 – – 3.06 <1		500 450 – – –	500 450 – – –	<450 150 150 – – 0.95	<450 150 200 3500 3500 <0.48	<450 150 150 – – 1.82 <1	<450 150 200 – – 4.39 <1
DD	<450 500 450 – – 2.70 <1	<450 500 500 – – 2.75 <1	<450 500 450 10000 10000 2.69 <1	<450 500 450 – – 1.47 <1	<450 150 250 3500 4000 0.96	<450 – – – – –	500 450 – – –	<450 – – – – 4.52 <1	500 450 – – –	<450 150 200 – – 0.71	<450 150 150 – – 0.88	<450 150 150 – – 0.94	<450 150 150 3500 3500 2.57 <1
DC	<450 500 500 – – 1.97 <1	<450 500 500 – – 2.28 <1	<450 500 450 – – 1.67 <1	<450 500 450 10000 10000 1.13 <1	<450 150 150 – – 1.04 <1		500 450 – – –	500 450 – – –	<450 150 250 – – 1.09 <1	<450 150 200 – – 1.36 <1	<450 150 100 3500 3500 2.24 <1	2250 150 100 – – 2.67 <1
DB	<450 500 450 – – 2.42 <1	<450 500 550 10000 10000 2.12 <1	<450 500 550 – – 1.91 <1	<450 500 550 – – 1.98 <1	<450 150 250 – – 1.95 <1	<450 – – – – –	500 350 – – –	<450 – – – – 5.79 <1	500 400 – – –	<450 150 150 – – 0.90	<450 150 150 – – 0.79	<450 150 150 3500 3500 2.76 <1	<450 150 150 – – 0.75
DA	<450 500 450 – – 2.67 <1	<450 500 450 – – 3.11 <1	<450 500 450 – – <0.79	<450 500 400 – – 2.80 <1	<450 150 275 3500 10000 0.89				<450 150 250 – – <0.47	720 150 200 3500 6500 1.11 <1	<450 150 150 – – 2.57 <1	<450 150 150 3500 3500 2.37 <1
CZ	<450 500 450 10000 12000 2.93 <1	<450 500 450 – – 2.20 <1	<450 500 450 – – 1.38 <1	<450 500 450 – – 1.05 <1	<450 500 450 10000 10000 1.26 <1	<450 – – – – 2.67 <1	500 500 – – –	<450 – – – – –	<450 500 450 – – <0.40	<450 500 450 10000 10000 0.49	<450 500 450 – – 0.57	<450 500 450 – – 2.76 <1
CY	<450 500 500 – – 1.99 <1	<450 500 500 – – 6.89 <1	<450 500 500 10000 10000 2.00 <1	<450 500 450 – – 2.17 <1	<450 500 450 – – 1.70 <1		500 400 – – –	500 450 – – –	<450 500 450 – – 1.72 <1	<450 500 450 – – 0.54	<450 500 450 10000 8000 2.43 <1	<450 500 450 – – 1.47 <1
CX	<450 500 450 – – 2.54 <1	<450 500 450 10000 10000 3.27 <1	<450 500 500 – – 2.35 <1	<450 500 450 10000 10000 1.66 <1	<450 500 450 – – 1.13 <1	<450 – – – – 2.77 <1	500 500 – – –	<450 – – – – 1.58 <1	<450 500 450 – – 1.68 <1	<450 500 450 – – 0.77	<450 500 450 – – 2.42 <1	<450 500 450 10000 10000 2.32 <1
CW	<450 500 450 – – 2.00 <1	<450 500 450 – – 4.55 <1	<450 500 500 – – 2.09 <1	<450 500 500 – – 1.57 <1	<450 500 450 10000 10000 2.70 <1				<450 500 450 – – 6.43 <1	<450 500 450 – – 1.21 <1	<450 500 450 10000 10000 1.39 <1	<450 500 450 – – 1.90 <1

Notes:

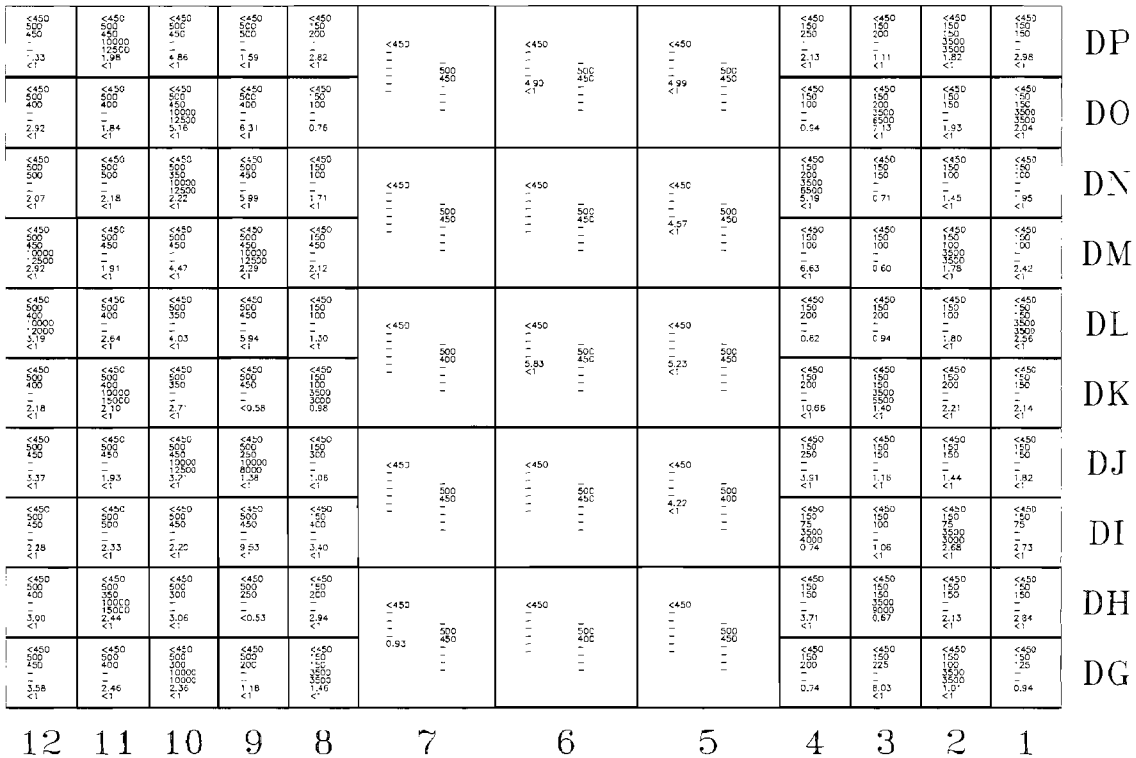
(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to 450μμCi/20cm² were sampled and analyzed by spectra analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Th-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV 2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
DZ	<450 500 450 10000 10000 2.39 <1	<450 500 500 - - 3.79 <1	<450 500 500 - - 1.92 <1	<450 500 450 - - <0.39	<450 150 250 3500 6500 <0.38	<450 - - - - 1.55 <1	<450 - - - -

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
EJ	<450 500 450 - - 1.90 <1	<450 500 500 - - 2.15 <1	<450 500 450 10000 12500 1.35 <1	<450 500 500 - - 4.49 <1	<450 150 100 - - 1.83 <1	<450 - - - - - 500 400 - - -	<450 - - - - 6.08 <1 - 500 400 - -	<450 - - - - - 500 400 - - -	<450 150 150 - - 1.86 <1	<450 150 250 3000 8500 7.79 <1	<450 150 150 - - 2.84 <1	<450 150 200 - - 1.94 <1
EI	<450 500 100 - - 1.98 <1	<450 500 450 10000 12500 3.09 <1	<450 500 400 - - 2.67 <1	<450 500 400 10000 14000 4.92 <1	<450 150 100 - - 0.85				<450 150 200 - - 16.51 <1	<450 150 250 - - 14.67 <1	<450 150 150 1500 3000 2.47 <1	<450 150 100 - - 4.31 <1
EH	<450 500 100 - - 1.86 <1	<450 500 550 - - 1.18 <1	<450 500 400 - - 3.20 <1	<450 500 400 - - 6.01 <1	<450 150 150 3500 9000 1.90 <1	<450 - - - - - 500 450 - - -	<450 - - - - - 500 350 - - -	<450 - - - - 5.83 <1 - 500 400 - -	<450 150 100 - - 1.92 <1	<450 150 250 - - 0.65	<450 150 100 - - 1.15 <1	<450 150 100 3500 3000 2.68 <1
EG	<450 500 100 - - 1.56 <1	<450 500 450 - - 2.41 <1	<450 500 400 10000 12500 1.67 <1	<450 500 355 - - 3.09 <1	<450 70 410 - - 2.74 <1				<450 150 210 - - 9.60 <1	<450 150 250 3500 8500 5.07 <1	<450 150 150 - - 2.54 <1	<450 150 110 - - 2.39 <1
EF	<450 500 100 10000 14500 2.22 <1	<450 500 400 10000 12500 1.83 <1	<450 500 500 - - 5.68 <1	<450 500 300 - - 5.95 <1	<450 150 100 - - 1.24 <1	<450 - - - - - 500 300 - - -	<450 - - - - - 500 250 - - -	<450 - - - - 6.28 <1 - 500 300 - -	<450 150 200 - - 10.93 <1	<450 150 130 - - 3.69 <1	<450 150 120 3500 2500 <0.52	<450 150 100 - - 1.18 <1
EE	<450 500 150 - - 1.39 <1	<450 500 500 - - 5.48 <1	<450 500 400 - - 1.72 <1	<450 500 400 - - 1.87 <1	<450 150 100 3500 9000 1.76 <1				<450 150 100 - - 1.01 <1	<450 150 150 - - 0.92	<450 150 150 3500 4000 3.71	<450 150 120 - - 0.70
ED	<450 500 100 - - 1.26 <1	<450 500 450 - - 1.94 <1	<450 500 450 - - 2.08 <1	<450 500 400 10000 13000 2.07 <1	<450 150 50 - - 1.07 <1	<450 - - - - - 500 500 - - -	<450 - - - - - 500 500 - - -	<450 - - - - 4.94 <1 - 500 500 - -	<450 150 150 3500 8000 1.08 <1	<450 150 150 - - 0.82	<450 150 100 - - 1.45 <1	<450 150 150 - - 3.25 <1
EC	<450 500 100 10000 10000 2.39 <1	<450 500 500 - - 1.32 <1	<450 500 400 - - 1.80 <1	<450 500 450 - - 1.57 <1	<450 150 400 - - 3.45 <1				<450 150 250 - - <0.55	<450 150 300 3500 8500 8.68 <1	<450 150 150 - - 2.76 <1	<450 150 120 3500 3000 1.52 <1
EB	<450 500 400 - - 1.40 <1	<450 500 450 - - 1.93 <1	<450 500 400 10000 13500 1.87 <1	<450 500 350 - - 1.23 <1	<450 150 250 - - 1.78 <1	<450 - - - - - 500 500 - - -	<450 - - - - - 500 400 - - -	<450 - - - - - 500 400 - - -	<450 150 150 - - <0.55	<450 150 150 3000 8500 0.90	<450 150 150 - - 2.96 <1	<450 150 150 - - 2.45 <1
EA	<450 500 400 - - 1.41 <1	<450 500 450 10000 12500 2.03 <1	<450 500 450 - - 1.24 <1	<450 500 500 10000 9000 2.46 <1	<450 150 250 - - 2.66 <1				<450 150 150 - - 0.57	<450 150 150 - - 2.51 <1	<450 150 150 3500 3000 1.08 <1	<450 150 150 - - 0.62

Sample Data

< 450 – M-247/PD Results [μμCi/20cm²]
200 – M-253/PD (HV-1 PHA) [bkg.]
300 – M-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

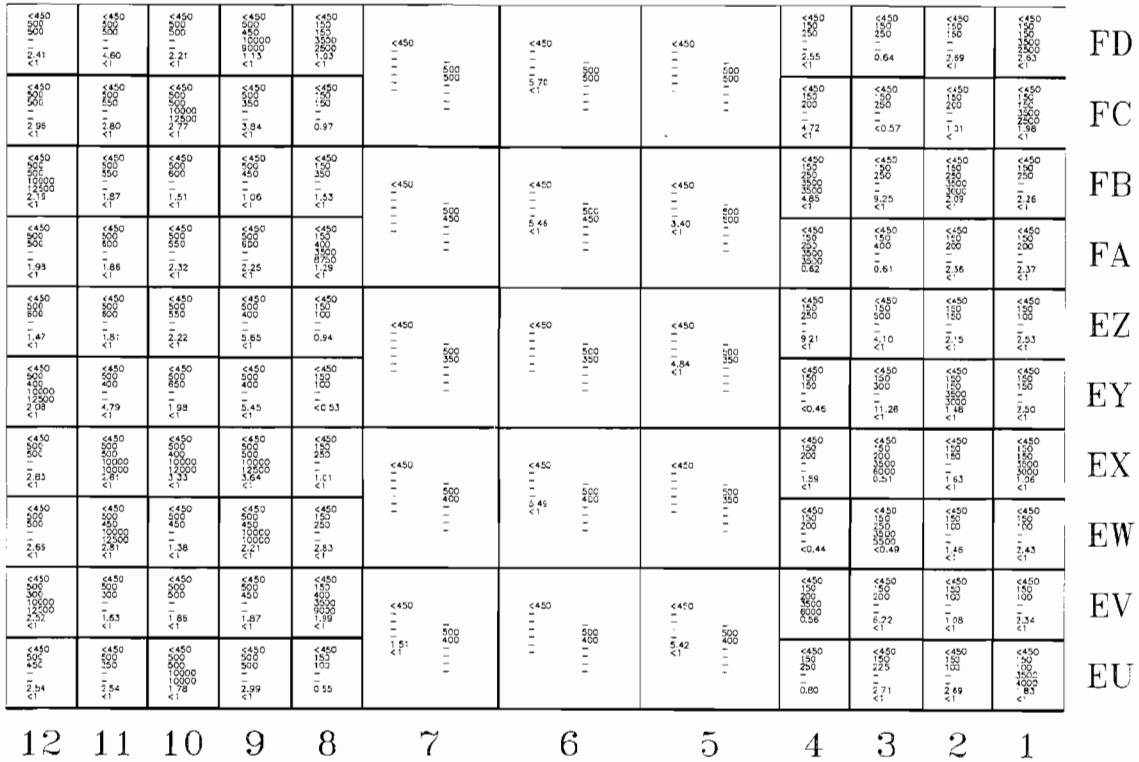
	12	11	10	9	8	7	6	5	4	3	2	1
ET	<450 500 400 – – 2.44 <1	<450 500 350 – – 2.92 <1	<450 500 550 10000 10500 2.81 <1	<450 500 500 – – 4.29 <1	<450 150 185 – – 0.96	<450 – – – – 500 350 – –	<450 – – – – 500 350 – –	<450 – – – – 500 350 – –	<450 150 150 – – 0.77	<450 150 250 – – 2.40 <1	<450 150 100 – 3500 3500 1.30 <1	<450 150 100 – – 2.44 <1
ES	<450 500 300 10000 12500 1.09 <1	<450 500 450 – – 4.71 <1	<450 500 550 – – 2.62 <1	<450 500 500 – – 1.27 <1	<450 150 425 3400 10000 3.32 <1				<450 150 250 3500 6750 10.23 <1	<450 150 325 – – 5.94 <1	<450 150 150 – – 1.54 <1	<450 150 150 – – 1.66 <1
ER	<450 500 300 – – 2.40 <1	<450 500 500 10000 12000 1.96 <1	<450 500 650 – – 2.73 <1	<450 500 500 10000 10000 5.60 <1	<450 150 260 – – <0.58	<450 – – – – 500 550 – –	<450 – – – – 500 550 – –	<450 – – – – 500 600 – –	<450 150 200 – – <0.60	<450 150 220 5500 3500 3.76 <1	<450 150 150 – – 0.74	<450 150 100 – – 2.28 <1
EQ	<450 500 500 – – 2.23 <1	<450 500 450 – – 2.48 <1	<450 500 800 – – 2.43 <1	<450 500 500 10000 12500 4.40 <1	<450 150 200 – – 0.75				<450 150 200 – – <0.44	<450 150 200 – – 0.61	<450 150 150 3500 3500 1.45 <1	<450 150 150 – – 2.27 <1
EP	<450 500 400 – – 2.27 <1	<450 500 500 – – 1.58 <1	<450 500 500 10000 12500 4.65 <1	<450 500 500 – – 2.02 <1	<450 150 200 3500 3500 1.43 <1	<450 – – – – 500 400 – –	<450 – – – – 500 400 – –	<450 – – – – 500 550 – –	<450 150 250 – – 1.14 <1	<450 150 225 – – 1.14 <1	<450 150 150 – – 2.16 <1	<450 150 100 3500 3500 2.04 <1
EO	<450 500 400 – – 0.81	<450 500 500 10000 15000 1.94 <1	<450 500 500 – – 2.01 <1	<450 500 500 – – 3.71 <1	<450 150 200 – – 1.57 <1				<450 150 225 – – 10.49 <1	<450 150 200 3500 5500 1.06 <1	<450 150 150 – – 4.27 <1	<450 150 150 – – 2.10 <1
EN	<450 500 400 10000 14000 1.69 <1	<450 500 500 – – 1.93 <1	<450 500 550 – – 2.11 <1	<450 500 500 – – 4.67 <1	<450 150 150 – – 1.10 <1	<450 – – – – 500 400 – –	<450 – – – – 500 450 – –	<450 – – – – 500 400 – –	<450 150 250 5500 3500 11.07 <1	<450 150 200 – – 1.02 <1	<450 150 150 – – 0.88	<450 150 150 – – 1.88 <1
EM	<450 500 400 – – 1.35 <1	<450 500 500 – – 2.83 <1	<450 500 500 10000 12500 5.63 <1	<450 500 500 – – 4.94 <1	<450 150 200 3500 3500 1.56 <1				<450 150 200 – – <0.50	<450 150 200 – – <0.57	<450 150 150 – – 1.44 <1	<450 150 120 3500 4500 1.05 <1
EL	<450 500 450 – – 1.34 <1	<450 500 450 10000 12500 1.72 <1	<450 500 500 – – 3.50 <1	<450 500 500 10000 8000 4.32 <1	<450 150 400 – – 1.78 <1	<450 – – – – 500 450 – –	<450 – – – – 500 350 – –	<450 – – – – 500 350 – –	<450 150 375 – – 2.66 <1	<450 150 250 – – 9.51 <1	<450 150 100 3500 4000 1.07 <1	<450 150 100 – – 1.98 <1
EK	<450 500 200 10000 12500 5.35 <1	<450 500 450 – – 1.87 <1	<450 500 400 – – 1.99 <1	<450 500 500 – – 6.38 <1	<450 150 250 – – 1.63 <1				<450 150 300 3500 6000 13.32 <1	<450 150 200 – – 7.21 <1	<450 150 150 – – 2.92 <1	<450 150 120 – – 2.24 <1

Sample Data

< 450 – IM-247/PD Results (μμCi/20cm²)
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
FN	<450 500 450 15000 13000 3.03 <1	<450 500 450 – – 2.23 –	<450 500 500 – – 3.49 <1	<450 500 450 – – 2.44 –	<450 150 450 – – 1.62 <1	<450 – – – – – 500 450 – –	<450 – – – – 5.35 – 500 300 – –	<450 – – – – 2.60 – 500 450 – –	<450 150 150 – – 1.36 –	<450 150 200 1500 5000 0.91	<450 150 200 – – 1.85 –	<450 150 200 – – 2.57 –
FM	<450 500 500 – – 1.75 <1	<450 500 500 – – 4.10 <1	<450 500 500 – – 3.05 <1	<450 500 400 10000 11000 2.08 <1	<450 150 350 – – 1.57 <1				<450 150 250 – – 1.23 –	<450 150 250 1500 5000 0.91	<450 150 200 – – 2.03 <1	<450 150 200 – – 2.68 <1
FL	<450 500 450 – – 2.63 <1	<450 500 400 – – 2.12 <1	<450 500 400 10000 10000 4.55 <1	<450 500 450 – – 3.48 <1	<450 150 250 – – 0.78	<450 – – – – – 500 400 – –	<450 – – – – – 500 400 – –	<450 – – – – 5.05 <1 500 500 – –	<450 150 250 1500 7000 1.01	<450 150 200 – – 1.49 <1	<450 150 250 – – 3.51 <1	<450 150 250 1500 5000 2.67 <1
FK	<450 500 400 – – 2.58 <1	<450 500 450 – – 2.86 <1	<450 500 400 – – 3.04 <1	<450 500 450 – – 4.92 <1	<450 150 450 1500 3500 2.52 <1				<450 150 250 – – 0.74	<450 150 150 – – 2.35 <1	<450 150 250 – – 4.02 <1	<450 150 200 1500 5500 3.11 <1
FJ	<450 500 400 – – 1.13 <1	<450 500 450 – – 7.60 <1	<450 500 500 – – 2.14 <1	<450 500 450 10000 10000 1.74 <1	<450 150 250 1500 7000 1.43 <1	<450 – – – – – 500 675 – –	<450 – – – – – 500 300 – –	<450 – – – – 5.21 <1 500 675 – –	<450 150 200 – – 0.69	<450 150 150 – – 2.92 <1	<450 150 150 1500 6000 2.09 <1	<450 150 150 – – 2.29 –
FI	<450 500 350 15000 13000 2.19 <1	<450 500 450 – – 2.14 <1	<450 500 300 – – 3.58 <1	<450 500 600 – – 2.27 <1	<450 150 250 – – 1.94 <1				<450 150 200 1500 6500 1.49 <1	<450 150 225 – – 2.94 <1	<450 150 200 – – 5.95 <1	<450 150 150 – – 1.76 –
FH	<450 500 400 13000 9000 2.77 <1	<450 500 450 15000 15000 2.90 <1	<450 500 500 – – 2.51 <1	<450 500 600 – – 4.78 <1	<450 150 200 – – 1.4 <1	<450 – – – – – 500 675 – –	<450 – – – – – 500 300 – –	<450 – – – – 5.57 <1 500 350 – –	<450 150 200 – – 3.32 <1	<450 150 150 1500 6000 2.41 <1	<450 150 150 – – 1.69 <1	<450 150 150 – – 2.05 <1
FG	<450 500 300 – – 1.27 <1	<450 500 400 10000 10000 1.69 <1	<450 500 500 – – 4.07 <1	<450 500 400 – – 1.36 <1	<450 150 200 – – 2.44 <1				<450 150 200 – – 5.16 <1	<450 150 200 – – 5.75 <1	<450 150 150 1500 4000 0.69	<450 150 150 – – 1.36 <1
FF	<450 500 450 – – 2.47 <1	<450 500 450 – – 1.76 <1	<450 500 450 15000 15000 4.26 <1	<450 500 400 – – 0.78	<450 150 275 – – 2.53 <1	<450 – – – – – 500 400 – –	<450 – – – – – 500 425 – –	<450 – – – – 5.79 <1 500 400 – –	<450 150 200 – – 2.14 <1	<450 150 150 1500 6000 1.96 <1	<450 150 150 – – 2.29 –	<450 150 150 – – 1.89 <1
FE	<450 500 500 – – 1.93 <1	<450 500 500 10000 13000 1.31 <1	<450 500 600 – – 3.74 <1	<450 500 500 15000 15000 2.42 <1	<450 150 250 – – 2.70 <1				<450 150 250 – – 5.31 <1	<450 150 250 1500 3500 <0.50	<450 150 100 – – <0.51	<450 150 100 – – 2.61 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
183 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results pCi/g)

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
FX	<450 500 300 – – 1.77 <1	<450 500 400 – – 2.59 <1	<450 500 400 10000 10000 2.51 <1	<450 500 350 – – 2.32 <1	<450 150 250 – – 2.44 <1	<450 – – – – – 400 500 – – –	<450 – – – – – 150 150 – – –	<450 – – – – 2.51 <1 – 400 450 – –	<450 300 450 6000 12500 <0.54	<450 300 350 – – 6.61 <1	<450 150 100 – – <0.59	<450 150 100 – – 1.29 <1
FW	<450 500 550 10000 12500 1.92 <1	<450 500 550 – – 2.58 <1	<450 500 600 – – 2.76 <1	<450 500 450 – – 2.38 <1	<450 150 250 3500 5000 2.82 <1				<450 300 250 – – <0.52	<450 300 250 – – <0.58	<450 150 200 – – 1.63 <1	<450 150 100 3500 3000 1.64 <1
FV	<450 550 600 – – 1.37 <1	<450 550 600 – – 0.72	<450 500 600 10000 12500 2.42 <1	<450 500 500 – – 3.66 <1	<450 150 150 – – 6.01 <1	<450 – – – – – 400 500 – – –	<450 – – – – 1.43 <1 – 150 100 – –	<450 – – – – 1.53 <1 – 400 500 – –	<450 300 350 – – <0.50	<450 300 300 5000 9500 1.10 <1	<450 150 100 – – 1.38 <1	<450 150 100 – – 1.56 <1
FU	<450 500 400 – – 1.44 <1	<450 500 400 – – 1.95 <1	<450 500 400 10000 12500 2.41 <1	<450 500 350 – – 4.18 <1	<450 150 150 3500 3000 1.45 <1				<450 300 250 – – 1.11 <1	<450 300 250 – – 0.78	<450 150 100 3500 3000 1.86 <1	<450 150 100 – – 1.54 <1
FT	<450 500 550 10000 11500 2.15 <1	<450 500 600 – – 0.94	<450 500 600 – – 1.78 <1	<450 500 400 – – 1.04 <1	<450 150 250 – – 1.52 <1	<450 – – – – – 400 500 – – –	<450 – – – – – 150 100 – – –	<450 – – – – 2.85 <1 – 400 450 – –	<450 300 300 8000 9000 3.69	<450 300 500 – – 10.20 <1	<450 150 150 – – 1.90 <1	<450 150 200 3500 2500 1.21 <1
FS	<450 500 550 – – 2.14 <1	<450 500 600 – – 2.24 <1	<450 500 600 10000 12000 1.75 <1	<450 500 450 – – 1.53 <1	<450 150 250 – – 2.07 <1				<450 300 450 – – 10.31 <1	<450 300 450 – – 0.86	<450 150 150 3500 2500 1.27 <1	<450 150 130 – – 1.54 <1
FR	<450 500 450 – – 2.23 <1	<450 500 450 10000 11000 2.20 <1	<450 500 450 – – 2.22 <1	<450 500 450 10000 11000 1.16 <1	<450 500 350 – – 1.7 <1	<450 – – – – – 300 350 – – –	<450 – – – – 4.99 <1 – 300 350 – –	<450 – – – – 4.34 <1 – 300 350 – –	<450 300 450 – – 4.77	<450 300 450 6000 10000 1.28 <1	<450 150 75 – – 1.60 <1	<450 150 75 – – 1.94 <1
FQ	<450 500 300 – – 3.23 <1	<450 500 350 – – 3.25 <1	<450 500 300 – – 3.29 <1	<450 500 300 – – 1.36 <1	<450 500 300 10000 12500 2.09 <1				<450 300 300 – – 14.81 <1	<450 300 500 – – 12.45 <1	<450 150 100 – – 0.97	<450 150 100 3500 3000 2.70 <1
FP	<450 500 450 – – 3.52 <1	<450 500 450 – – 1.56	<450 500 500 10000 13000 1.91 <1	<450 500 450 – – 3.98 <1	<450 500 350 – – 1.44 <1	<450 – – – – – 300 450 – – –	<450 – – – – 5.04 <1 – 300 350 – –	<450 – – – – – 300 425 – – –	<450 300 350 8000 7000 0.75	<450 300 300 – – 7.62 <1	<450 150 150 – – 1.13 <1	<450 150 150 – – 2.86 <1
FO	<450 500 400 10000 15000 2.57 <1	<450 500 425 – – 2.39 <1	<450 500 450 – – 2.15 <1	<450 500 425 – – 3.99 <1	<450 500 300 10000 2800 1.21 <1				<450 300 350 – – 4.55 <1	<450 300 350 – – 11.02 <1	<450 150 100 3500 3500 1.60 <1	<450 150 100 – – 0.50

Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
182 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

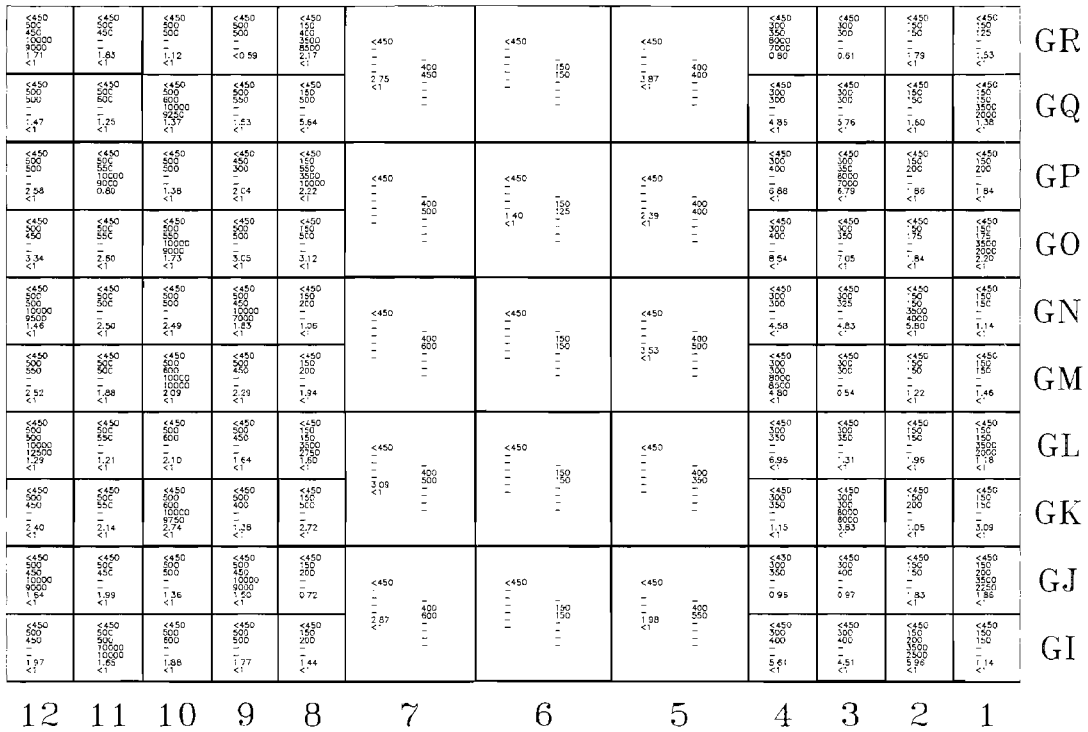
	12	11	10	9	8	7	6	5	4	3	2	1
GH	<450 500 500 – – 2.53 <1	<450 500 500 – – 2.75 <1	<450 500 500 10000 10000 2.64 <1	<450 500 400 – – 1.70 <1	<450 150 250 3500 8000 1.07 <1	<450 – – – – 1.17 <1	<450 – – – – – 150 100 – – –	<450 – – – – 2.99 <1	<450 150 400 10000 11.70 <1	<450 300 300 – – 0.66	<450 150 150 – – 1.33 <1	<450 150 150 – – 1.23 <1
GG	<450 500 500 10000 10000 2.52 <1	<450 500 500 – – 2.03 <1	<450 500 500 – – 2.23 <1	<450 500 500 – – 1.10 <1	<450 150 400 – – 2.32 <1				<450 300 375 – – 4.63 <1	<450 300 400 – – 4.44 <1	<450 150 150 3500 2900 0.92	<450 150 150 – – 2.17 <1
GF	<450 500 550 – – 1.92 <1	<450 500 500 – – 0.51	<450 500 500 10000 10000 1.99 <1	<450 500 550 – – 1.61 <1	<450 150 100 3500 3000 1.52 <1	<450 – – – – – 400 600 – – –	<450 – – – – – 150 130 – – –	<450 – – – – 2.28 <1	<450 300 400 8000 10000 1.00 <1	<450 300 400 – – 0.73	<450 150 100 – – 1.86 <1	<450 150 75 – – 1.60 <1
GE	<450 500 550 10000 10000 1.82 <1	<450 500 550 – – 1.08 <1	<450 500 600 – – 2.60 <1	<450 500 450 – – 1.13 <1	<450 150 150 – – 1.22 <1				<450 300 400 – – 7.78 <1	<450 300 400 – – 0.98	<450 150 150 3500 2500 1.37	<450 150 150 – – 1.10 <1
GD	<450 500 500 – – 1.82 <1	<450 500 600 10000 10000 1.51 <1	<450 500 550 – – 2.65 <1	<450 500 350 10000 9000 1.86 <1	<450 150 200 – – 4.72 <1	<450 – – – – 2.57 <1	<450 – – – – – 150 150 – – –	<450 – – – – 2.94 <1	<450 300 400 – – <0.41	<450 300 500 8000 11000 4.45 <1	<450 150 150 – – 1.43 <1	<450 150 200 3500 2000 1.21 <1
GC	<450 500 450 – – 1.31 <1	<450 500 400 – – 2.45 <1	<450 500 400 – – 1.67 <1	<450 500 450 – – 1.31 <1	<450 150 450 3500 9000 2.59 <1				<450 300 300 – – 2.46 <1	<450 300 200 – – 4.52 <1	<450 150 200 – – 0.97	<450 150 150 – – 0.94
GB	<450 500 300 10000 10000 1.34 <1	<450 500 550 – – 1.53 <1	<450 500 450 10000 10000 3.15 <1	<450 500 400 – – 1.21 <1	<450 150 150 – – 1.89 <1	<450 – – – – – 420 600 – – –	<450 – – – – – 150 150 – – –	<450 – – – – 3.17 <1	<450 300 300 – – 4.61 <1	<450 300 300 – – 4.55 <1	<450 150 150 3500 3000 0.65	<450 150 150 – – 1.65 <1
GA	<450 500 300 – – 7.78 <1	<450 500 550 – – 1.34 <1	<450 500 450 – – 1.66 <1	<450 500 450 – – 1.66 <1	<450 150 150 3500 3000 2.02 <1				<450 300 325 – – 6.45 <1	<450 300 300 8000 8000 5.39 <1	<450 150 150 – – 1.67 <1	<450 150 150 – – 1.56 <1
FZ	<450 500 450 – – 1.96 <1	<450 500 550 10000 8000 4.19 <1	<450 500 500 – – 0.60	<450 500 300 – – 1.43 <1	<450 150 150 – – 1.27 <1	<450 – – – – 2.78 <1	<450 – – – – – 150 150 – – –	<450 – – – – 2.02 <1	<450 300 500 – – 12.54 <1	<450 300 500 – – <0.59	<450 150 100 – – 1.65 <1	<450 150 100 3500 5000 1.27 <1
FY	<450 500 450 10000 15000 1.87 <1	<450 500 450 – – 1.68 <1	<450 500 450 – – 1.99 <1	<450 500 300 – – 1.14 <1	<450 150 400 3500 15000 2.70 <1				<450 300 350 – – 0.77	<450 300 350 – – <0.54	<450 150 100 3500 3000 0.83	<450 150 100 – – 1.14 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
132 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Ec. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

	12	11	10	9	8	7	6	5	4	3	2	1
HB	<450 500 900 - - 2.36 <1	<450 500 555 - - 5.08 <1	<450 500 600 - - 3.28 <1	<450 500 600 - - 2.53 <1	<450 150 425 3500 4000 1.51 <1	<450 - - - - 2.54 <1	<450 - - - - - - 150 150	<450 - - - - - - 425 150	<450 100 200 - - - <0.47	<450 300 600 - - 1.64 <1	<450 150 175 - - 1.57 <1	<450 150 200 3500 2250 1.19 <1
HA	<450 500 500 10000 9250 1.33 <1	<450 500 525 - - 4.40 <1	<450 500 575 10000 10000 1.54 <1	<450 500 600 - - 2.07 <1	<450 150 500 - - 2.83 <1				<450 100 150 - - 1.60 <1	<450 300 850 8000 7750 4.91 <1	<450 150 150 - - 0.91	<450 150 150 - - 5.09 <1
GZ	<450 500 100 - - 3.26 <1	<450 500 1300 - - 2.00 <1	<450 500 450 - - 1.91 <1	<450 500 120 - - 2.43 <1	<450 100 475 3500 3500 2.23 <1	<450 - - - - 1.94 <1	<450 - - - - - - 150 50	<450 - - - - 2.76 <1	<450 100 100 8000 4500 <0.50	<450 300 100 - - 3.97 <1	<450 150 150 - - 1.75 <1	<450 150 150 3500 3000 0.81
GY	<450 500 100 - - 1.56 <1	<450 500 500 - - 0.91	<450 500 500 10000 9500 1.96 <1	<450 500 500 - - 2.62 <1	<450 150 150 525 - 2.44 <1				<450 100 400 - - 0.68	<450 300 400 8000 7500 5.06 <1	<450 150 200 - - 1.25 <1	<450 150 150 - - 1.75 <1
GX	<450 500 150 10000 8000 1.40 <1	<450 500 500 - - 1.28 <1	<450 500 600 - - 4.63 <1	<450 500 450 - - 1.24 <1	<450 100 350 - - 1.49 <1	<450 - - - - 1.82 <1	<450 - - - - - - 500 50	<450 - - - - - - 400 400	<450 100 300 - - 4.58 <1	<450 300 500 - - 5.24 <1	<450 150 200 - - 1.31 <1	<450 150 150 3500 3000 1.56 <1
GW	<450 500 800 - - 1.49 <1	<450 500 500 - - 1.29 <1	<450 500 600 10000 9000 1.14 <1	<450 500 400 - - 1.00 <1	<450 150 425 3500 3000 2.62 <1				<450 100 300 - - <0.43	<450 300 500 8000 7500 4.35 <1	<450 150 150 - - 1.12	<450 150 150 - - 1.22 <1
GV	<450 500 600 10000 9000 1.75 <1	<450 500 500 - - <0.65	<450 500 600 - - 0.63	<450 500 450 - - 1.04 <1	<450 150 200 - - 1.31 <1	<450 - - - - 2.82 <1	<450 - - - - - - 150 125	<450 - - - - 2.21 <1	<450 100 300 - - 1.22 <1	<450 300 400 - - 4.51 <1	<450 150 150 - - 0.81	<450 150 150 3500 3000 1.01 <1
GU	<450 500 500 - - 0.98	<450 500 450 10000 9300 0.89	<450 500 550 - - 0.36 <1	<450 500 500 10000 3600 1.77 <1	<450 150 200 - - 1.43 <1				<450 100 350 - - <0.47	<450 300 350 - - 0.76	<450 150 150 3500 3000 0.91	<450 150 150 - - 0.98
GT	<450 500 400 10000 8500 <0.69	<450 500 350 - - 0.94	<450 500 580 - - 1.04 <1	<450 500 480 - - 1.66 <1	<450 150 400 3500 6500 1.25 <1	<450 - - - - 3.09 <1	<450 - - - - - - 150 125	<450 - - - - - - 400 400	<450 100 150 - - <0.42	<450 300 400 8000 7500 2.57 <1	<450 150 150 - - 6.14 <1	<450 150 100 - - 1.47 <1
GS	<450 500 500 - - 0.95	<450 500 500 - - <0.61	<450 500 500 10000 8500 5.36 <1	<450 500 550 - - 1.69 <1	<450 150 450 - - 3.05 <1				<450 100 350 - - 0.82	<450 300 350 - - 0.56	<450 150 150 3500 3000 1.63 <1	<450 150 150 - - 7.27 <1

Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps

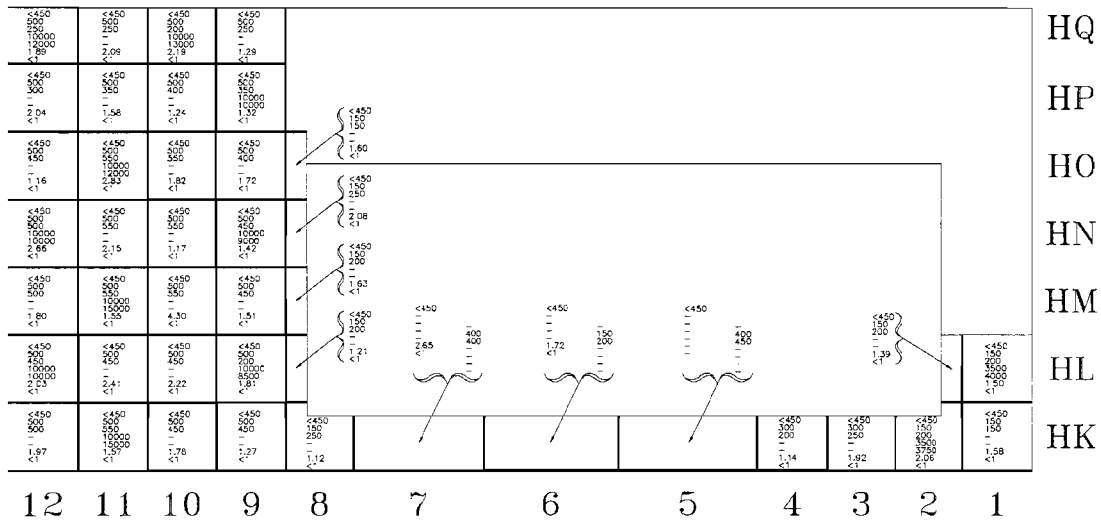
	12	11	10	9	8	7	6	5	4	3	2	1
HJ	<450 500 550 – – 1.87 <1	<450 500 550 – – 1.50 <1	<450 500 500 – – 1.67 <1	<450 500 475 – – 1.41 <1	<450 150 470 4500 8300 1.73 <1	<450 – – – – – 400 400 – – –	<450 – – – – 1.35 <1 – 150 150 – –	<450 – – – – 1.56 <1 – 400 150 – –	<450 300 450 8000 9000 – <0.40	<450 300 400 – – 0.61	<450 150 200 – – 1.72 <1	<450 150 150 – – 1.22 <1
HI	<450 500 600 10000 10000 1.58 <1	<450 500 600 – – 4.67 <1	<450 500 500 13000 15000 2.41 <1	<450 500 500 – – 3.96 <1	<450 150 150 – – 1.32 <1				<450 300 300 – – <0.36	<450 300 350 – – 1.02 <1	<450 150 150 650 3500 4000 1.98 <1	<450 150 250 – – 1.32 <1
HH	<450 500 600 – – 1.72 <1	<450 450 450 – – 1.34 <1	<450 500 600 – – 1.81 <1	<450 500 250 – – 1.56 <1	<450 150 620 3500 8300 1.77 <1	<450 – – – – – 400 600 – – –	<450 – – – – 1.57 <1 – 150 250 – –	<450 – – – – – 400 400 – – –	<450 300 300 – – 1.28 <1	<450 300 300 6000 8500 <0.43	<450 150 250 – – 1.42 <1	<450 150 200 – – 1.33 <1
HG	<450 500 500 10000 10000 1.25 <1	<450 500 500 – – 3.92 <1	<450 500 500 12000 13500 4.58 <1	<450 500 500 – – 1.99 <1	<450 150 630 – – 1.39 <1				<450 300 300 – – 0.39	<450 300 300 – – 0.50	<450 150 250 – – 2.19 <1	<450 150 250 3500 3500 0.74
HF	<450 500 550 – – 1.64 <1	<450 500 500 10000 10000 1.61 <1	<450 500 600 – – 1.65 <1	<450 500 500 – – 1.30 <1	<450 150 450 4500 8300 2.31 <1	<450 – – – – – 400 500 – – –	<450 – – – – 1.27 <1 – 150 200 – –	<450 – – – – – 400 400 – – –	<450 300 300 6000 8500 1.22 <1	<450 300 350 – – <0.42	<450 150 150 – – 1.48 <1	<450 150 150 – – 1.30 <1
HE	<450 500 700 – – 1.87 <1	<450 500 700 – – 2.68 <1	<450 500 600 10000 13000 1.67 <1	<450 500 500 – – 1.50 <1	<450 150 450 – – 2.42 <1				<450 300 300 – – 1.16 <1	<450 300 300 – – 1.06 <1	<450 150 150 – – 1.77 <1	<450 150 100 3500 2000 1.90 <1
HD	<450 500 600 10000 10000 1.44 <1	<450 500 550 – – 1.44 <1	<450 500 500 – – 1.83 <1	<450 500 500 10000 10000 2.55 <1	<450 150 450 – – 2.47 <1	<450 – – – – 2.28 <1 – 400 500 – –	<450 – – – – 1.67 <1 – 150 250 – –	<450 – – – – – 400 400 – – –	<450 300 300 – – <0.47	<450 300 300 – – <0.57	<450 150 250 3500 4000 1.90 <1	<450 150 200 – – 1.42 <1
HC	<450 500 475 – – 1.24 <1	<450 500 500 10000 10000 3.90 <1	<450 500 575 – – 1.72 <1	<450 500 450 – – 2.85 <1	<450 150 450 – – 2.19 <1				<450 300 300 8000 8500 0.61	<450 300 300 – – 0.79	<450 150 150 – – 1.52 <1	<450 150 200 – – 2.86 <1

Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

3. Pier D

f. Prior Photograph

End of pier facing east.

3. Pier D

f. Prior Photograph

End of pier facing west.

3. Pier D

g. During Photograph

Midway of pier facing west.

3. Pier D

g. During Photograph

Midway of pier facing east.

3. Pier D

h. After Photograph

End of pier facing east.

4. Pier F

a. Introduction:

Pier F is located in grid D-7 of the Charleston Naval Shipyard map (Figure 10) and was constructed in 1916. Pier F is also identified as structure 317-C.

(1) Description:

Structure 317-C is approximately 447' long by 56' wide by 11' high. The shape of Pier F is curved and it initially extends northeast, before turning to the south. It is oriented east into the Cooper River. The pier is constructed of wood pilings that support a concrete slab surface. Along the sides of the pier are wood posts and beams bolted into the concrete. The pier contains three sets of train rails. The first set of rails extends along the north side of section 1 then branches into two sets which extend along each side of section 2.

(2) Brief History:

(a) **Use:** This structure was associated with the expansion of the Charleston Naval Base during the buildup of the U.S. Navy prior to and during World War I.

(b) **Radiological History:** This structure was used to berth nuclear vessels.

(3) Survey Requirements:

Group 2, Group 3 and Nuclear Ship Berthing Area surveys were required.

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Where physically possible, each grid was subdivided into two 3' by 3' subsections which were located in areas of highest potential for contamination. One of these subsections was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Solid material samples were taken from a minimum of 50% of the 10' by 10' grids. Additionally, solid material samples were taken from each 3' by 3' subsection that resulted in levels greater than 450 $\mu\mu Ci/20cm^2$ with the IM-247/PD or greater than twice background with the IM-253/PD (HV-1 PHA).

Group 3 survey areas were divided into approximately 5' by 5' grids. Each grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). A minimum of 25% of these grids were also surveyed using the IM-253/PD (HV-2 GROSS). Additionally, solid material samples were taken from each 5' by 5' grid.

4. Pier F

Pier F was divided into 265 10' by 10' grids and 810 5' by 5' grids. Individual backgrounds were used for Pier F sections 1 and 2. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the low and high natural radioactivity concrete pours in section 1 were 40, 75, 2500 and 40, 200, 4000 counts per minute respectively. These levels were based upon backgrounds obtained from Pier U. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the low, medium and high natural radioactivity concrete pours in section 2 were: 40, 75, 3000; 40, 125, 4000; and 40, 225, 5000 counts per minute respectively. These areas were also based upon background radiation levels obtained from Pier U.

A total of 949 solid material samples were taken. Each solid sample was removed from the grid location indicating the highest potential. The following naturally occurring radionuclides were typical isotopes identified during analysis of solid material samples: beryllium 7, lead 212, and lead 214.

c. Summary:

Surveys performed with the IM-247/PD detected nine areas greater than 450 $\mu\mu Ci/20cm^2$.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 23 areas greater than or equal to twice background.

Surveys performed with the IM-253/PD (HV-2 GROSS) detected seven areas greater than or equal to twice background.

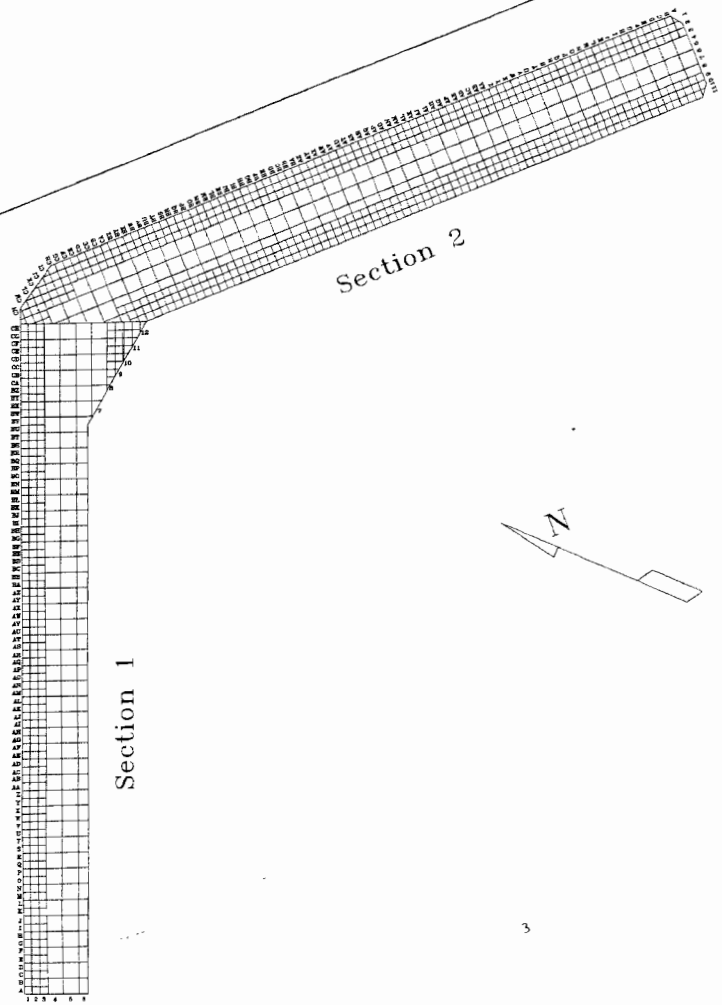
Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of less than 0.35 pCi/g to a high of 20.91 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all solid material samples were less than 1 pCi/g.

Volume II., Section G

4. Pier F

d. Overall Grid Map



4. Pier F

e. Localized Grid Maps (Section 1)

	1	2	3	4	5	6
J	<450 75 100 – 2500 3000 1.51 <1	<450 200 300 – – 2.37 <1	<450 200 300 – – 3.12 <1	<450 – – – – – – 75 100 – – 6.51 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
I	<450 75 100 – – 1.58 <1	<450 200 250 4000 5500 2.59 <1	<450 200 250 – – 2.66 <1			
H	<450 75 100 – – 0.99	485 200 350 – – 2.07 <1	<450 200 300 – – 2.35 <1	<450 – – – – – – 75 100 – – – –	900 75 100 2500 3000 1.60 <1	<450 – – – – – – 75 100 – – – –
G	<450 75 100 – – 0.63	<450 200 200 – – 1.24 <1	<450 200 250 4000 4500 3.48 <1			
F	<450 75 150 2500 2750 0.94	<450 200 100 4000 4000 1.56 <1	<450 200 150 – – 1.15 <1	<450 – – – – – – 75 125 – – 1.18 <1	<450 – – – – – – 75 125 – – – –	<450 – – – – – – <450 75 150 2500 2500 1.11 <1
E	<450 75 100 2500 3500 2.78 <1	<450 200 125 – – 1.42 <1	<450 200 125 – – 1.78 <1			
D	<450 75 125 – – 1.94 <1	<450 200 125 – – 1.55 <1	<450 200 175 – – 1.28 <1	<450 – – – – – – 75 125 – – – –	1125 75 90 2500 2750 1.14 <1	<450 – – – – – – <450 75 230 2500 3000 1.29 <1
C	<450 75 125 – – 1.16 <1	<450 200 125 – – 0.77	<450 200 200 4000 3500 1.16 <1			
B	<450 75 125 – – 1.28 <1	720 200 250 4000 7000 0.75	<450 200 200 – – 1.26 <1	<450 – – – – – – 75 125 – – – –	<450 – – – – – – <450 75 225 2500 4750 1.2[illegible] <1	<450 – – – – – – 75 125 – – 2.11 <1
A	<450 75 125 2500 2500 1.52 <1	<450 200 125 – – 0.69	<450 200 200 – – 2.05 <1			

	1	2	3	4	5	6
T	<450 75 100 – – 2.99 <1	<450 200 250 – – 2.99 <1	<450 200 250 – – 3.58 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
S	<450 75 100 – – 1.65 <1	<450 200 250 – – 2.94 <1	<450 200 250 4000 6000 2.42 <1			
R	<450 75 100 – – 0.80	<450 200 200 4000 6000 1.98 <1	<450 200 250 – – 3.14 <1	1350 75 100 2500 2500 1.25 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
Q	<450 75 100 2500 3500 0.97	<450 200 250 – – 1.91 <1	<450 200 250 – – 1.75 <1			
P	<450 75 75 – – 0.94	<450 200 200 – – 3.20 <1	<450 200 200 – – 2.63 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
O	<450 75 100 2500 2500 0.82	<450 200 250 – – 2.22 <1	<450 200 250 – – 2.08 <1			
N	<450 75 100 – – 1.15 <1	<450 200 300 – – 2.14 <1	<450 200 250 4000 6000 2.27 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
M	<450 75 100 – – 0.72	<450 200 250 4000 6000 1.74 <1	<450 200 250 – – 2.36 <1			
L	<450 75 100 – – 1.34 <1	<450 200 300 – – 2.36 <1	<450 200 300 – – 2.17 <1	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –	<450 – – – – – – 75 100 – – – –
K	<450 75 100 – – 1.67 <1	<450 200 250 – – 2.10 <1	<450 200 250 4000 5500 2.46 <1			

Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to 450μμC/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμC/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 1)

	1	2	3	4	5	6
AD	<450 75 100 2500 2000 1.34 <1	720 200 200 – – 2.32 <1	<450 200 – – – 1.88 <1	<450 – – – – 1.06 <1 – 75 100 – – –	<450 – – – – 1.26 <1 – 75 100 – – –	<450 – – – – – 75 100 – – –
AC	<450 75 100 – – 1.04 <1	<450 200 200 – – 3.13 <1	<450 200 200 4000 5500 2.68 <1			
AB	<450 75 100 – – 1.16 <1	<450 200 250 – – 2.28 <1	<450 200 250 – – 3.16 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – – 75 50 – – –
AA	<450 75 100 – – 1.39 <1	<450 200 250 – – 2.97 <1	<450 200 250 4000 5500 2.78 <1			
Z	<450 75 100 – – 1.14 <1	<450 200 250 4000 5000 2.99 <1	<450 200 250 – – 2.75 <1	<450 – – – – – <450 75 300 2500 7750 1.90 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –
Y	<450 75 100 – – 1.52 <1	<450 200 300 – – 2.87 <1	<450 200 300 4000 5500 2.46 <1			
X	<450 75 100 – – 1.17 <1	<450 200 250 – – 1.91 <1	<450 200 250 – – 3.69 <1	<450 – – – – – 75 125 – – –	<450 – – – – – 75 125 – – –	<450 – – – – – 75 125 – – –
W	<450 75 100 – – 1.06 <1	<450 200 250 – – 3.23 <1	<450 200 250 4000 5000 2.26 <1			
V	<450 75 100 – – 0.99	1395 200 750 4000 6000 3.26 <1	<450 200 300 – – 2.64 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –
U	<450 75 100 2500 2000 0.81	<450 200 300 – – 2.51 <1	<450 200 250 – – 3.60 <1			

	1	2	3	4	5	6
AN	<450 75 50 – – 1.14 <1	<450 200 200 – – 4.03 <1	<450 200 250 – – 3.23 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 125 – 1.10 <1	<450 – – – – 1.30 <1 – 75 100 – – –
AM	<450 75 50 – – 0.71	<450 200 250 4000 5000 2.85 <1	<450 200 250 – – 2.84 <1			
AL	<450 75 75 2500 2500 0.94	<450 200 250 – – 2.24 <1	<450 200 250 – – 2.31 <1	<450 – – – – – 75 100 – – –	<450 – – – – 1.03 <1 – 75 100 – – –	<450 – – – – – 75 100 – – –
AK	<450 75 75 – – 0.71	<450 200 250 – – 2.35 <1	<450 200 300 4000 5500 3.58 <1			
AJ	<450 75 100 – – 1.28 <1	<450 200 200 – – 2.28 <1	<450 200 200 – – 3.82 <1	<450 – – – – – 75 100 – – –	<450 – – – – 1.38 <1 – 75 100 – – –	<450 – – – – 1.11 <1 – 75 100 – – –
AI	<450 75 75 – – 1.27 <1	<450 200 250 – – 3.05 <1	<450 200 200 4000 5000 2.33 <1			
AH	<450 75 75 – – 1.87 <1	<450 200 200 4000 5000 3.05 <1	<450 200 200 – – 4.29 <1	<450 – – – – – 75 100 – – –	<450 – – – – 1.73 <1 – 75 100 – – –	<450 – – – – – 75 100 – – –
AG	<450 75 75 – – 1.68 <1	<450 200 250 – – 3.28 <1	<450 200 250 4000 5500 3.28 <1			
AF	<450 75 100 – – 1.26 <1	<450 200 200 – – 3.34 <1	450 200 200 4000 3750 3.37 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – 1.13 <1 – 75 100 – – –
AE	1.25 75 200 2500 2250 20.91 <1	<450 200 200 4000 5000 2.35 <1	<450 200 200 – – 3.32 <1			

Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to 450μμCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Pa-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 1)

	1	2	3	4	5	6
AX	<450 75 100 – – 1.60 <1	<450 200 100 – – 2.06 <1	<450 200 100 4000 5500 2.35 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –
AW	<450 75 100 – – 1.61 <1	<450 200 200 4000 5500 2.47 <1	<450 200 200 – – 2.72 <1			1.01 <1
AV	<450 75 50 – – 1.39 <1	<450 200 200 – – 2.50 <1	<450 200 250 – – 2.13 <1	<450 – – – – – 75 125 – – 2.12 <1	<450 – – – – – 75 125 – – –	<450 – – – – – 75 125 – – 1.26 <1
AU	<450 75 100 2500 2500 1.31 <1	<450 200 250 – – 3.09 <1	<450 200 250 – – 3.44 <1			
AT	<450 75 50 – – 1.48 <1	<450 200 200 – – 2.46 <1	<450 200 250 4000 4500 3.14 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – 1.48 <1 75 100 – – –
AS	<450 75 50 – – 1.28 <1	<450 200 250 4000 5000 2.95 <1	<450 200 250 – – 2.57 <1			
AR	<450 75 50 – – 1.51 <1	<450 200 300 – – 2.65 <1	<450 200 250 – – 2.91 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – 1.51 <1 75 100 – – –
AQ	<450 75 50 – – 1.66 <1	<450 200 200 4000 4000 2.91 <1	<450 200 150 – – 2.92 <1			
AP	<450 75 100 – – 1.14 <1	<450 200 200 – – 4.18 <1	<450 200 250 4000 4500 2.56 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – 1.07 <1 75 100 – – –
AO	<450 75 50 – – 0.77	<450 200 200 4000 5000 2.70 <1	<450 200 200 – – 3.57 <1			

	1	2	3	4	5	6
BH	<450 75 100 – – 1.43 <1	<450 200 200 – – 2.81 <1	<450 200 200 – – 3.09 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – –	<450 – – – – – 75 50 – – –
BG	<450 75 100 2500 2500 1.47 <1	<450 200 250 – – 2.50 <1	<450 200 250 – – 3.16 <1			
BF	<450 75 75 – – 5.61 <1	<450 200 250 – – 1.96 <1	<450 200 250 4000 4500 1.77 <1	<450 – – – – – <450 75 450 2500 9000 1.69 <1	<450 – – – – 1.65 <1 75 100 – – –	<450 – – – – – 75 100 – – –
BE	<450 75 100 – – 2.33 <1	<450 200 250 4000 5000 3.35 <1	<450 200 250 – – 2.49 <1			
BD	<450 75 100 – – 1.41 <1	<450 200 250 – – 2.64 <1	<450 200 300 – – 2.58 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 100 – – 1.0 <1	<450 – – – – – 75 100 – – –
BC	<450 75 125 – – 1.83 <1	<450 200 200 – – 3.07 <1	<450 200 250 4000 6000 2.10 <1			
BB	<450 75 100 – – 1.27 <1	<450 200 200 4000 5000 2.75 <1	<450 200 200 – – 2.81 <1	<450 – – – – – 75 100 – – –	<450 – – – – – 75 150 – – 2.02 <1	<450 – – – – – 75 50 – – –
BA	<450 75 100 2500 2500 1.31 <1	<450 200 250 – – 3.30 <1	<450 200 250 – – 2.49 <1			
AZ	<450 75 100 – – 1.55 <1	<450 200 250 – – 3.47 <1	<450 200 150 – – 1.75 <1	<450 – – – – – 75 100 – – –	<450 – – – – 1.87 <1 75 100 – – –	<450 – – – – – 75 100 – – 1.61 <1
AY	<450 75 75 – – 1.64 <1	<450 200 200 4000 6000 2.58 <1	<450 200 150 – – 1.46 <1			

Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 1)

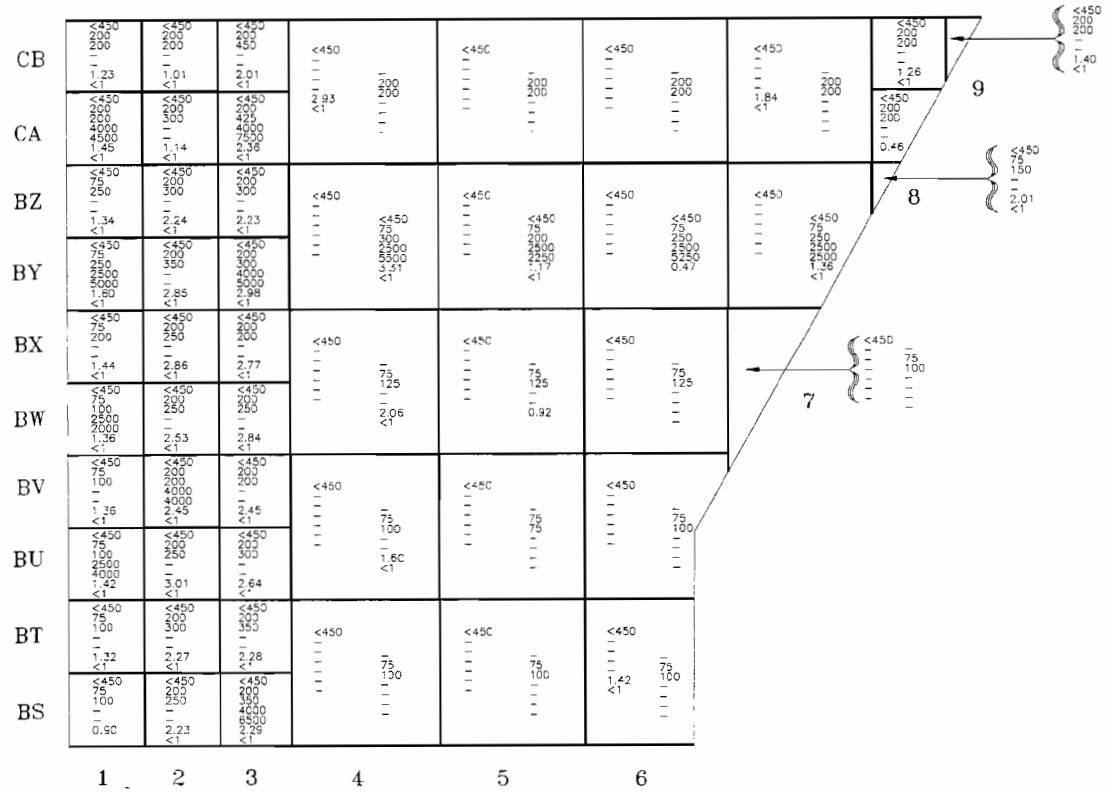
	1	2	3	4	5	6
BR	<450 75 100 – – 0.97	<450 200 350 4000 6500 3.61 <1	<450 200 300 – – 2.03 <1	<450 – – – – – – – 75 100 – – 1.20 <1	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 125 – – 1.01 <1
BQ	<450 75 100 2500 2500 1.55 <1	<450 200 225 – – 2.94 <1	<450 200 225 – – 2.12 <1			
BP	<450 75 150 – – 2.37 <1	<450 200 250 – – 2.77 <1	<450 200 200 – – 1.75 <1	<450 – – – – – – – 75 100 – – 4.73 <1	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 100 – – – –
BO	<450 75 100 2500 2500 2.04 <1	<450 200 200 – – 0.83	<450 200 200 – – 2.21 <1			
BN	<450 75 100 – – 1.08 <1	<450 200 250 4000 4500 1.69 <1	<450 200 300 – – 1.74 <1	<450 – – – – – – – 75 100 – – 1.19 <1	<450 – – – – – – – 75 100 – – 1.55 <1	<450 – – – – – – – 75 100 – – – –
BM	<450 75 75 2500 2500 0.83	<450 200 250 – – 3.00 <1	<450 200 250 – – 2.23 <1			
BL	<450 75 75 – – 1.75 <1	<450 200 250 – – 3.03 <1	<450 200 200 – – 1.23 <1	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 100 – – – –
BK	<450 75 100 – – 1.07 <1	<450 200 250 – – 0.84	<450 200 150 4000 5000 2.24 <1			
BJ	<450 75 100 – – 1.02 <1	<450 200 250 4000 4000 2.44 <1	<450 200 250 – – 2.47 <1	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 100 – – – –	<450 – – – – – – – 75 100 – – 1.10 <1
BI	<450 75 100 2500 2500 1.47 <1	<450 200 200 – – 2.60 <1	<450 200 200 – – 3.37 <1			

Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 = MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 1)

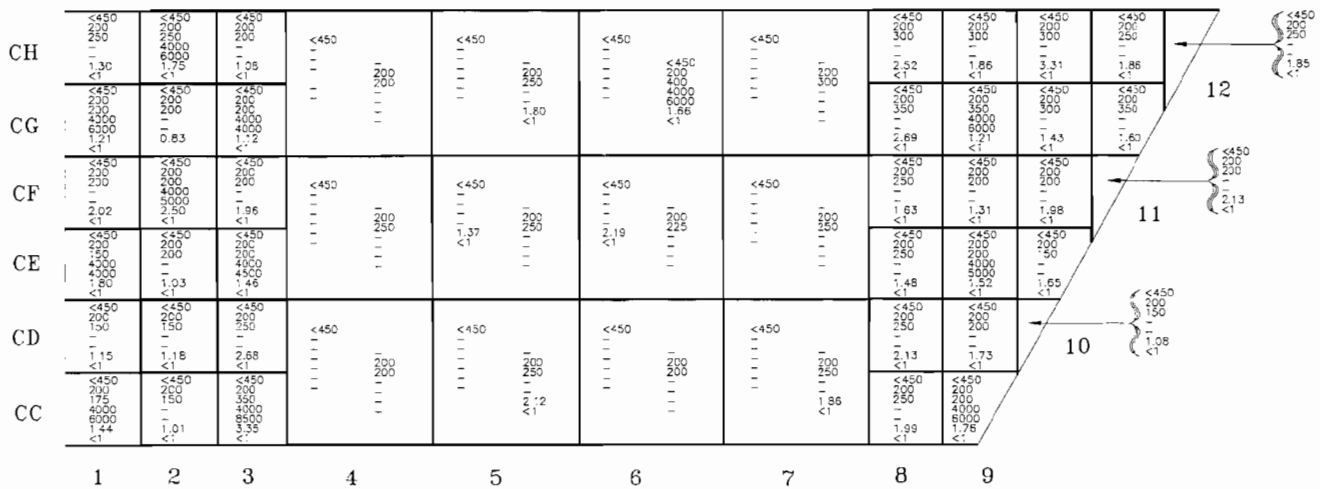


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 1)

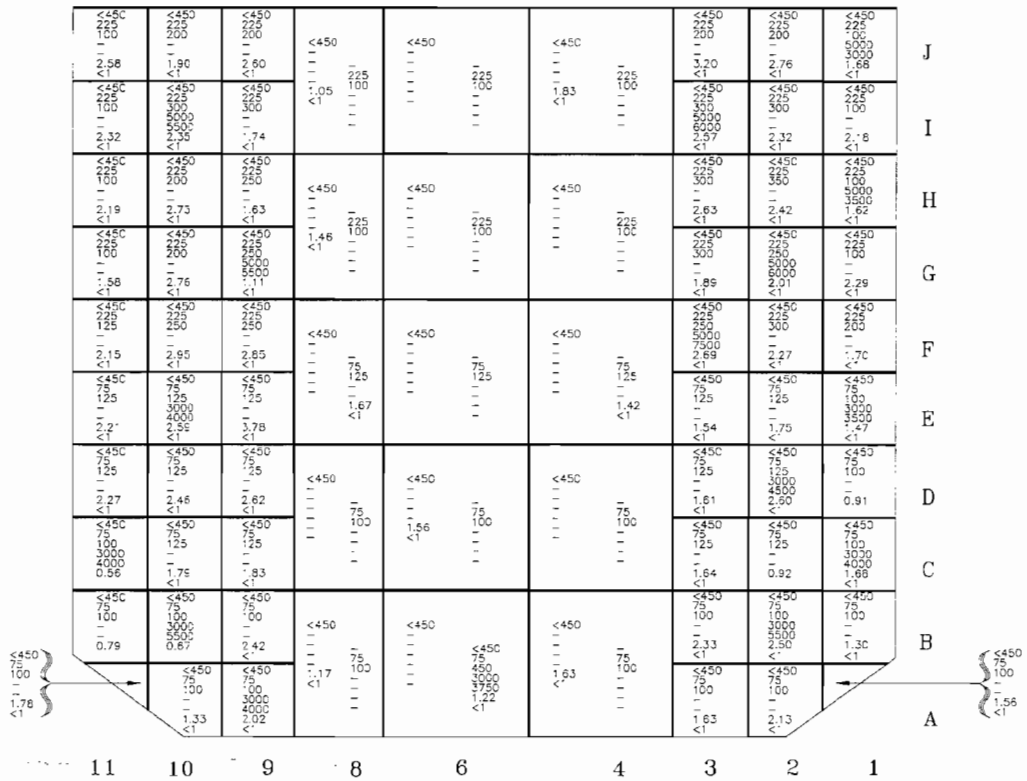


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PC (HV-2 GROSS) [bkg.]
7300 – IM-253/PC (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

	11	10	9	8	6	4	3	2	1
T	<450 225 125 – – 1.68 <1	<450 225 250 – – 2.35 <1	<450 225 250 – – 2.87 <1	<450 – – – – 1.25 <1	<450 – – – – – 225 200	<450 – – – – – 225 200	<450 225 300 5000 5500 1.41 <1	<450 225 300 – – 2.55 <1	<450 225 200 – – 2.25 <1
S	<450 225 125 5000 3000 1.84 <1	<450 225 250 – – 2.32 <1	<450 225 250 – – 2.27 <1				<450 225 350 – – 1.46 <1	<450 225 300 – – 2.19 <1	<450 225 225 5000 4500 2.43 <1
R	<450 225 125 – – 1.37 <1	<450 225 175 – – 2.29 <1	<450 225 225 – – 2.38 <1	<450 – – – – 1.72 <1	<450 – – – – – 225 150	<450 – – – – 1.19 <1	<450 225 225 – – 2.44 <1	<450 225 250 5000 5000 2.08 <1	<450 225 125 – – 2.52 <1
Q	<450 225 125 5000 5000 1.56 <1	<450 225 125 – – 2.23 <1	<450 225 250 – – 0.62				<450 225 250 5000 6500 1.52 <1	<450 225 250 – – 1.73 <1	<450 225 125 – – 2.23 <1
P	<450 225 125 – – 1.47 <1	<450 225 250 – – 2.34 <1	<450 225 250 – – 1.35 <1	<450 – – – – 1.53 <1	<450 – – – – – 225 125	<450 – – – – 1.72 <1	<450 225 350 – – 1.57 <1	<450 225 350 – – 2.59 <1	<450 225 100 5000 3000 2.38 <1
O	<450 225 100 – – 2.85 <1	<450 225 250 5000 5500 2.48 <1	<450 225 200 – – 1.47 <1				<450 225 250 5000 7000 1.87 <1	<450 225 100 – – 2.69 <1	<450 225 100 – – 2.22 <1
N	<450 225 150 – – 2.11 <1	<450 225 250 – – 1.24 <1	<450 225 250 – – 1.23 <1	<450 – – – – – 225 150	<450 – – – – – 225 75	<450 – – – – 3.06 <1	<450 225 300 5000 6000 1.32 <1	<450 225 250 – – 1.84 <1	<450 225 100 – – 2.22 <1
M	<450 225 150 – – 1.86 <1	<450 225 200 5000 5530 2.19 <1	<450 225 200 – – 0.71				<450 225 300 – – 1.52 <1	<450 225 300 5000 5500 2.26 <1	<450 225 300 – – 1.53 <1
L	<450 225 100 – – 2.15 <1	<450 225 225 – – 2.51 <1	<450 225 225 – – 0.77	<450 – – – – – 225 100	<450 – – – – 1.49 <1 225 100	<450 – – – – – 225 100	<450 225 225 5000 6500 3.12 <1	<450 225 225 – – 2.40 <1	<450 225 100 – – 1.12 <1
K	<450 225 100 – – 1.96 <1	<450 225 225 5000 5000 1.92 <1	<450 225 150 – – 1.07 <1				<450 225 200 – – 2.51 <1	<450 225 150 – – 2.66 <1	<450 225 125 5000 3500 2.03 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

<450 125 150 – – 1.46 <1	<450 125 200 – – 1.51 <1	<450 125 200 – – 0.73	<450 – – – – 1.60 <1	<450 – – – – – 125 150 – – – –	<450 – – – – – 125 150 – – – –	<450 – – – – – 125 200 – – – –	<450 125 200 4000 6500 2.00 <1	<450 125 200 – – 2.34 <1	<450 125 200 – – 0.70	AD
<450 125 100 – – 1.77 <1	<450 125 200 – – 1.11 <1	<450 125 200 4000 4500 1.66 <1					<450 125 200 – – 2.89 <1	<450 125 150 – – 1.60 <1	<450 125 150 4500 4000 2.03 <1	AC
<450 125 150 – – 1.40 <1	<450 125 200 – – 1.91 <1	<450 125 200 – – 1.95 <1	<450 – – – – – 125 150 – – – –	<450 – – – – 2.09 <1	<450 – – – – – 125 200 – – – –	<450 – – – – 3.01 <1	<450 125 200 – – 1.90 <1	<450 125 200 4000 6500 1.74 <1	<450 125 200 – – 1.60 <1	AB
<450 125 150 – – 1.12 <1	<450 125 150 – – 1.46 <1	<450 125 150 4000 4000 1.87 <1					<450 125 150 – – 1.41 <1	<450 125 150 – – 1.98 <1	<450 125 150 4000 4000 1.47 <1	AA
<450 125 200 – – 1.47 <1	<450 125 150 – – 0.82	<450 125 150 – – 1.42 <1	<450 – – – – – 125 200 – – – –	<450 – – – – – 125 150 – – – –	<450 – – – – – 125 200 – – – –		<450 125 200 4000 7000 1.78 <1	<450 125 200 – – 1.95 <1	<450 125 200 – – 1.59 <1	Z
<450 125 200 – – 0.97	<450 125 150 4000 3500 1.45 <1	<450 125 200 – – 1.08 <1				<450 – – – – – 125 200 – – – 1.68 <1	<450 125 200 – – 2.35 <1	<450 125 150 – – 1.71 <1	<450 125 200 4000 5000 1.17 <1	Y
<450 125 200 – – 1.01 <1	<450 125 150 – – 1.37 <1	<450 125 150 – – 1.52 <1	<450 – – – – – 125 125 – – – –	<450 – – – – – 125 125 – – – –	<450 – – – – – 125 200 – – – –		<450 125 225 – – 1.68 <1	<450 125 225 – – 1.81 <1	<450 125 200 4000 4000 2.07 <1	X
<450 125 150 – – 1.10 <1	<450 125 150 4000 3500 2.45 <1	<450 125 150 – – 1.00 <1				<450 – – – – – 125 200 – – – 1.16 <1	<450 125 200 – – 2.73 <1	<450 125 200 4000 6000 2.11 <1	<450 125 200 – – 1.13 <1	W
<450 125 150 – – 1.77 <1	<450 125 200 – – 2.68 <1	<450 125 225 – – 2.36 <1	<450 – – – – – 125 75 – – – –	<450 – – – – – 125 125 – – – –	<450 – – – – – 125 150 – – – –		<450 125 200 – – 1.24 <1	<450 125 200 – – 2.36 <1	<450 125 200 4000 4500 2.41 <1	V
<450 125 125 – – 0.87	<450 125 200 4000 5500 1.90 <1	<450 125 225 – – 2.21 <1					<450 125 200 – – 1.61 <1	<450 125 225 4000 6500 2.30 <1	<450 125 125 – – 1.90 <1	U
11	10	9	8	6	4		3	2	1	

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

	11	10	9	8	6	4	3	2	1
AN	<450 125 150 – – <0.35	<450 175 225 – – 1.44 <1	<450 125 225 – – 1.87 <1	<450 – – – – – 125 125	<450 – – – – – 125 125	<450 – – – – – 125 200	<450 125 225 – – 2.19 <1	<450 125 200 – – 2.21 <1	<450 125 150 4000 5500 1.44 <1
AM	<450 125 200 – – 1.92 <1	<450 125 200 4000 6000 2.13 <1	<450 125 200 – – 2.12 <1			1.85 <1	<450 125 175 4000 7000 2.26 <1	<450 125 200 – – 2.47 <1	<450 125 150 – – 1.30 <1
AL	<450 125 200 – – 1.80 <1	<450 125 200 – – 2.23 <1	<450 125 200 – – 2.77 <1	<450 – – – – – 125 150	<450 – – – – 1.14 <1 125 150	<450 – – – – – 125 225	<450 125 250 4000 6000 1.96 <1	<450 125 200 – – 2.36 <1	<450 125 200 – – 1.19 <1
AK	<450 125 150 – – 1.53 <1	<450 125 200 – – 1.95 <1	<450 125 200 4000 3000 2.51 <1			2.76 <1	<450 125 150 – – 1.01 <1	<450 125 150 – – 1.08 <1	<450 125 225 4000 3000 1.36 <1
AJ	<450 125 150 – – 1.82 <1	<450 125 200 – – 2.71 <1	<450 125 200 – – 2.33 <1	<450 – – – – – 125 200	<450 – – – – – 125 150	<450 – – – – 1.65 <1 125 200	<450 125 200 – – 2.66 <1	<450 125 200 – – 3.42 <1	<450 125 225 4000 6000 0.77
AI	<450 125 150 – – 1.56 <1	<450 125 150 – – 2.12 <1	<450 125 150 4000 5000 0.95				<450 125 200 – – 2.31 <1	<450 125 200 4000 6500 2.80 <1	<450 125 200 – – 2.07 <1
AH	<450 125 150 – – <0.46	<450 125 150 – – 1.17 <1	<450 125 150 – – 1.11 <1	<450 – – – – – 125 150	<450 – – – – – 125 175	<450 – – – – – 125 175	<450 125 225 4000 5500 2.32 <1	<450 125 150 – – 1.91 <1	<450 125 150 – – 1.51 <1
AG	<450 125 200 – – 1.49 <1	<450 125 200 4000 4000 1.58 <1	<450 125 200 – – 1.21 <1		1.90 <1	1.80 <1	<450 125 150 – – 1.79 <1	<450 125 175 4000 5000 1.17 <1	<450 125 225 – – 1.54 <1
AF	<450 125 200 – – 1.70 <1	<450 125 200 – – 1.83 <1	<450 125 200 – – 0.97	<450 – – – – – 125 150	<450 – – – – – 125 200	<450 – – – – – 125 200	<450 125 250 4000 5000 3.05 <1	<450 125 200 – – 2.56 <1	<450 125 200 – – 3.48 <1
AE	<450 125 150 4000 5000 2.36 <1	<450 125 200 – – 1.15 <1	<450 125 200 – – 1.59 <1			1.65 <1	<450 125 200 – – <0.42	<450 125 200 – – 2.67 <1	<450 125 200 4000 5000 0.84

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

	11	10	9	8	6	4	3	2	1
AX	<450 225 300 – – 0.97	<450 225 350 – – 2.59 <1	<450 225 350 – – 1.93 <1	<450 – – – – – – – 225 250 – – –	<450 – – – – – 1.16 <1 – 225 250 – – –	<450 – – – – – 1.90 <1 – 225 250 – – –	<450 225 300 5000 9000 2.42 <1	<450 225 300 – – 2.46 <1	<450 225 300 – – 2.19 <1
AW	<450 225 300 – – 2.35 <1	<450 225 300 5000 6500 2.69 <1	<450 225 250 – – 2.09 <1				<450 225 250 – – 1.91 <1	<450 225 255 5000 9000 2.52 <1	<450 225 300 – – 1.43 <1
AV	<450 225 300 – – 1.34 <1	<450 225 300 – – 2.43 <1	<450 225 300 – – 1.75 <1	<450 – – – – – – – 225 300 – – –	<450 – – – – – – – 225 300 – – –	<450 – – – – – – – 225 300 – – –	<450 225 250 – – 1.65 <1	<450 225 250 – – 1.51 <1	<450 225 255 5000 5900 1.62 <1
AU	<450 225 250 – – 1.61 <1	<450 225 300 5000 6500 2.55 <1	<450 225 250 – – 1.42 <1				<450 225 300 5000 6000 2.93 <1	<450 225 300 – – 1.57 <1	<450 225 200 – – 1.05 <1
AT	<450 225 250 – – 0.88	<450 225 250 – – 0.50	<450 225 200 – – 1.73 <1	<450 – – – – – – – 125 200 – – –	<450 – – – – – – – 125 200 – – –	<450 – – – – – – – 125 225 – – –	<450 225 225 – – 2.68 <1	<450 225 225 – – 1.91 <1	<450 225 225 5000 5500 1.72 <1
AS	<450 125 200 – – 0.66	<450 125 200 – – 1.88 <1	<450 125 200 4000 6000 2.45 <1				<450 125 200 – – 2.67 <1	<450 125 200 4000 7500 2.75 <1	<450 125 200 – – 1.52 <1
AR	<450 125 200 – – 1.65 <1	<450 125 200 – – 2.34 <1	<450 125 200 – – 2.48 <1	<450 – – – – – – – 125 200 – – –	<450 – – – – – – – 125 225 – – –	<450 – – – – – – – 125 225 – – –	<450 125 225 – – 1.45 <1	<450 125 200 – – 3.27 <1	<450 125 200 4000 5500 1.56 <1
AQ	<450 125 200 – – 0.82	<450 125 200 – – 2.98 <1	<450 125 225 4000 6000 2.38 <1				<450 125 225 4000 7500 2.70 <1	<450 125 225 – – 2.57 <1	<450 125 200 – – 2.39 <1
AP	<450 125 150 – – 2.72 <1	<450 125 225 – – 2.63 <1	<450 125 225 – – 1.83 <1	<450 – – – – – – – 125 225 – – –	<450 – – – – – – – 125 225 – – –	<450 – – – – – – – 125 225 – – –	<450 125 225 – – 2.80 <1	<450 125 225 – – 2.67 <1	<450 125 225 4000 6000 2.55 <1
AO	<450 125 225 – – 0.83	<450 125 – – – 1.19 <1	<450 125 225 4000 6000 1.48 <1				<450 125 200 – – 2.11 <1	<450 125 200 4000 7000 2.30 <1	<450 125 150 – – 0.58

Sample Data

<450 – IM-247/PD Results [$\mu\mu C/20cm^2$]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

	11	10	9	8	6	4	3	2	1
BH	<450 225 225 – – 1.98 <1	<450 225 350 – – 1.46 <1	<450 225 300 – – 3.41 <1	<450 – – – – – – – – – 225 225 – – – –	<450 – – – – – 1.97 <1 – – – – 225 225 – – – –	<450 – – – – – – – – – 225 250 – – – –	<450 225 200 – – 2.07 <1	<450 225 200 – – 1.99 <1	<450 225 300 5000 5500 1.93 <1
BG	<450 225 250 – – 1.29 <1	<450 225 250 – – 2.31 <1	<450 225 250 7500 5000 5500 2.37 <1				<450 225 200 5000 5500 2.02 <1	<450 225 250 – – 1.42 <1	<450 225 250 – – 2.93 <1
BF	<450 225 300 – – 1.47 <1	<450 225 300 – – 2.09 <1	<450 225 300 – – 1.74 <1	<450 – – – – – – – – – 225 225 – – – –	<450 – – – – – 2.03 <1 – – – – 225 300 – – – –	<450 – – – – – – – – – 225 250 – – – –	<450 225 300 5000 7500 2.21 <1	<450 225 350 – – 3.09 <1	<450 225 350 – – 1.90 <1
BE	<450 225 300 – – 2.09 <1	<450 225 300 5000 7000 1.37 <1	<450 225 300 – – 2.88 <1				<450 225 300 – – 1.66 <1	<450 225 300 – – 2.17 <1	<450 225 300 5000 8000 2.39 <1
BD	<450 225 350 – – 0.92	<450 225 300 – – 2.46 <1	<450 225 300 – – 1.43 <1	<450 – – – – – – – – – 225 350 – – – –	<450 – – – – – 1.33 <1 – – – – 225 350 – – – –	<450 – – – – – – – – – 225 300 – – – –	<450 225 350 5000 11000 0.57	<450 225 300 – – 2.70 <1	<450 225 250 – – 1.68 <1
BC	<450 225 200 – – 1.48 <1	<450 225 225 5000 8000 2.40 <1	<450 225 200 – – 2.18 <1				<450 225 350 – – 2.28 <1	<450 225 350 – – 2.42 <1	<450 225 350 5000 8500 1.67 <1
BB	<450 225 200 – – 1.38 <1	<450 225 225 – – 3.03 <1	<450 225 250 – – 1.86 <1	<450 – – – – – – – – – 225 250 – – – –	<450 – – – – – 0.89 – – – – 225 250 – – – –	<450 – – – – – – – – – 225 350 – – – –	<450 225 350 – – 2.52 <1	<450 225 300 – – 2.95 <1	<450 225 350 5000 7500 1.95 <1
BA	<450 225 300 – – 1.41 <1	<450 225 300 – – 1.71 <1	<450 225 250 8000 6500 2.33 <1				<450 225 350 – – 1.91 <1	<450 225 350 5000 8000 1.51 <1	<450 225 350 – – 2.54 <1
AZ	<450 225 300 – – 1.57 <1	<450 225 300 – – 2.33 <1	<450 225 350 5000 7000 2.09 <1	<450 – – – – – – – – – 225 250 – – – –	<450 – – – – – – – – – 225 350 – – – –	<450 – – – – – – – – – 225 375 – – – –	<450 225 300 – – 1.70 <1	<450 225 350 – – 2.18 <1	<450 225 300 – – 1.95 <1
AY	<450 225 300 – – 1.59 <1	<450 225 350 – – 1.16 <1	<450 225 300 – – 1.35 <1				<450 225 350 5000 8000 2.18 <1	<450 225 300 – – 1.80 <1	<450 225 300 5000 7500 1.65 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

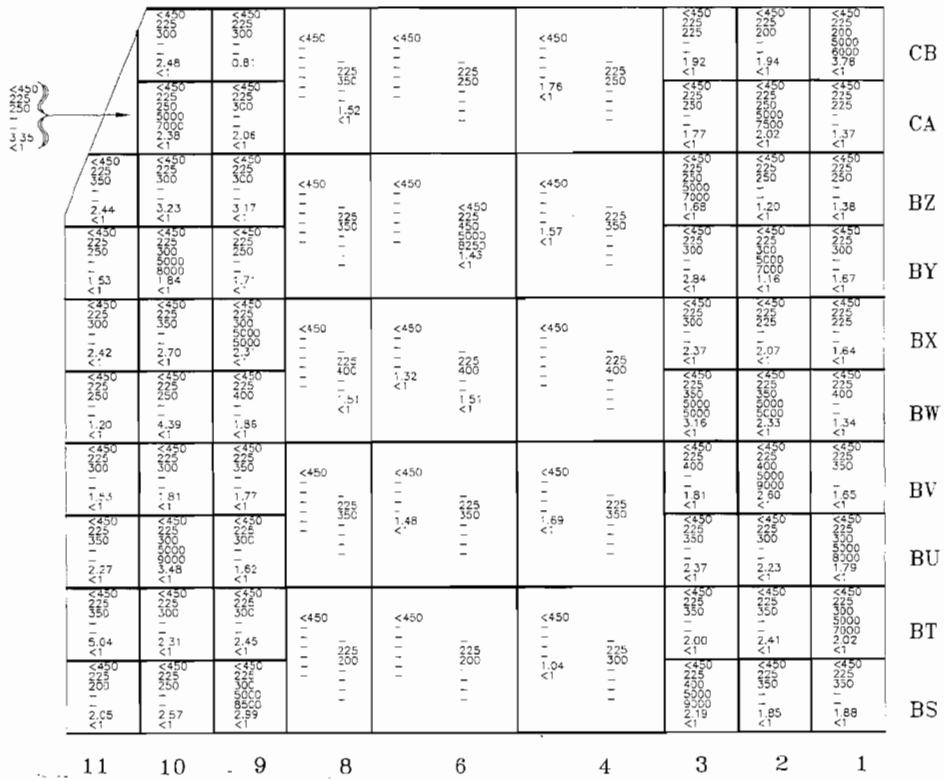
	11	10	9	8	6	4	3	2	1
BR	<450 225 450 – – 2.65 <1	<450 225 450 – – 1.97 <1	<450 225 450 – – 2.50 <1	<450 – – – – 1.45 <1	<450 – – – – 225 300	<450 – – – – 225 300	<450 225 450 – – 2.50 <1	<450 225 450 – – 1.66 <1	<450 225 450 5000 8000 2.57 <1
BQ	<450 225 300 5000 8500 1.37 <1	<450 225 300 – – 1.77 <1	<450 225 250 – – 2.15 <1	– – – – – – – –	– – – – – – – –	– – – – – – – –	<450 225 300 – – 2.87 <1	<450 225 300 5000 9000 4.21 <1	<450 225 300 – – 1.5* <1
BP	<450 225 250 – – 1.51 <1	<450 225 275 – – 1.88 <1	<450 225 300 – – 2.15 <1	<450 – – – – 225 200	<450 – – – – 225 200	<450 – – – – 225 200	<450 225 300 5000 9000 1.96 <1	<450 225 300 – – 2.21 <1	<450 225 400 – – 1.99 <1
BO	<450 225 250 – – 1.64 <1	<450 225 300 5000 7000 1.89 <1	<450 225 300 – – 2.05 <1	– – – – – – – –	<450 – – – – 1.65 <1	– – – – – – – –	<450 225 300 – – 1.96 <1	<450 225 300 – – 1.26 <1	<450 225 400 5000 8500 1.66 <1
BN	<450 225 225 – – 1.20 <1	<450 225 225 – – 1.80 <1	<450 225 350 – – 2.22 <1	<450 – – – – 225 225	<450 – – – – 225 225	<450 – – – – 225 350	<450 225 300 – – 1.50 <1	<450 225 225 5000 7300 1.79 <1	<450 225 250 – – 1.61 <1
BM	<450 225 100 – – 1.38 <1	<450 225 150 5000 8000 1.45 <1	<450 225 200 5000 8000 2.05 <1	– – – – – – – –	<450 – – – – 1.10 <1	– – – – – – – –	<450 225 225 – – 2.44 <1	<450 225 225 – – 2.10 <1	<450 225 200 – – 1.68 <1
BL	<450 225 200 – – 1.01 <1	<450 225 200 5000 8500 2.03 <1	<450 225 200 – – 2.52 <1	<450 – – – – 225 200	<450 – – – – 225 200	<450 – – – – 225 200	<450 225 225 – – 1.91 <1	<450 225 250 – – 2.30 <1	<450 225 250 – – 1.99 <1
BK	<450 225 250 – – 1.13 <1	<450 225 225 – – 2.49 <1	<450 225 225 – – 3.04 <1	– – – – – – – –	<450 – – – – 3.07 <1	– – – – – – – –	<450 225 300 5000 8000 1.96 <1	<450 225 300 5000 8000 2.29 <1	<450 225 300 – – 2.69 <1
BJ	<450 225 225 – – 1.48 <1	<450 225 300 – – 1.70 <1	<450 225 300 5000 7000 2.28 <1	<450 – – – – 225 150	<450 – – – – 225 200	<450 – – – – 225 200	<450 225 300 – – 2.07 <1	<450 225 300 – – 2.25 <1	<450 225 250 – – 2.49 <1
BI	<450 225 200 – – 1.50 <1	<450 225 200 – – 4.16 <1	<450 225 200 – – 1.80 <1	– – – – – – – –	<450 – – – – 1.49 <1	<450 – – – – 2.06 <1	<450 225 200 5000 7000 2.16 <1	<450 225 200 5000 7000 1.83 <1	<450 225 200 – – 1.19 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MDA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)

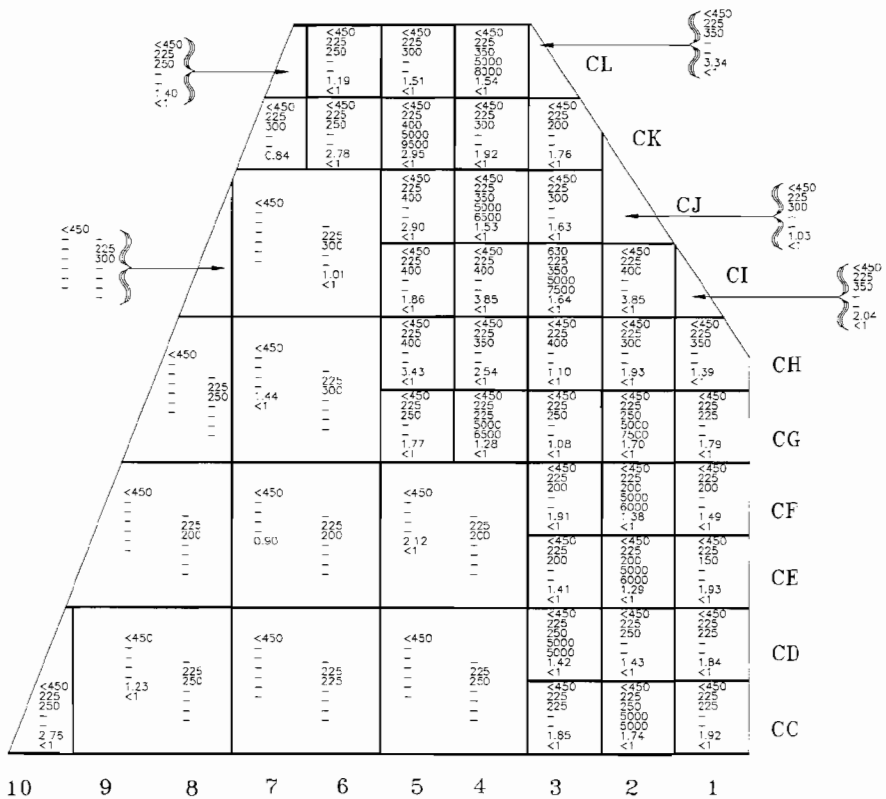


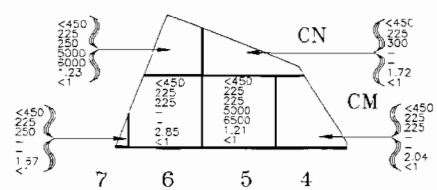
Sample Data

<450 – IM-247/PD Results [µµCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7300 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

e. Localized Grid Maps (Section 2)





Notes:

(1) Areas surveyed with air IM-247/PD, indicating detectable activity greater than or equal to 450μCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

4. Pier F

f. Prior Photograph

Viewing toward Section 1.

4. Pier F

f. Prior Photograph

Junction of Sections 1 and 2.

4. Pier F

f. Prior Photograph

Viewing Section 2.

4. Pier F

g. After Photograph

Viewing from head of Section 1.

4. Pier F

g. After Photograph

Viewing from head of Section 2.

5. Pier G

a. Introduction:

Pier G is located in grid D-7 of the Charleston Naval Shipyard map (Figure 10) and was constructed in 1943. Pier G is also identified as structure 317D.

(1) Description:

Structure 317D is approximately 930 feet long by 80 feet wide by 11 feet high. It is oriented east into the Cooper River. The pier is constructed of concrete pilings that support a concrete slab surface. Along the sides of the pier are wood posts and beams bolted into the concrete. The upper surface of the pier is concrete and contains two sets of train rails and one set of crane rails.

(2) Brief History:

(a) **Use:** This structure was constructed as part of the U.S. naval shore establishment expansion program implemented prior to and during World War II. In 1939, the shipyard became responsible for maintaining destroyers which were assigned to the Atlantic Fleet.

This pier was later used for berthing nuclear powered ships undergoing repair at Charleston. Temporary radioactive material storage areas were established on this structure to support work on these vessels and support craft such as tenders and barges.

(b) **Radiological History:** Areas on the pier were controlled as radiation areas and radioactive material storage areas. Temporary radioactive material storage areas were used for temporary storage of radioactive material including ships components and portable radioactive liquid collection tanks. Radioactive material was transported regularly over the pier.

In 1963 a spill of 50 gallons of radioactive liquid with a concentration of $3x10^{-5}$ μCi/ml occurred on the pier. On several other occasions, minor spills of radioactive liquid also occurred. Following these incidents all spill areas were decontaminated to less than 450 μμCi/100cm^2. Loose surface contamination levels were otherwise maintained to levels less than 450 μμCi/100cm^2.

5. Pier G

(3) **Survey Requirements:**

Nuclear Ship Berthing Area surveys. Group 3 and Group 2 surveys were performed on the pier and extended 40 feet beyond the base of the pier.

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Where physically possible, each grid was subdivided into two 3' by 3' subsections which were located in areas of highest potential for contamination. One of these subsections was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Solid material samples were taken from a minimum of 50% of the 10' by 10' grids. Additionally, solid material samples were taken from each 3' by 3' subsection that resulted in levels greater than 450 $\mu\mu Ci/20cm^2$ with an IM-247/PD or greater than twice background with the IM-253/PD (HV-1 PHA).

Group 3 survey areas were divided into approximately 5' by 5' grids. Each grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). Then a minimum of 25% of these grids were surveyed using the IM-253/PD (HV-2 GROSS). Additionally, solid material samples were taken from each 5' by 5' grid.

Pier G, including the forty-foot extension, was divided into four hundred and nineteen 10' by 10' grids and one thousand, five hundred and fifty-seven 5' by 5' grids.

Individual backgrounds were used for this pier and its land side approach. The approach to the pier is asphalt. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the low and high asphalt pours were 60, 200, 5500 and 80, 400, and 10000 counts per minute respectively. These levels were based upon backgrounds obtained from Pier T and the road north of Building M-1257 respectively. The main section of the pier is constructed primarily of concrete. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the low and high concrete pours were 40, 100, 3000, and 40, 100 and 10000 counts per minute respectively. These areas were based upon background radiation levels obtained from Pier U and the deck of Building 1724.

A total of one thousand, seven hundred and sixty-nine solid material samples were taken. Solid sample surveys at grid location ET-16 was not performed due to the presence of unpainted metal. Each solid sample was taken from the area of highest potential in each grid. The following naturally occurring radionuclides were typical isotopes identified during analysis of solid material samples: potassium 40, bismuth 214, lead 212, and lead 214.

5. Pier G

c. Summary:

Surveys performed with the IM-247/PD detected two areas greater than 450 $\mu\mu Ci/20cm^2$.

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

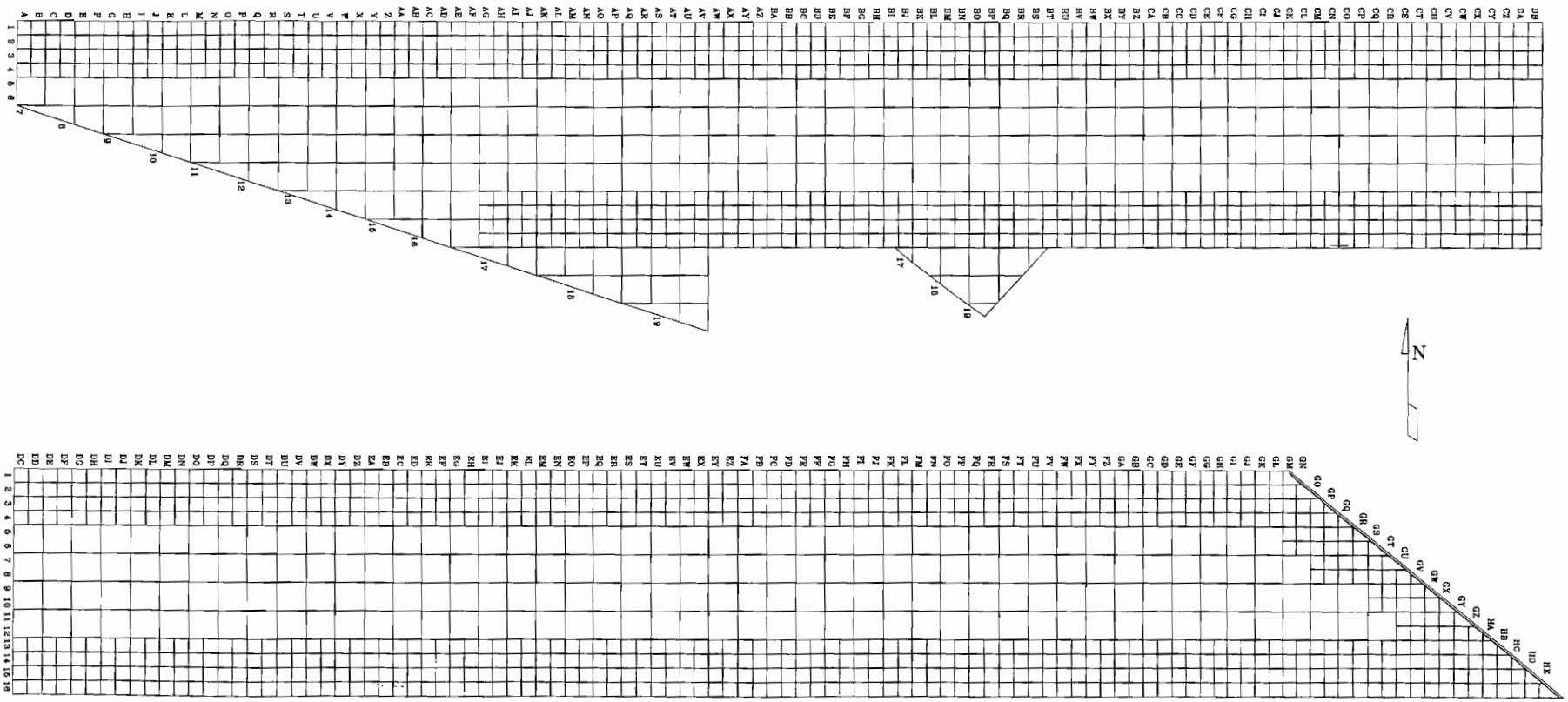
Surveys performed with the IM-253/PD (HV-2 GROSS) detected forty-one areas greater than or equal to twice background.

Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of <0.37 pCi/g to a high of 31.58 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all solid material samples were less than 1 pCi/g.

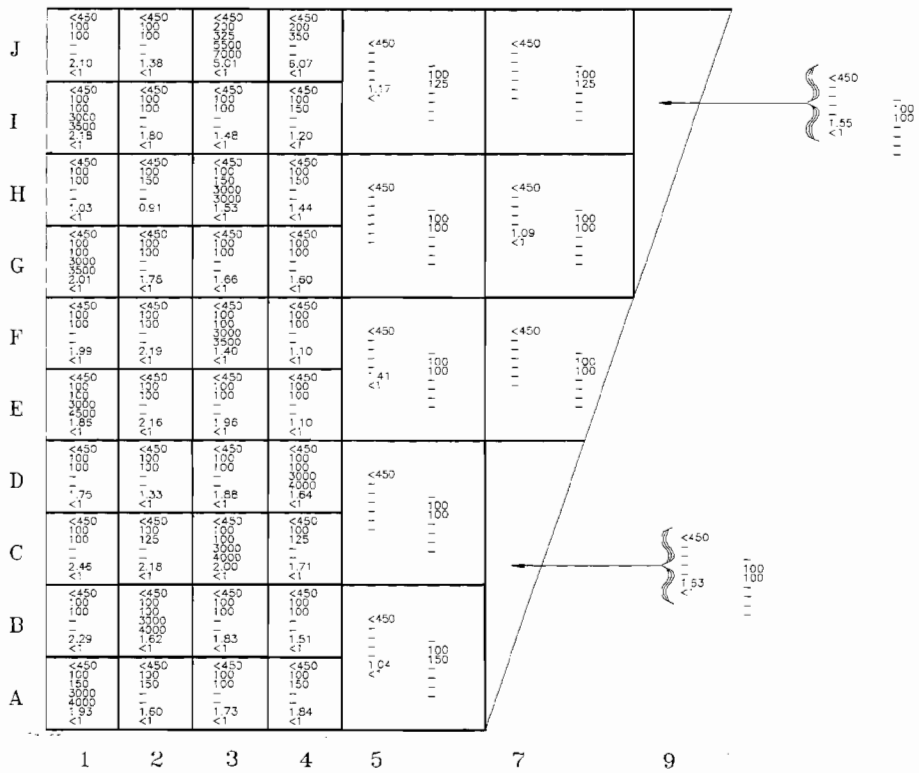
5. Pier G

d. Overall Grid Map



5. Pier G

e. Localized Grid Maps

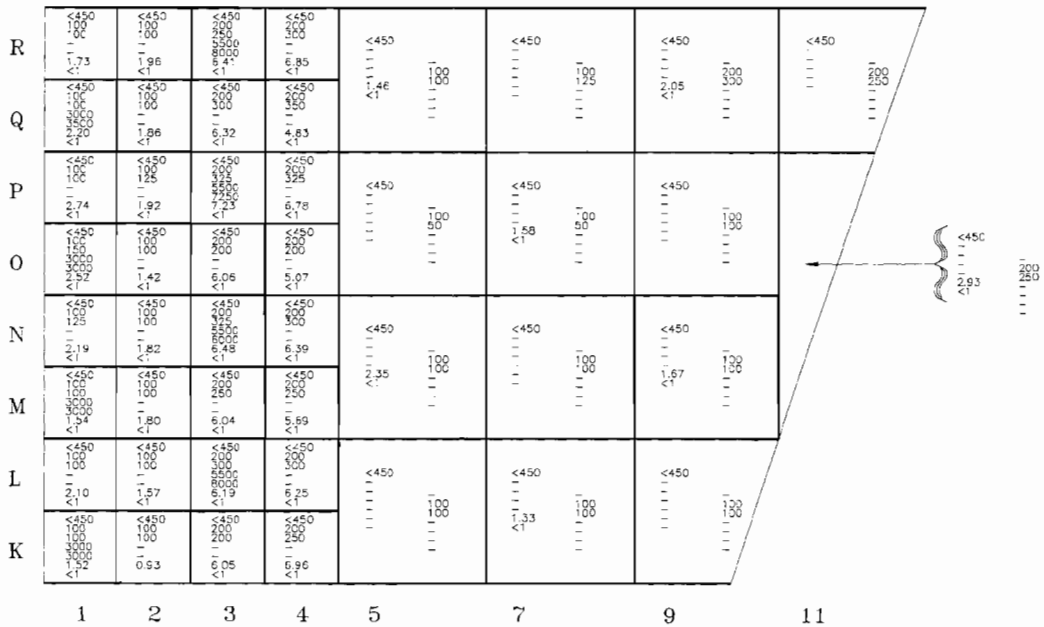


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
20C – IM-253/PD (HV-1 PHA) [bkg.]
30C – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

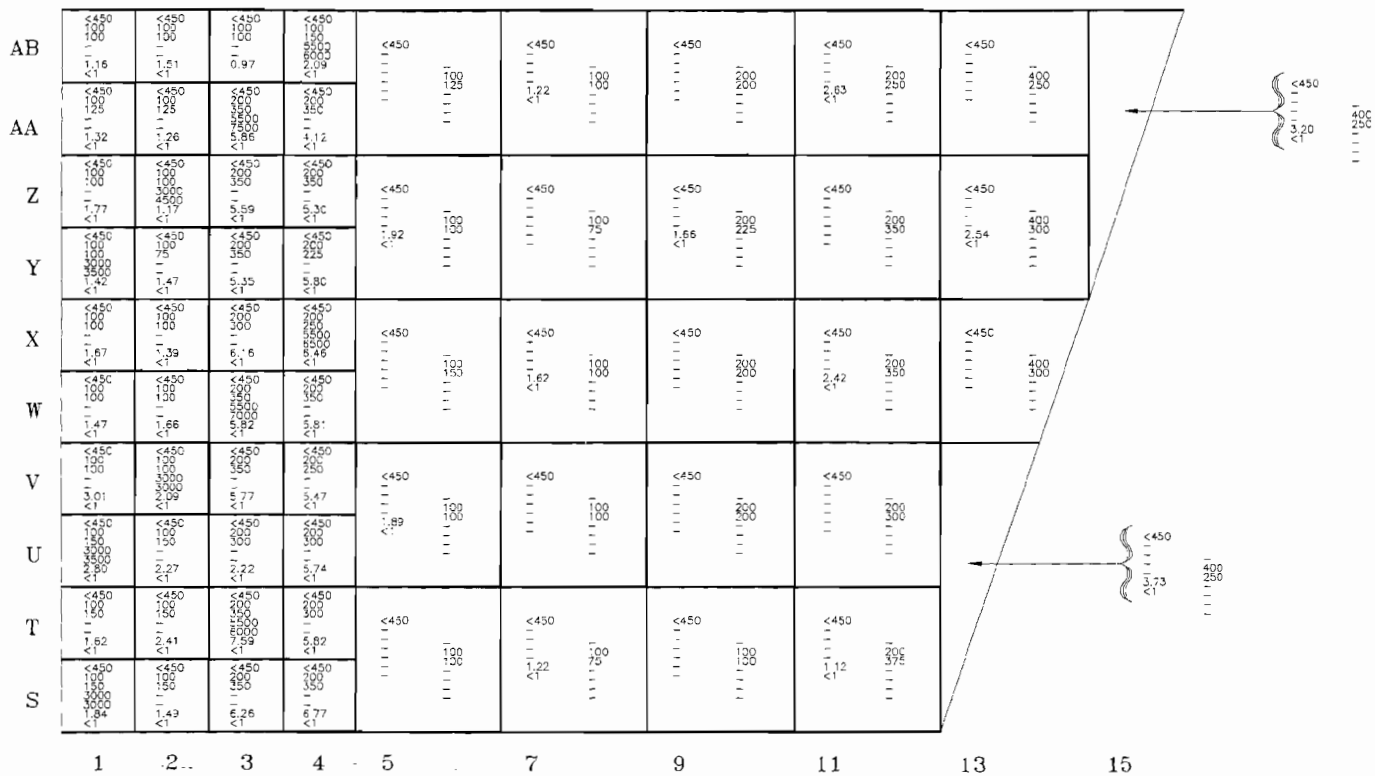


Sample Data

< 450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

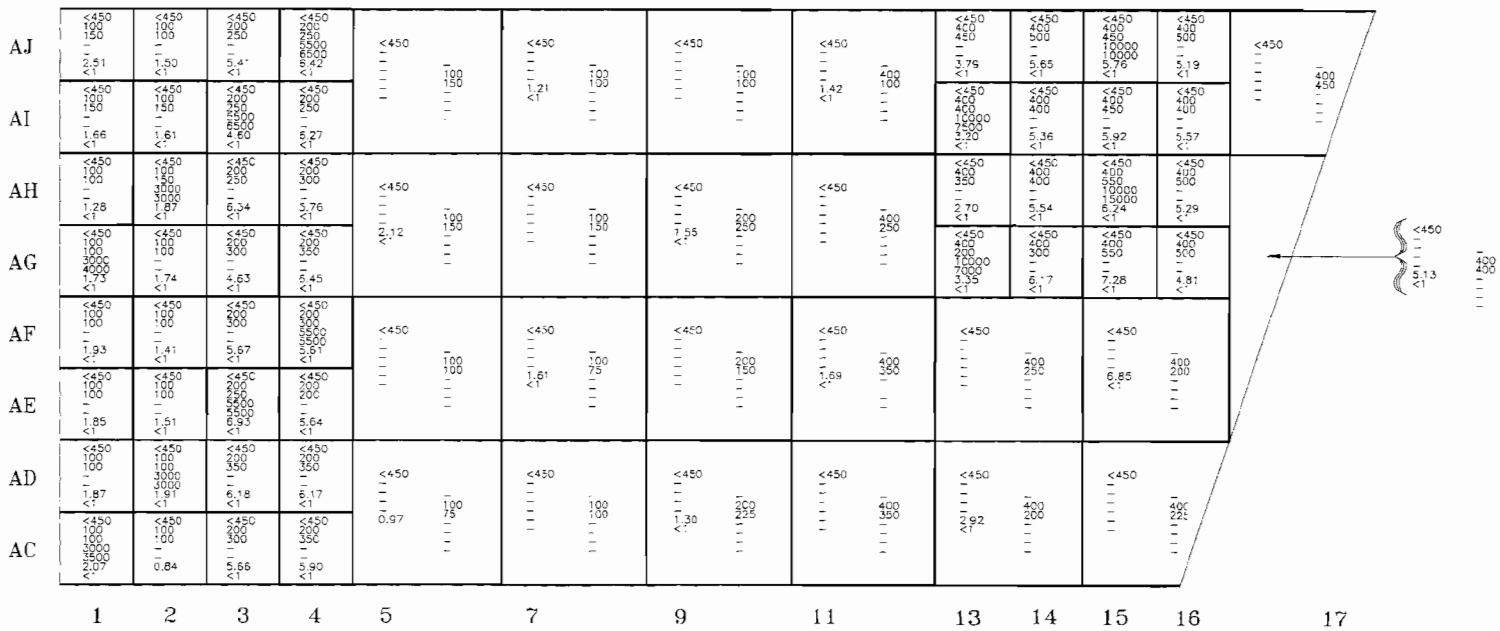


Sample Data

< 450 – M-247/PD Results [μμCi/20cm²]
200 – M-253/PD (HV-1 PHA) [bkg.]
300 – M-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

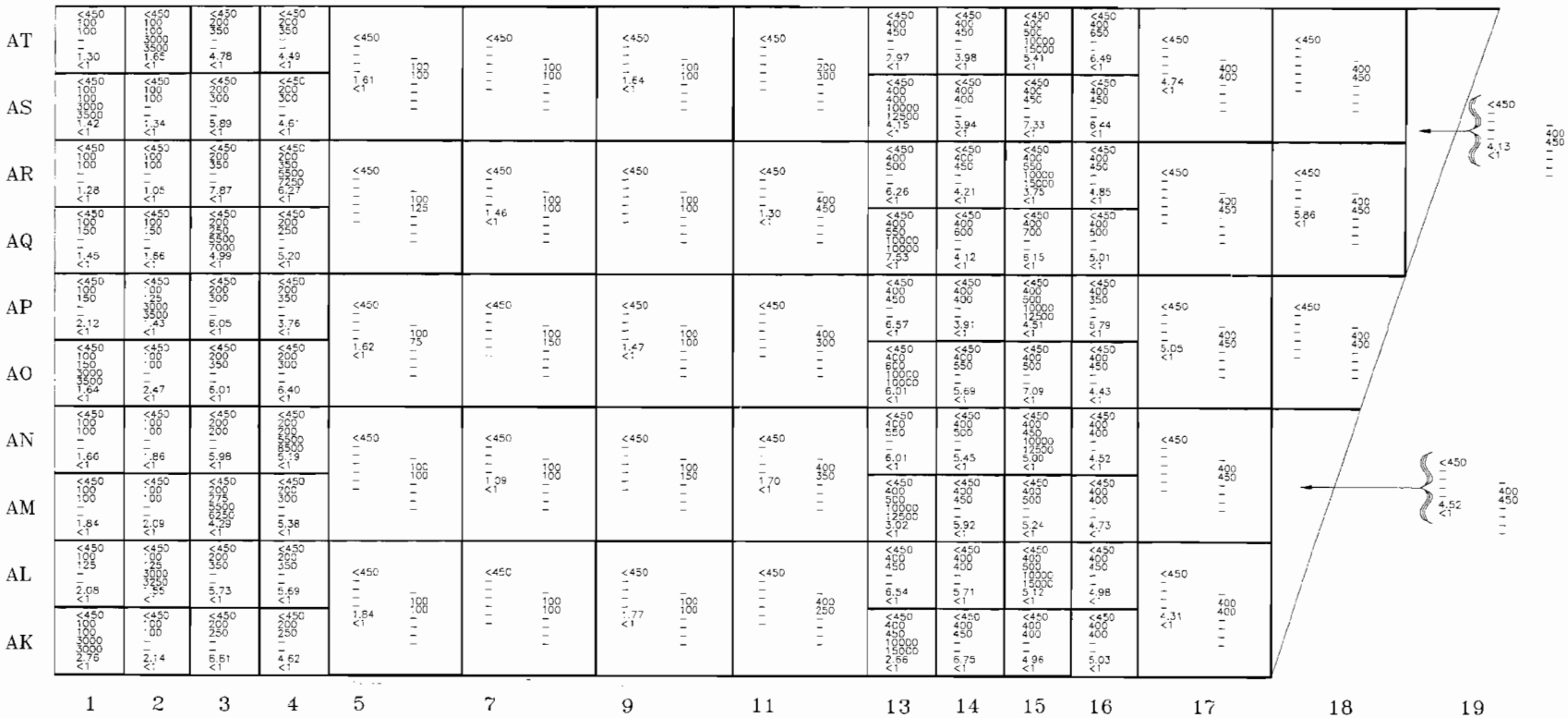


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [µµCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GRCSS) [bkg.]
7330 – IM-253/PD (HV-2 GRCSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16	17	18	19
BD	<450 100 150 – – 1.48 <1	<450 100 125 – – 0.66	<450 200 300 – – 5.65 <1	<450 200 250 2500 5000 5.11 <1	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 125 – – – 1.95 <1	<450 – – – – – – 200 200 – – –	<450 – – – – – – 100 100 – – – 1.66 <1	<450 200 150 – – 3.94 <1	<450 200 150 – – 3.92 <1	<450 100 150 3000 4000 1.57 <1	<450 – – – – 0.75			
BC	<450 100 125 – – 1.67 <1	<450 100 100 – – 0.88	<450 200 275 5500 7250 5.02 <1	<450 200 275 – – 4.95 <1					<450 200 200 2500 3000 3.77 <1	<450 200 200 – – 4.72 <1	<450 200 300 – – 1.67 <1	<450 100 100 – – 1.64 <1			
BB	<450 100 100 – – 2.11 <1	<450 100 100 3000 3000 0.82	<450 200 250 – – 4.99 <1	<450 200 250 – – 1.96 <1	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 150 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – – – 100 150 – – –	<450 200 250 – – 4.12 <1	<450 200 250 – – 1.91 <1	<450 100 250 2500 3500 2.07 <1	<450 100 150 – – 1.36 <1			
BA	<450 100 100 3000 3000 2.00 <1	<450 100 100 – – <0.67	<450 200 250 – – 0.62	<450 200 250 – – 5.84 <1					<450 200 200 5500 8000 4.60 <1	<450 100 400 2000 5500 2.15 <1	<450 100 300 4000 6000 2.23 <1	<450 100 100 – – 0.62			
AZ	<450 100 100 – – 1.27 <1	<450 100 100 – – 0.74	<450 200 250 – – 3.99 <1	<450 200 250 5500 5000 5.02 <1	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 150 – – –	<450 – – – – – – 400 350 – – –	<450 400 400 – – 5.18 <1	<450 400 450 – – 4.15 <1	<450 100 100 4000 3500 0.97 <1	<450 100 150 – – 1.22 <1			
AY	<450 100 100 – – 1.86 <1	<450 100 150 – – 1.27 <1	<450 200 300 5500 7000 7.15 <1	<450 200 300 – – 5.93 <1					<450 400 550 10000 10000 7.21 <1	<450 400 500 – – 5.30 <1	<450 100 100 – – 0.97	<450 400 400 – – 4.89 <1			
AX	<450 100 100 – – 1.81 <1	<450 100 100 3000 3500 1.32 <1	<450 200 350 – – 5.53 <1	<450 200 350 – – 5.50 <1	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – – – 400 400 – – –	<450 400 400 – – 5.34 <1	<450 400 400 – – 3.66 <1	<450 100 100 4000 3500 1.51 <1	<450 400 400 – – 5.17 <1			
AW	<450 100 100 3000 3000 1.07 <1	<450 100 100 – – 1.52 <1	<450 200 300 – – 6.23 <1	<450 200 300 – – 6.40 <1					<450 400 400 10000 10000 3.50 <1	<450 400 350 – – 3.52 <1	<450 400 450 – – 3.36 <1	<450 400 550 – – 5.03 <1			
AV	<450 100 100 – – 1.38 <1	<450 100 100 – – 1.55 <1	<450 200 250 – – 6.16 <1	<450 200 300 5500 6000 5.73 <1	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 200 250 – – –	<450 400 250 – – 3.59 <1	<450 400 350 – – 3.10 <1	<450 400 300 10000 10000 3.40 <1	<450 400 350 – – 3.55 <1	<450 – – – – – – 400 300 – – –	<450 – – – – 5.32 <1 400 400 – – –	<450 – – – – – – 400 400 – – –
AU	<450 100 100 – – 1.84 <1	<450 100 150 – – 1.27 <1	<450 200 550 5500 6000 5.95 <1	<450 200 300 – – 6.70 <1					<450 400 450 10000 10000 2.74 <1	<450 400 400 – – 3.66 <1	<450 400 350 – – 2.94 <1	<450 400 200 – – 3.37 <1			

Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

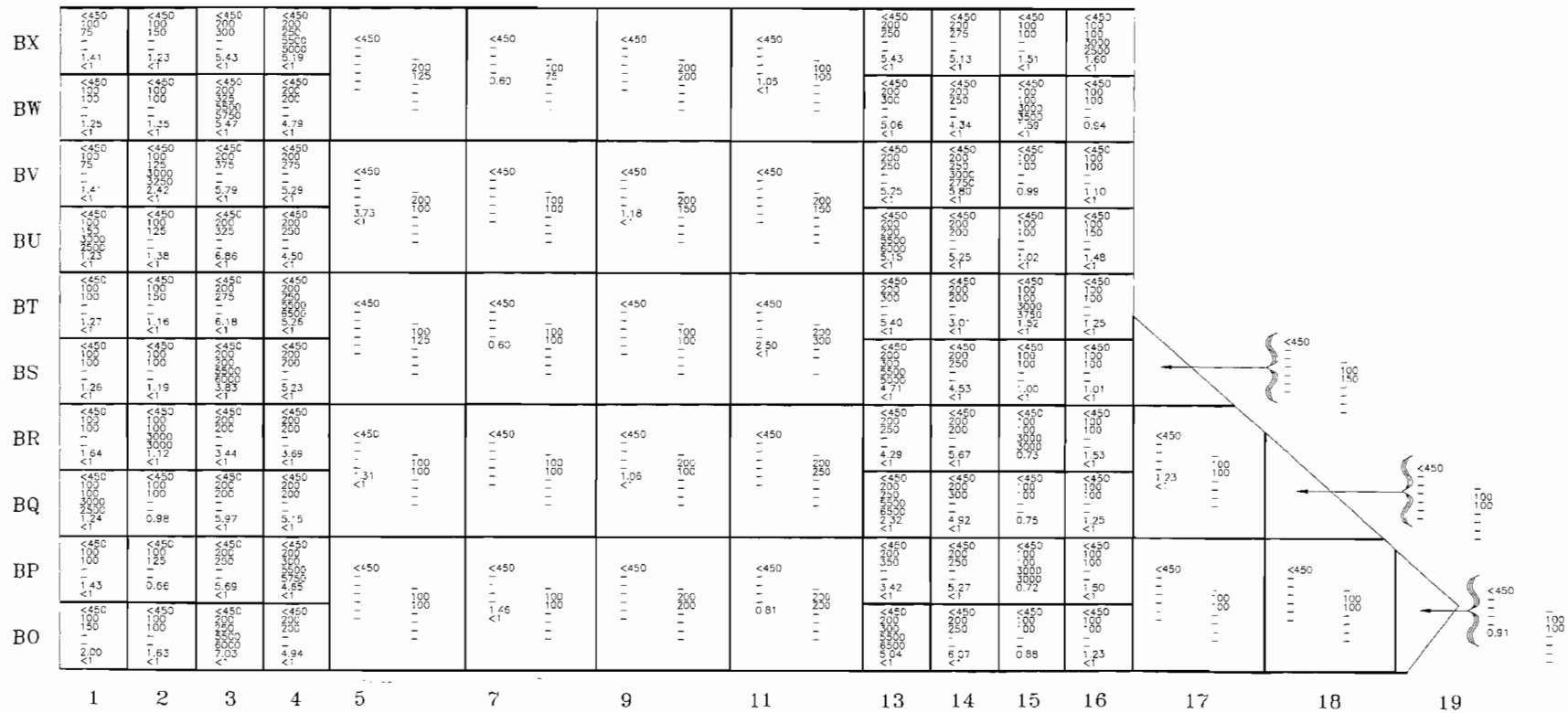
	1	2	3	4	5	7	9	11	13	14	15	16	17	18
BN	<450 100 100 – – 1.48 <1	<450 100 100 3000 3000 1.95 <1	<450 200 150 – – 4.59 <1	<450 200 150 – – 4.98 <1	<450 – – – – 0.95 – 100 100 – – – –	<450 – – – – – – 100 100 – – – –	<450 – – – – 1.08 – 200 150 – – – –	<450 – – – – – – 100 100 – – – –	<450 200 200 450 5500 8500 15000 3.90 <1	<450 200 450 5500 8500 7.08 <1	<450 100 125 3000 3000 0.55	<450 100 100 – – 0.89	<450 – – – – 0.99 – 100 100 – – – –	<450 – – – – – – 100 100 – – – –
BM	<450 100 100 3000 2000 2.74 <1	<450 100 100 – – 3.08 <1	<450 200 150 – – 6.20 <1	<450 200 150 – – 4.06 <1					<450 200 350 5500 6500 5.28 <1	<450 200 300 – – 5.49 <1	<450 100 100 – – 0.74	<450 100 100 – – 0.74		
BL	<450 100 50 – – 0.90	<450 100 150 – – 1.19 <1	<450 200 150 – – 5.77 <1	<450 200 350 5500 6000 3.64 <1	<450 – – – – – – 100 100 – – – –	<450 – – – – 1.25 <1 – 100 100 – – – –	<450 – – – – – – 100 100 – – – –	<450 – – – – 0.95 – 200 250 – – – –	<450 200 250 – – 4.66 <1	<450 200 250 – – 3.15 <1	<450 100 100 3000 2500 1.21 <1	<450 100 100 – – 0.48	<450 – – – – – – 100 100 – – – –	<450 – – – – 1.07 <1 – 100 100 – – – –
BK	<450 100 125 – – 0.95	<450 100 100 – – 1.53 <1	<450 200 375 5500 6250 4.89 <1	<450 200 250 – – 6.80 <1					<450 200 350 5500 6500 10.40 <1	<450 200 350 – – 1.33 <1	<450 100 100 – – 0.62	<450 100 100 – – 0.83	<450 – – – – 1.14 <1 – 100 100 – – – –	
BJ	<450 100 125 – – 0.68	<450 100 150 3000 3250 0.90	<450 200 350 – – 5.34 <1	<450 200 250 – – 3.61 <1	<450 – – – – – – 200 250 – – – –	<450 – – – – – – 100 100 – – – –	<450 – – – – 1.73 – 200 200 – – – –	<450 – – – – – – 100 100 – – – –	<450 200 350 – – 4.63 <1	<450 200 300 – – 3.76 <1	<450 100 100 3000 3000 1.74 <1	<450 100 100 – – 1.09 <1	<450 – – – – 1.67 <1 – 100 100 – – – –	
BI	<450 100 100 3000 3500 1.25 <1	<450 100 100 – – 2.47 <1	<450 200 250 – – 4.92 <1	<450 200 250 – – 6.95 <1					<450 200 450 5500 7000 8.25 <1	<450 200 250 – – 5.05 <1	<450 100 100 – – 1.41 <1	<450 100 100 – – 0.94		
BH	<450 100 100 – – 1.12 <1	<450 100 100 – – 0.52	<450 200 200 – – 4.24 <1	<450 200 200 5500 6000 4.66 <1	<450 – – – – – – 100 100 – – – –	<450 – – – – 3.25 <1 – 100 100 – – – –	<450 – – – – – – 100 100 – – – –	<450 – – – – 0.80 – 100 150 – – – –	<450 200 200 – – 3.10 <1	<450 200 200 – – 4.52 <1	<450 100 100 3000 3000 1.08 <1	<450 100 100 – – <0.55		
BG	<450 100 150 – – 1.26 <1	<450 100 100 – – 1.22 <1	<450 200 200 5500 5000 1.25 <1	<450 200 200 – – 4.46 <1					<450 200 450 5500 5000 3.97 <1	<450 200 150 – – 3.85 <1	<450 100 100 – – 0.51	<450 100 100 – – 0.89		
BF	<450 100 500 3000 15000 2.29 <1	<450 100 150 3000 3000 2.85 <1	<450 200 250 – – 5.82 <1	<450 200 250 – – 5.08 <1	<450 – – – – 1.96 <1 – 100 100 – – – –	<450 – – – – – – 100 100 – – – –	<450 – – – – 1.01 – 200 100 – – – –	<450 – – – – – – 100 100 – – – –	<450 200 150 – – 6.56 <1	<450 200 150 – – 6.84 <1	<450 100 100 3000 3000 2.41 <1	<450 100 100 – – 4.10 <1		
BE	<450 100 500 3000 15000 1.44 <1	<450 100 150 – – 0.92	<450 200 250 – – 6.69 <1	<450 200 250 – – 5.16 <1					<450 200 100 5500 6000 0.68	<450 200 100 – – 1.51 <1	<450 100 100 – – 0.68	<450 100 150 – – 1.55 <1		

Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.92 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [µµCi/200cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
CH	<450 100 300 7000 1.44 <1	<450 100 100 3000 3000 1.69 <1	<450 200 250 – – 6.11 <1	<450 200 250 – – 4.53 <1	<450 – – – – – 1.48 <1	<450 – – – – – – – 200 200	<450 – – – – – 1.33 <1	<450 – – – – – – – 100 50	<450 200 200 – – 6.34 <1	<450 200 200 5500 6000 6.00 <1	<450 100 100 – – 1.33 <1	<450 100 50 – – 1.53 <1
CG	<450 100 300 3000 7000 1.44 <1	<450 100 – – – 1.46 <1	<450 200 250 – – 5.37 <1	<450 200 250 – – 3.96 <1					<450 200 200 2500 2500 6.43 <1	<450 200 100 – – 5.78 <1	<450 100 50 – – 1.32 <1	<450 100 50 – – 1.79 <1
CF	<450 100 175 – – 1.46 <1	<450 100 175 – – 1.27 <1	<450 200 175 – – 4.50 <1	<450 200 200 5500 5750 5.01 <1	<450 – – – – – – – 100 100	<450 – – – – – 2.14 <1 200 200	<450 – – – – – – – 200 150	<450 – – – – – 3.00 <1 100 100	<450 200 250 – – 4.50 <1	<450 200 300 – – 4.78 <1	<450 100 100 – – 1.33 <1	<450 100 100 3000 7500 2.36 <1
CE	<450 100 100 – – 1.88 <1	<450 100 100 – – 1.95 <1	<450 200 700 5500 5750 5.54 <1	<450 200 200 – – 5.82 <1					<450 200 200 – – 5.42 <1	<450 200 250 – – 5.20 <1	<450 100 100 3000 3000 1.77 <1	<450 100 100 – – 1.41 <1
CD	<450 100 100 – – 1.35 <1	<450 100 100 3000 2750 0.91	<450 200 250 – – 5.14 <1	<450 200 200 – – 4.93 <1	<450 – – – – – 2.49 <1 200 200	<450 – – – – – – – 200 250	<450 – – – – – 0.96 – 200 200	<450 – – – – – – – 100 100	<450 200 300 – – 6.34 <1	<450 200 250 5500 5500 6.28 <1	<450 100 75 – – 1.48 <1	<450 100 100 – – 1.47 <1
CC	<450 100 100 3000 3500 2.16 <1	<450 100 100 – – 1.55 <1	<450 200 250 – – 4.78 <1	<450 200 250 – – 3.90 <1					<450 200 250 5500 6000 5.16 <1	<450 200 200 – – 5.88 <1	<450 100 100 – – 1.23 <1	<450 100 75 – – 0.75
CB	<450 100 100 – – 1.31 <1	<450 100 100 – – 1.23 <1	<450 200 250 – – 5.60 <1	<450 100 150 5500 5250 4.00 <1	<450 – – – – – – – 200 200	<450 – – – – – 3.05 <1 200 200	<450 – – – – – – – 200 150	<450 – – – – – 0.85 – 100 75	<450 200 100 – – 5.39 <1	<450 200 150 – – 1.42 <1	<450 100 100 – – 0.99	<450 100 100 3000 3000 1.11 <1
CA	<450 100 100 – – 1.72 <1	<450 100 100 – – 1.12 <1	<450 200 250 5500 6000 4.70 <1	<450 200 200 – – 5.41 <1					<450 200 150 – – 4.68 <1	<450 200 150 – – 4.57 <1	<450 100 100 3000 3000 1.14 <1	<450 100 100 – – 1.16 <1
BZ	<450 100 100 – – 1.48 <1	<450 100 100 3000 3000 1.44 <1	<450 250 250 – – 5.01 <1	<450 200 200 – – 4.40 <1	<450 – – – – – 0.80 – 200 200	<450 – – – – – – – 100 100	<450 – – – – – 1.88 <1 200 200	<450 – – – – – – – 100 100	<450 200 200 – – 4.92 <1	<450 200 150 5500 5750 3.15 <1	<450 100 50 – – 1.52 <1	<450 100 50 – – 1.55 <1
BY	<450 100 100 3000 3000 1.08 <1	<450 100 100 – – 1.05 <1	<450 200 300 – – 4.00 <1	<450 200 200 – – 4.19 <1					<450 200 250 5500 5500 5.47 <1	<450 200 200 – – 4.89 <1	<450 100 100 – – 0.52	<450 100 100 – – 1.19 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
CR	<450 100 50 – – 0.56	<450 100 150 – – <0.37	<450 200 250 – – 3.42 <1	<450 200 300 5500 7000 5.58 <1	<450 – – – – – – 200 100 – – –	<450 – – – – – – 100 50 – – –	<450 – – – – – – 200 100 – – –	<450 – – – – – – 100 100 – – –	<450 200 250 – – 4.19 <1	<450 200 250 – – <0.39	<450 100 50 – – 1.2 <1	<450 100 100 3000 3500 2.00 <1
CQ	<450 100 50 – – 1.56 <1	<450 100 50 – – 2.34 <1	<450 200 250 5500 6500 2.95 <1	<450 200 250 – – 6.28 <1					<450 200 250 – – 4.28 <1	<450 200 250 – – 4.41 <1	<450 100 50 3000 3000 0.90	<450 100 100 – – 0.88
CP	<450 100 50 – – 1.20 <1	<450 100 50 3000 3500 1.80 <1	<450 200 350 – – 6.48 <1	<450 200 300 – – 5.54 <1	<450 – – – – – – 200 100 – – –	<450 – – – – – – 100 50 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 200 250 – – 5.59 <1	<450 200 250 5500 6000 7.80 <1	<450 100 50 – – 1.00 <1	<450 100 100 – – 1.12 <1
CO	<450 100 100 3000 3000 1.05 <1	<450 100 100 – – 1.90 <1	<450 200 250 – – 5.13 <1	<450 200 300 – – 6.76 <1					<450 200 250 5500 6000 5.59 <1	<450 200 250 – – 5.24 <1	<450 100 50 – – 0.68	<450 100 100 – – 0.87
CN	<450 100 75 – – 1.32 <1	<450 100 75 – – 1.69 <1	<450 200 150 – – 2.87 <1	<450 200 300 5500 6500 5.72 <1	<450 – – – – – – 200 250 – – –	<450 – – – – – – 100 150 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – – – 100 100 – – –	<450 200 200 – – 4.62 <1	<450 200 250 – – 4.71 <1	<450 100 100 – – 1.54 <1	<450 100 100 3000 3000 1.73 <1
CM	<450 100 75 – – 1.23	<450 100 75 – – 1.19	<450 200 150 5500 4000 2.78 <1	<450 200 300 – – 5.41 <1					<450 200 250 – – 5.47 <1	<450 200 200 – – 5.25 <1	<450 100 100 3000 3500 0.89	<450 100 100 – – 1.01 <1
CL	<450 100 100 – – 0.92	<450 100 100 3000 3500 1.43 <1	<450 200 200 – – 4.49 <1	<450 200 300 – – 5.05 <1	<450 – – – – – – 200 250 – – –	<450 – – – – – – 100 150 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – – – 100 100 – – –	<450 200 250 – – 5.42 <1	<450 200 250 5500 6500 5.48 <1	<450 100 100 – – 0.46	<450 100 100 – – 0.71
CK	<450 100 100 3000 3500 1.67 <1	<450 100 100 – – 1.47 <1	<450 200 200 – – 5.83 <1	<450 200 250 – – 5.19 <1	2.53 <1	<450 1.06 <1			<450 200 300 5500 6000 4.92 <1	<450 200 250 – – 4.68 <1	<450 100 100 – – 0.81	<450 100 100 – – 0.70
CJ	<450 100 300 3500 7000 1.83 <1	<450 100 150 – – 1.13 <1	<450 200 200 – – 4.85 <1	<450 200 150 5500 5500 5.16 <1	<450 – – – – – – 200 200 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – – – 100 150 – – –	<450 200 200 – – 5.39 <1	<450 200 200 – – 4.08 <1	<450 100 100 – – 0.69	<450 100 100 3000 3000 0.94
CI	<450 100 300 3000 7000 1.60 <1	<450 100 100 – – 1.57 <1	<450 200 750 5500 5500 5.97 <1	<450 200 250 – – 4.52 <1					<450 200 250 – – 5.62 <1	<450 200 250 – – 4.94 <1	<450 100 100 3000 3500 1.42 <1	<450 100 100 – – 1.95 <1

Sample Data

<450 – IM-247/FD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/FD (HV-1 PHA) [bkg]
300 – IM-253/FD (HV-1 PHA) [cpm]
7000 – IM-253/FD (HV-2 GROSS) [bkg]
7300 – IM-253/FD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
DB	<450 100 50 – – 1.77 <1	<450 100 50 3000 2500 1.29 <1	<450 200 250 – – 6.57 <1	<450 200 300 – – 5.55 <1	<450 – – – – 0.77 – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 – – – – 0.68 – 100 150 – – –	<450 – – – – – – 100 150 – – –	<450 200 250 – – 4.65 <1	<450 200 300 5500 6000 4.33 <1	<450 100 100 – – 1.32 <1	<450 100 100 – – 1.57 <1
DA	<450 100 100 3000 3000 1.55 <1	<450 100 100 – – 1.75 <1	<450 200 200 – – 6.57 <1	<450 200 200 – – 5.85 <1					<450 200 250 5500 5500 4.75 <1	<450 200 300 – – 5.06 <1	<450 100 150 – – 1.23 <1	<450 100 100 – – 1.04 <1
CZ	<450 100 100 – – 1.37 <1	<450 100 100 – – 1.56 <1	<450 100 100 – – 7.02 <1	<450 200 250 5500 8000 4.86 <1	<450 – – – – – – 100 100 – – –	<450 – – – – 1.57 <1 – 100 100 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – 0.63 – 100 50 – – –	<450 200 200 – – 5.57 <1	<450 200 200 – – 5.08 <1	<450 100 100 – – 1.24 <1	<450 100 100 3000 3500 1.10 <1
CY	<450 100 100 – – 1.85 <1	<450 100 50 – – 1.47 <1	<450 100 100 5500 4500 1.71 <1	4950 100 150 3000 5000 31.58 <1					<450 200 200 – – 4.81 <1	<450 200 200 – – 3.56 <1	<450 100 100 3000 3500 1.03 <1	<450 100 100 – – 1.22 <1
CX	<450 100 100 – – 1.66 <1	<450 100 100 3000 2500 0.96	8100 100 225 1000 5000 4.17 <1	<450 100 100 – – 15.68 <1	<450 – – – – 1.51 <1 – 200 150 – – –	<450 – – – – – – 100 50 – – –	<450 – – – – 1.39 <1 – 200 150 – – –	<450 – – – – – – 100 50 – – –	<450 200 250 – – 4.74 <1	<450 200 350 4500 5000 2.92 <1	<450 100 50 – – 0.80	<450 100 50 – – 0.84
CW	<450 100 100 3000 3000 1.76 <1	<450 100 75 – – 2.24 <1	<450 100 150 – – 5.89 <1	<450 200 150 – – 2.85 <1					<450 200 250 5500 5500 5.98 <1	<450 200 200 – – 3.78 <1	<450 100 100 – – 1.48 <1	<450 100 100 – – 1.40 <1
CV	<450 100 75 – – 1.08 <1	<450 100 75 – – 0.95	<450 200 150 – – 2.20 <1	<450 200 175 5500 3500 2.43 <1	<450 – – – – – – 200 200 – – –	<450 – – – – 1.35 – 200 100 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – 1.03 <1 – 100 150 – – –	<450 200 250 – – 3.91 <1	<450 200 200 – – 5.28 <1	<450 100 100 – – 1.54 <1	<450 100 50 3000 2000 1.68 <1
CU	<450 100 75 – – 1.38 <1	<450 100 50 – – 0.65	<450 200 200 5500 4500 3.05 <1	<450 200 200 – – 2.78 <1					<450 200 225 – – 4.47 <1	<450 200 250 – – 2.62 <1	<450 100 100 3000 2000 1.40 <1	<450 100 100 – – 1.01 <1
CT	<450 100 100 – – 1.10 <1	<450 100 100 3000 3500 0.99	<450 200 100 – – 1.78 <1	<450 200 300 – – 1.63 <1	<450 – – – – <0.45 – 100 75 – – –	<450 – – – – – – 100 50 – – –	<450 – – – – 1.11 <1 – 100 100 – – –	<450 – – – – – – 100 100 – – –	<450 200 200 – – 4.40 <1	<450 200 250 5500 5000 3.77 <1	<450 100 100 – – 0.46	<450 100 100 – – 0.82
CS	<450 100 100 3000 3000 1.34 <1	<450 100 100 – – 1.02 <1	<450 200 200 – – 3.92 <1	<450 200 200 – – 2.87 <1					<450 200 250 5500 4500 4.54 <1	<450 200 200 – – 3.41 <1	<450 100 150 – – 1.35 <1	<450 100 100 – – 1.32 <1

Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to 450μμCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
DL	<450 100 100 – – 1.72 <1	<450 100 100 – – 1.46 <1	<450 200 250 – – 6.77 <1	<450 200 300 [illegible] 5500 6.93 <1	<450 – – – – – 200 150	<450 – – – – 3.72 <1 – 100 100	<450 – – – – – 200 100	<450 – – – – 3.96 <1 – 200 100	<450 200 100 – – 5.56 <1	<450 200 100 – – 5.19 <1	<450 100 50 – – 1.07 <1	<450 100 50 – 3000 3000 0.88
DK	<450 100 150 – – 1.54 <1	<450 100 150 – – 1.19 <1	<450 200 200 – 5500 6500 7.04 <1	<450 200 300 – – 7.04 <1					<450 200 200 – – 4.76 <1	<450 200 150 – – 5.09 <1	<450 100 100 3000 3500 1.17 <1	<450 100 50 – – 1.77 <1
DJ	<450 100 150 – – 1.34 <1	<450 100 150 3000 2000 1.15 <1	<450 200 200 – – 6.72 <1	<450 200 250 – – 5.65 <1	<450 – – – – – 200 100	<450 – – – – – 100 100	<450 – – – – 1.02 <1 – 200 250	<450 – – – – – 100 100	<450 200 75 – – 5.14 <1	<450 200 200 5500 5500 5.31 <1	<450 100 100 – – 7.10 <1	<450 100 75 – – 1.97 <1
DI	<450 100 300 3000 7000 0.88	<450 100 100 3000 2200 1.05 <1	<450 200 250 – – 5.46 <1	<450 200 300 – – 6.60 <1	<450 – – – – 1.56 <1				<450 200 150 5500 6500 6.65 <1	<450 200 225 – – 6.26 <1	<450 100 50 – – 1.52 <1	<450 100 75 – – 1.17 <1
DH	<450 100 175 – – 1.69 <1	<450 100 125 – – 1.29 <1	<450 200 300 – – 4.77 <1	<450 200 300 [illegible] 5500 5500 7.26 <1	<450 – – – – – 100 100	<450 – – – – 0.66 – 100 75	<450 – – – – – 200 200	<450 – – – – 1.05 <1 – 100 100	<450 200 200 – – 2.17 <1	<450 200 300 – – 5.81 <1	<450 100 100 – – 1.10 <1	<450 100 100 3000 2500 <0.39
DG	<450 100 175 – – 1.17 <1	<450 100 100 – – 1.1[illegible] <1	<450 200 225 5500 5500 6.22 <1	<450 200 300 – – 3.48 <1					<450 200 200 – – 2.63 <1	<450 200 250 – – 5.64 <1	<450 100 100 3000 3000 <0.48	<450 100 100 – – 1.45 <1
DF	<450 100 175 – – 1.33 <1	<450 100 100 3000 2000 1.09 <1	<450 100 100 – – 5.61 <1	<450 200 [illegible] – – 5.32 <1	<450 – – – – – 100 75	<450 – – – – – 100 100	<450 – – – – 1.29 <1 – 100 100	<450 – – – – – 100 100	<450 200 250 – – 2.28 <1	<450 200 200 5500 5500 5.41 <1	<450 100 100 – – 1.26 <1	<450 100 100 – – 1.72 <1
DE	<450 100 250 3000 7000 2.00 <1	<450 100 100 – – 0.97	<450 200 100 – – 4.11 <1	<450 100 100 – – 6.30 <1	0.97				<450 200 200 5500 5500 4.36 <1	<450 200 200 – – 5.49 <1	<450 100 100 – – 1.11 <1	<450 100 100 – – 2.06 <1
DD	<450 100 100 – – 1.74 <1	<450 100 100 – – 1.96 <1	<450 200 200 – – 5.21 <1	<450 200 300 5500 4500 6.78 <1	<450 – – – – – 200 100	<450 – – – – 0.96 – 100 100	<450 – – – – – 200 150	<450 – – – – 1.39 <1 – 100 100	<450 200 250 – – 4.27 <1	<450 200 225 – – 4.95 <1	<450 100 100 – – 1.05 <1	<450 100 100 3000 3000 2.25 <1
DC	<450 100 100 – – 1.16 <1	<450 100 100 – – 2.28 <1	<450 200 250 5500 5000 5.00 <1	<450 200 250 – – 5.64 <1					<450 200 200 – – 4.49 <1	<450 200 250 – – 8.30 <1	<450 100 100 3000 3000 1.38 <1	<450 100 100 – – 1.35 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
DV	<450 100 100 – – 1.33 <1	<450 100 100 3000 2500 1.27 <1	<450 200 150 – – 7.03 <1	<450 200 150 – – 5.91 <1	<450 – – – – 1.21 <1	<450 – – – –

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
EF	<450 100 150 – – 1.64 <1	<450 100 100 – – 0.77	<450 200 250 – – 5.84 <1	<450 200 200 2500 5500 5500 5.95 <1	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – 2.78 <1 100 100 – – – –	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – 3.09 <1 100 75 – – – –	<450 200 200 – – 5.34 <1	<450 200 200 – – 5.55 <1	<450 100 100 – – 1.36 <1	<450 100 100 3000 2000 1.03 <1
EE	<450 100 125 – – 1.86 <1	<450 100 100 – – 1.19 <1	<450 200 150 2500 5500 5.42 <1	<450 200 200 – – 2.80 <1					<450 200 150 – – 5.16 <1	<450 200 100 – – 5.61 <1	<450 100 125 3000 2000 6.44 <1	<450 100 75 – – 2.30 <1
ED	<450 100 150 – – 5.39 <1	<450 100 125 3000 2500 2.04 <1	<450 200 200 – – 3.81 <1	<450 200 200 – – 3.39 <1	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – – 100 100 – – – –	<450 200 300 – – 3.68 <1	<450 200 250 2500 5500 4.30 <1	<450 100 100 – – 1.03 <1	<450 100 100 – – 0.98
EC	<450 100 100 3000 2250 1.90 <1	<450 100 125 – – 1.94 <1	<450 200 225 – – 6.05 <1	<450 200 300 – – 5.72 <1					<450 200 350 5500 5500 3.60 <1	<450 200 300 – – 4.86 <1	<450 100 100 – – 1.33 <1	<450 100 100 – – 2.22 <1
EB	<450 100 100 – – 2.03 <1	<450 100 150 – – 1.44 <1	<450 200 300 – – 5.17 <1	<450 200 250 2500 5000 5.21 <1	<450 – – – – – – – – – 100 125 – – – –	<450 – – – – – – – – 3.52 <1 100 100 – – – –	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – 3.26 <1 100 100 – – – –	<450 200 250 – – 4.38 <1	<450 200 250 – – 4.83 <1	<450 100 150 – – 0.74	<450 100 150 3000 3500 1.61 <1
EA	<450 100 100 – – 1.25 <1	<450 100 100 – – 1.36 <1	<450 200 250 2500 5000 5.99 <1	<450 200 300 – – 4.75 <1					<450 200 300 – – 3.88 <1	<450 200 250 – – 4.84 <1	<450 100 125 3000 3500 1.40 <1	<450 100 100 – – 1.67 <1
DZ	<450 100 100 – – 1.84 <1	<450 100 100 3000 2500 1.87 <1	<450 200 150 – – 3.78 <1	<450 200 150 – – 5.01 <1	<450 – – – – – – – – – 100 100 – – – –	<450 – – – – – – – – – 100 75 – – – –	<450 – – – – – – – – 1.49 <1 200 150 – – – –	<450 – – – – – – – – – 200 150 – – – –	<450 200 200 – – 4.65 <1	<450 200 200 5500 5000 3.74 <1	<450 100 50 – – 1.30 <1	<450 100 50 – – 1.19 <1
DY	<450 100 100 3000 2000 1.09 <1	<450 100 100 – – 1.51 <1	<450 200 200 – – 5.44 <1	<450 200 150 – – 4.69 <1					<450 200 200 5500 5000 5.11 <1	<450 200 200 – – 4.85 <1	<450 100 100 – – 1.06 <1	<450 100 300 3000 10000 1.57 <1
DX	<450 100 100 – – 1.29 <1	<450 100 100 – – 1.16 <1	<450 200 250 – – 5.56 <1	<450 200 200 5500 5500 6.07 <1	<450 – – – – – – – – – 200 100 – – – –	<450 – – – – – – – – 1.59 <1 100 100 – – – –	<450 – – – – – – – – – 200 200 – – – –	<450 – – – – – – – – 4.27 <1 100 100 – – – –	<450 200 300 – – 6.03 <1	<450 200 325 – – 5.63 <1	<450 100 100 – – 1.14 <1	<450 100 150 3000 5000 0.87
DW	<450 100 50 – – 0.93	<450 100 50 – – 0.96	<450 200 200 5500 5000 5.15 <1	<450 200 200 – – 4.96 <1					<450 200 250 – – 4.27 <1	<450 200 300 – – 5.10 <1	<450 100 100 3000 3000 0.72	<450 100 300 3000 7000 1.74 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
EP	<450 100 100 – 1.78 <1	<450 100 100 3000 3500 1.69 <1	<450 200 300 – 4.27 <1	<450 200 250 – 5.50 <1	<450 – – – – <0.49 – 100 100 – – –	<450 – – – – – 100 100 – – –	<450 – – – – 0.77 – 100 50 – – –	<450 – – – – – – 100 50 – – –	<450 100 75 – – 5.88 <1	<450 100 200 5500 5500 5.16 <1	<450 100 50 – – 0.98	<450 100 75 – – 1.24 <1
EO	<450 100 125 3000 3000 1.97 <1	<450 100 150 – – 1.26 <1	<450 200 275 – – 5.96 <1	<450 200 250 – – 4.15 <1					<450 100 100 150 5500 5500 5.34 <1	<450 100 150 – – 6.34 <1	<450 100 100 – – 0.62	<450 100 100 – – 2.39 <1
EN	<450 100 100 – – 1.86 <1	<450 100 125 – – 1.73 <1	<450 200 250 – – 5.29 <1	<450 200 250 5500 5500 5.17 <1	<450 – – – – – 100 100 – – –	<450 – – – – 2.41 – 100 75 – – –	<450 – – – – – 100 100 – – –	<450 – – – – 2.86 – 100 75 – – –	<450 200 250 – – 5.03 <1	<450 200 250 – – 3.56 <1	<450 100 100 – – 0.96	<450 100 100 3000 2500 1.02 <1
EM	<450 100 100 – – 3.80 <1	<450 100 100 – – 2.98 <1	<450 200 250 5500 5500 5.66 <1	<450 200 200 – – 5.53 <1					<450 200 200 – – 4.54 <1	<450 200 300 – – 4.29 <1	<450 100 50 3000 2500 5.75 <1	<450 100 100 – – 1.57 <1
EL	<450 100 100 – – 1.70 <1	<450 100 125 3000 2500 1.79 <1	<450 200 225 – – 5.24 <1	<450 200 100 – – 5.49 <1	<450 – – – – – 200 125 – – –	<450 – – – – – 100 75 – – –	<450 – – – – 0.81 – 200 150 – – –	<450 – – – – – – 100 75 – – –	<450 200 250 – – 5.40 <1	<450 200 300 5500 5500 5.56 <1	<450 100 125 – – 1.09 <1	<450 100 100 – – 1.68 <1
EK	<450 100 75 3000 3000 1.31 <1	<450 100 100 – – 1.94 <1	<450 200 150 – – 5.45 <1	<450 200 125 – – 4.80 <1					<450 200 150 – – 5.02 <1	<450 200 250 – – 4.74 <1	<450 100 100 – – 0.90	<450 100 150 – – 0.88
EJ	<450 100 300 3000 2000 0.69	<450 100 100 – – 1.01 <1	<450 200 255 – – 6.24 <1	<450 200 200 5500 5500 4.02 <1	<450 – – – – – 100 100 – – –	<450 – – – – 3.49 – 100 100 – – –	<450 – – – – – 100 100 – – –	<450 – – – – 2.51 – 100 100 – – –	<450 100 150 – – 4.82 <1	<450 200 300 – – 5.51 <1	<450 100 100 – – 0.97	<450 100 100 3000 2000 0.70
EI	<450 100 100 – – 1.74 <1	<450 100 100 – – 1.51 <1	<450 200 150 5500 5500 6.10 <1	<450 200 150 – – 4.99 <1					<450 200 175 – – 5.97 <1	<450 100 150 – – 2.90 <1	<450 100 100 3000 2000 1.75 <1	<450 100 50 – – 1.03 <1
EH	<450 100 300 3000 7000 1.73 <1	<450 100 100 3000 3000 0.85	<450 200 150 – – 5.08 <1	<450 200 150 – – 5.92 <1	<450 – – – – 0.96 – 200 200 – – –	<450 – – – – – 100 150 – – –	<450 – – – – 0.85 – 100 150 – – –	<450 – – – – – – 100 100 – – –	<450 100 155 – – 2.91 <1	<450 100 175 5500 5500 3.79 <1	<450 100 100 – – 1.16 <1	<450 100 125 – – 1.47 <1
EG	<450 100 400 1000 10000 0.70	<450 100 100 – – 1.51 <1	<450 200 200 – – 4.72 <1	<450 200 200 – – 5.90 <1					<450 100 150 5500 5500 1.54 <1	<450 100 100 – – 2.71 <1	<450 100 100 – – 0.92	<450 100 100 – – 0.88

Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
EZ	<450 100 100 – – 1.04 <1	<450 100 100 – – 0.89	<450 200 250 – – 6.45 <1	<450 200 300 5500 5000 5.07 <1	<450 – – –

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
FJ	<450 100 150 – – 1.07 <1	<450 100 100 3000 3000 1.04 <1	<450 200 200 – – 5.03 <1	<450 200 200 – – 7.10 <1	<450 – – – – 1.31 <1	<450 – – – –

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
FT	<450 100 50 – – 1.10 <1	<450 100 50 – – 1.01 <1	<450 200 100 – – 2.57 <1	<450 200 150 5500 5000 4.30 <1	<450 – – – – – 200 100 – – –	<450 – – – – 1.23 <1 – 100 100 – – –	<450 – – – – – 100 100 – – –	<450 – – – – 1.22 <1 – 100 100 – – –	<450 200 250 – – 4.81 <1	<450 200 250 – – 6.02 <1	<450 100 100 – – 0.86	<450 100 175 3000 4000 1.17 <1
FS	<450 100 100 – – 1.44 <1	<450 100 100 – – 0.98	<450 200 250 5500 4500 3.03 <1	<450 200 250 – – 5.16 <1					<450 200 250 – – 5.87 <1	<450 200 350 – – 4.93 <1	<450 100 100 3000 3500 0.97	<450 100 100 – – 0.98
FR	<450 100 100 – – 1.13 <1	<450 100 100 3000 2500 0.85	<450 200 200 – – 0.78	<450 200 220 – – 4.89 <1	<450 – – – – – 100 100 – – –	<450 – – – – – 100 100 – – –	<450 – – – – – 200 200 – – –	<450 – – – – – 100 100 – – –	<450 200 100 – – 1.18 <1	<450 200 100 5500 4000 1.08 <1	<450 100 100 – – 0.93	<450 100 150 – – 1.24 <1
FQ	<450 100 100 3000 2500 1.47 <1	<450 100 100 – – 1.15 <1	<450 200 100 – – 3.00 <1	<450 200 100 – – 4.08 <1	1.00 <1	1.13 <1			<450 200 150 5500 4000 4.38 <1	<450 200 150 – – 4.05 <1	<450 100 150 – – 1.50 <1	<450 100 150 – – 1.72 <1
FP	<450 100 100 – – 1.09 <1	<450 100 100 – – 0.83	<450 200 250 – – 3.98 <1	<450 200 250 5500 6000 4.84 <1	<450 – – – – – 100 100 – – –	<450 – – – – 3.36 <1 – 100 150 – – –	<450 – – – – – 200 150 – – –	<450 – – – – 0.81 – 100 100 – – –	<450 200 250 – – 4.83 <1	<450 200 250 – – 3.97 <1	<450 100 50 – – 1.24 <1	<450 100 50 3000 2250 1.20 <1
FO	<450 100 100 – – 0.98	<450 100 100 – – 0.77	<450 200 250 5500 5500 4.07 <1	<450 200 300 – – 4.59 <1					<450 200 150 – – 4.35 <1	<450 200 200 – – 5.15 <1	<450 100 100 3000 2500 1.3[illegible] <1	<450 100 75 – – 1.17 <1
FN	<450 100 100 – – 0.88	<450 100 150 3000 3500 1.34 <1	<450 200 250 – – 4.51 <1	<450 200 300 – – 4.08 <1	<450 – – – – – 100 100 – – –	<450 – – – – – 100 100 – – –	<450 – – – – – 200 100 – – –	<450 – – – – – 100 100 – – –	<450 200 200 – – 5.18 <1	<450 200 250 5500 5500 5.58 <1	<450 100 100 – – 1.21 <1	<450 100 100 – – 1.39 <1
FM	<450 100 100 3000 3000 0.80	<450 100 100 – – 1.53 <1	<450 200 200 – – 5.76 <1	<450 200 200 – – 0.75	0.88				<450 200 250 5500 4000 4.85 <1	<450 200 250 – – 1.27 <1	<450 100 100 – – 1.33 <1	<450 100 150 – – 1.70 <1
FL	<450 100 100 – – 0.54	<450 100 100 – – 0.53	<450 200 200 – – 5.88 <1	<450 200 200 5500 4500 5.31 <1	<450 – – – – – 100 100 – – –	<450 – – – – 2.72 <1 – 100 125 – – –	<450 – – – – – 200 200 – – –	<450 – – – – 0.58 – 200 200 – – –	<450 200 725 – – 4.66 <1	<450 200 250 – – 4.69 <1	<450 100 125 – – 1.77 <1	<450 100 100 3000 2000 1.14 <1
FK	<450 100 150 – – 1.38 <1	<450 100 150 – – 1.05 <1	<450 200 200 5500 6000 5.39 <1	<450 200 250 – – 5.26 <1					<450 200 250 – – 4.19 <1	<450 200 250 – – 4.56 <1	<450 100 125 3500 2500 1.26 <1	<450 100 100 – – 1.24 <1

Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM 253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
GD	<450 100 100 – – 1.29 <1	<450 100 100 3000 2500 1.22 <1	<450 200 150 – – 4.44 <1	<450 200 150 – – 5.44 <1	<450 – – – – 1.06 <1 – 200 150 – – – –	<450 – – – – – – – 100 100 – – – –	<450 – – – – <0.45 – 200 100 – – – –	<450 – – – – – – – 100 100 – – – –	<450 200 350 – – 4.55 <1	<450 200 150 2500 5000 5.67 <1	<450 100 150 – – 2.07 <1	<450 100 150 – – 1.61 <1
GC	<450 100 100 3000 2500 1.13 <1	<450 100 100 – – 1.27 <1	<450 200 200 – – 0.92	<450 200 150 – – 0.87					<450 200 200 2500 5500 5.40 <1	<450 200 300 – – 6.08 <1	<450 100 100 – – 1.50 <1	<450 100 100 – – 1.27 <1
GB	<450 100 100 – – 1.24 <1	<450 100 100 – – 0.96	<450 200 200 – – 6.69 <1	<450 200 200 5500 5500 6.18 <1	<450 – – – – – – – 200 100 – – – –	<450 – – – – 1.49 <1 – 100 50 – – – –	<450 – – – – – – – 200 150 – – – –	<450 – – – – 1.28 <1 – 100 100 – – – –	<450 200 150 – – 3.95 <1	<450 200 200 – – 5.18 <1	<450 100 100 – – 1.08 <1	<450 100 100 3000 3000 1.02 <1
GA	<450 100 150 – – 0.77	<450 100 150 – – 0.60	<450 200 250 2500 4500 5.18 <1	<450 200 250 – – 5.20 <1					<450 200 250 – – 6.96 <1	<450 200 150 – – 4.51 <1	<450 100 150 3000 5500 1.60 <1	<450 100 100 – – 1.37 <1
FZ	<450 100 100 – – 1.69 <1	<450 100 100 3000 3000 1.93 <1	<450 200 200 – – 5.56 <1	<450 200 150 – – 1.19 <1	<450 – – – – 0.75 – 200 150 – – – –	<450 – – – – – – – 100 50 – – – –	<450 – – – – 1.12 <1 – 100 50 – – – –	<450 – – – – – – – 100 100 – – – –	<450 200 300 – – 5.19 <1	<450 200 250 5500 7000 6.03 <1	<450 100 100 – – 1.04 <1	<450 100 100 – – 1.45 <1
FY	<450 100 100 3000 3500 0.98	<450 100 100 – – 1.30 <1	<450 200 250 – – 4.07 <1	<450 200 250 – – 5.94 <1					<450 200 300 5500 6000 5.31 <1	<450 200 300 – – 5.33 <1	<450 100 150 – – 1.22 <1	<450 100 150 – – 1.05 <1
FX	<450 100 100 – – 1.21 <1	<450 100 100 – – 0.90	<450 200 200 – – 3.38 <1	<450 200 250 5000 5000 5.21 <1	<450 – – – – – – – 100 100 – – – –	<450 – – – – 1.08 – – 100 100 – – – –	<450 – – – – – – – 200 200 – – – –	<450 – – – – 1.27 <1 – 100 100 – – – –	<450 200 250 – – 4.74 <1	<450 200 300 – – 6.41 <1	<450 100 125 – – 1.39 <1	<450 100 300 3000 15000 1.95 <1
FW	<450 100 100 – – 1.26 <1	<450 100 150 – – 1.65 <1	<450 200 250 2500 5500 4.48 <1	<450 200 250 – – 5.73 <1					<450 200 250 – – 6.12 <1	<450 200 250 – – 5.26 <1	<450 100 100 3000 3250 1.75 <1	<450 100 300 3000 8000 1.44 <1
FV	<450 100 100 – – 0.76	<450 100 100 3000 2500 1.03 <1	<450 200 250 – – <0.41	<450 200 250 – – 6.44 <1	<450 – – – – 1.00 – 200 100 – – – –	<450 – – – – – – – 100 100 – – – –	<450 – – – – 1.17 <1 – 200 150 – – – –	<450 – – – – – – – 100 100 – – – –	<450 200 200 – – 5.68 <1	<450 200 200 5000 7000 6.95 <1	<450 100 100 – – 1.44 <1	<450 100 600 3000 25000 2.67 <1
FU	<450 100 100 3000 2500 0.63	<450 100 100 – – 1.20 <1	<450 200 200 – – 4.57 <1	<450 200 250 – – 5.86 <1					<450 200 250 5500 5500 4.71 <1	<450 200 250 – – 5.30 <1	<450 100 100 – – 2.12 <1	<450 100 300 3000 25000 2.32 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results pCi/g]

5. Pier G

e. Localized Grid Maps

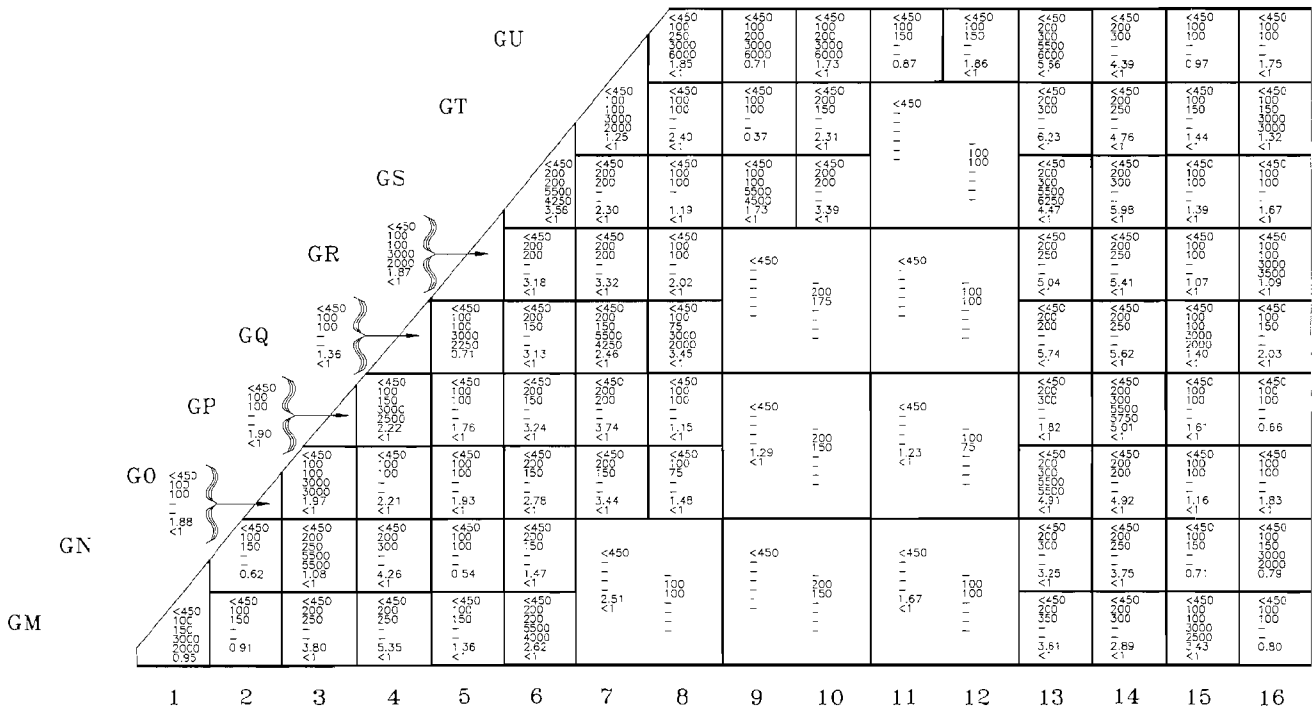
	1	2	3	4	5	7	9	11	13	14	15	16
GL	<450 100 100 – – 2.81 <1	<450 100 100 – – 1.28 <1	<450 200 300 5500 5000 5.74 <1	<450 200 300 – – 6.50 <1	<450 – – – – 1.79 <1 – 200 150 – – – –	<450 – – – – – 100 100 – – –	<450 – – – – 1.52 <1 – 100 50 – – –	<450 – – – – – 100 100 – – –	<450 200 250 225 – – 4.74 <1	<450 200 250 5500 6000 6.22 <1	<450 100 100 – – 0.66	<450 100 100 – – 2.00 <1
GK	<450 100 300 3000 6500 1.70 <1	<450 100 100 – – 1.49 <1	<450 200 250 – – 6.49 <1	<450 200 300 – – 6.06 <1					<450 200 250 225 5500 5000 6.87 <1	<450 200 200 – – 6.27 <1	<450 100 100 – – 1.92 <1	<450 100 100 – – 2.54 <1
GJ	<450 100 250 3000 6500 2.10 <1	<450 100 100 – – 1.28 <1	<450 200 300 – – 7.47 <1	<450 200 300 5500 5500 6.71 <1	<450 – – – – – 100 150 – – –	<450 – – – – 1.11 – 100 150 – – –	<450 100 100 – – – 100 100 – – –	<450 100 150 – – 1.83 <1 – 100 150 – – –	<450 200 350 – – 6.27 <1	<450 200 150 – – 4.56 <1	<450 100 100 – – 0.99	<450 100 100 3000 2500 1.36 <1
GI	<450 100 250 3000 6500 1.28 <1	<450 100 100 – – 1.23 <1	<450 100 150 3000 2000 4.77 <1	<450 100 150 – – 5.04 <1					<450 200 300 – – 5.18 <1	<450 200 350 – – 4.80 <1	<450 100 100 3000 2500 1.76 <1	<450 100 100 – – 1.60 <1
GH	<450 100 250 3000 6500 1.27 <1	<450 100 100 3000 7000 1.34 <1	<450 200 250 – – 5.81 <1	<450 200 250 – – 5.73 <1	<450 – – – – 1.63 <1 – 200 150 – – –	<450 – – – – – 100 100 – – –	<450 – – – – 1.30 <1 – 200 100 – – –	<450 – – – – – 100 100 – – –	<450 200 250 – – 5.24 <1	<450 200 250 5500 5000 4.86 <1	<450 100 150 – – 1.54 <1	<450 100 100 – – 1.87 <1
GG	<450 100 250 3000 6500 1.16 <1	<450 100 100 – – 1.3[illegible] <1	<450 200 250 – – 6.03 <1	<450 200 300 – – 6.44 <1					<450 200 300 5500 4500 4.72 <1	<450 200 350 – – 4.22 <1	<450 100 300 3000 6000 1.60 <1	<450 100 400 3000 6500 1.69 <1
GF	<450 100 300 3000 7500 1.36 <1	<450 100 100 – – 1.13 <1	<450 200 250 – – 5.70 <1	<450 200 300 5500 6500 6.93 <1	<450 – – – – – 200 150 – – –	<450 – – – – 0.88 – 100 100 – – –	<450 – – – – – 200 200 – – –	<450 – – – – 1.39 <1 – 100 100 – – –	<450 200 150 – – 2.99 <1	<450 200 350 – – 4.15 <1	<450 100 100 – – 1.29 <1	<450 100 150 3000 3000 0.82 <1
GE	<450 100 100 – – 1.49 <1	<450 100 100 – – 1.15 <1	<450 200 250 5500 5000 4.77 <1	<450 200 250 – – 5.69 <1					<450 200 200 – – 2.31 <1	<450 200 200 – – 5.09 <1	<450 100 100 3000 2500 1.57 <1	<450 100 100 – – 2.07 <1

Sample Data

<450 – IM-247/PD Results [μμC./20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps

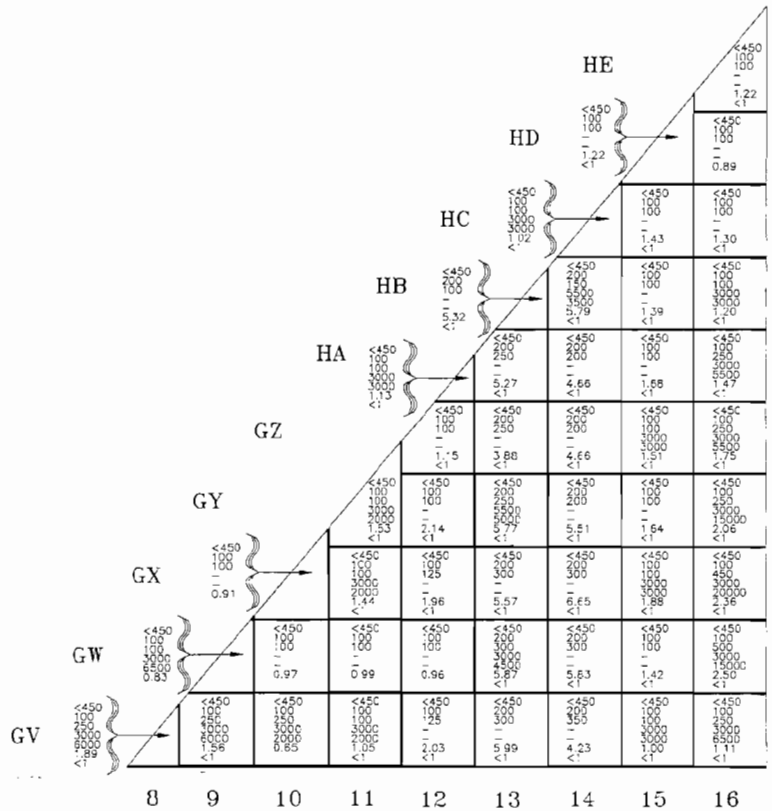


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-' PHA) [bkg.]
300 – IM-253/PD (HV-' PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

5. Pier G

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμC/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7300 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results pCi/g]

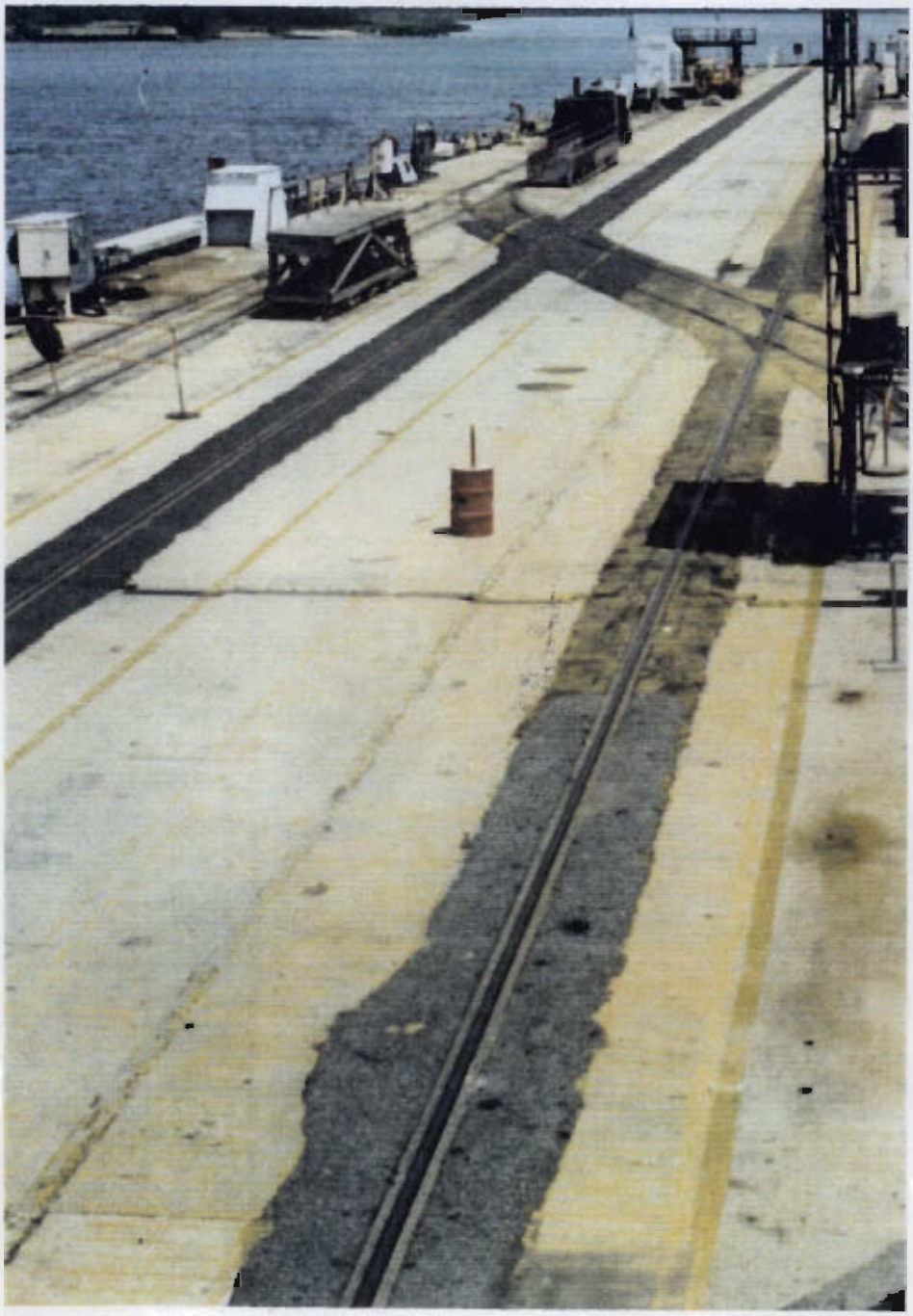
5. Pier G

f. Prior Photograph

Head of pier, facing east.

5. Pier G

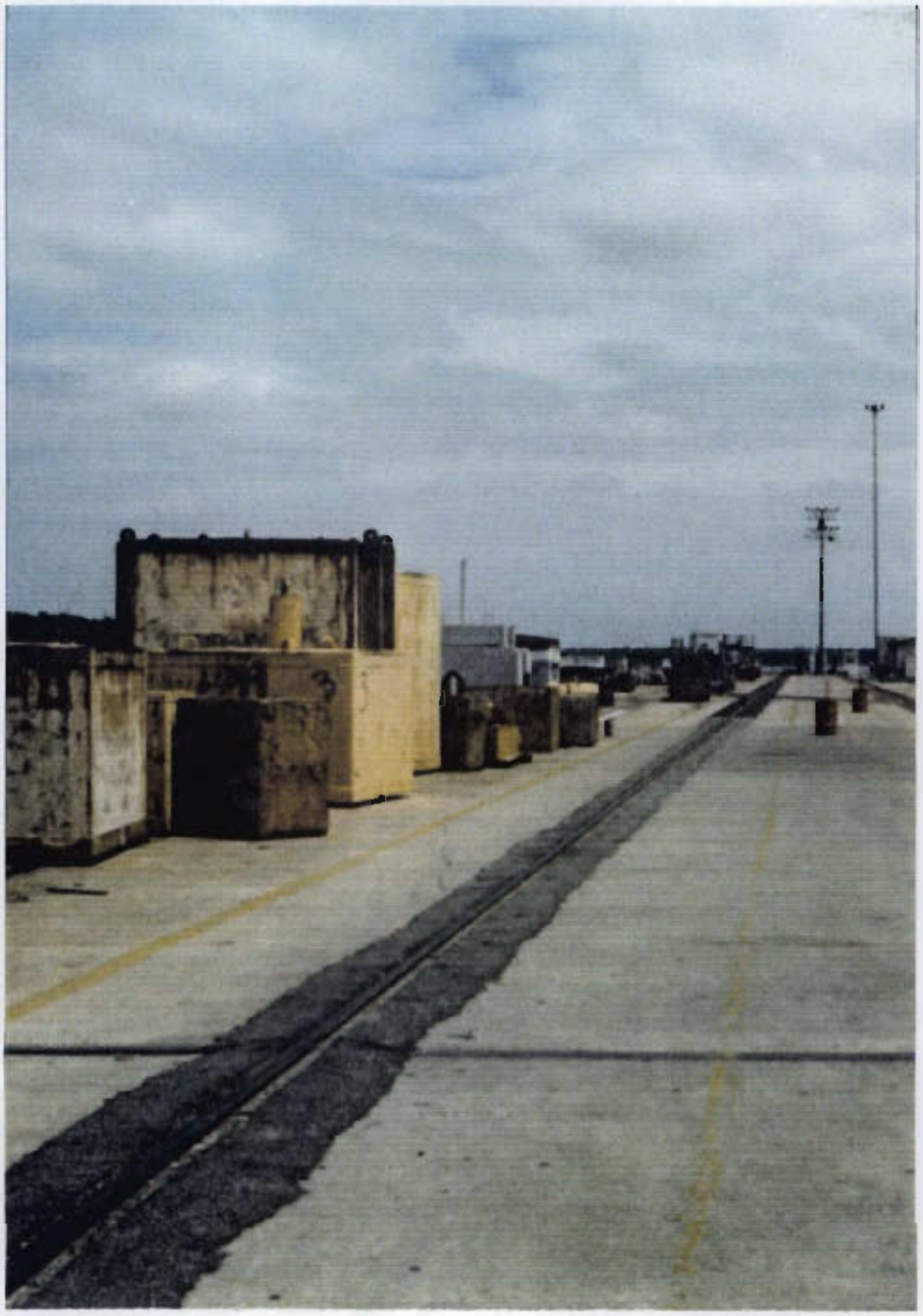
f. Prior Photograph



Head of pier.

5. Pier G

g. During Photograph



Viewing toward end of pier.

5. Pier G

h. After Photograph

Facing toward end of pier.

5. Pier G

h. After Photograph

Midway of pier.

6. Pier H

a. Introduction:

Pier H is located in grid D-8 of the Charleston Naval Shipyard map (Figure 10) and was constructed in 1942. Pier H is also identified as structure 317-E.

(1) Description:

Structure 317-E is approximately 750' long by 80' wide by 11' high. It is oriented east into the Cooper River. The pier is constructed of concrete pilings that support a concrete slab surface. Portions of the upper surface of the pier are covered with asphalt. Along the sides of the pier are wood posts and beams bolted into the concrete. Along the south side of the pier are three wooden service platforms. The pier contains two sets of train rails and one set of crane rails. The Pier H survey area includes a 40' extension approaching the base of the pier.

(2) Brief History:

(a) **Use:** This structure was constructed as part of the U.S. naval shore establishment expansion programs implemented prior to and during World War II.

(b) **Radiological History:** This structure was used to berth nuclear vessels. Areas on the pier have been controlled as radiation areas and radioactive material storage areas. Radioactive material was transported regularly over the pier. Loose surface contamination levels were maintained to levels less than 450 $\mu\mu Ci/100cm^2$.

(c) On the underside of this structure, discharge piping from a Radioactive Liquid (RL) processing system was routed from Building 79A to the southeast end of the pier. In the mid 1970's the piping below the pier was removed. At a later date, the Building 79A RL processing system and the remaining discharge piping were removed.

(3) Survey Requirements:

Group 2, Group 3 and Nuclear Ship Berthing Area surveys were required on this structure.

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Where physically possible, each grid was subdivided into two 3' by 3' subsections which were located in areas of highest potential for contamination. One of

6. Pier H

these subsections was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Solid material samples were taken from a minimum of 50 percent of the 10' by 10' grids. Additionally, solid material samples were taken from each 3' by 3' subsection that resulted in levels greater than 450 $\mu\mu Ci/20cm^2$ with the IM-247/PD or greater than twice background with the IM-253/PD (HV-1 PHA).

Group 3 survey areas were divided into approximately 5' by 5' grids. Each grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). Then a minimum of 25 percent of these grids was surveyed using the IM-253/PD (HV-2 GROSS). Additionally, solid material samples were taken from each 5' by 5' grid.

Pier H, including the 40' extension, was divided into 473 10' by 10' grids and 975 5' by 5' grids.

Individual backgrounds were used for this pier and its land side approach. The IM-247/PD and IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds of 40, 200, and 5000 counts per minute used for the asphalt pours were based upon backgrounds obtained from Pier T Quaywall. The IM-247/PD and IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds of 40, 150, and 3000 counts per minute used for the concrete pours were based upon background radiation levels obtained from Pier T Quaywall. The IM-247/PD and IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds of 40, 75, and 4000 counts per minute used for the wood construction were based upon backgrounds obtained from the Building 246 wood supports.

Some grids have more than one material within their boundaries. The measured radiation levels recorded in each grid represent the highest radiation level found within the grid for the particular instrument and survey mode. For example, in grid CH-15 the highest IM-253/PD (HV-1 PHA) reading was detected on an asphalt covered area and the highest IM-253/PD (HV-2 GROSS) was detected from a poured cement surface. The background radiation levels in these cases represent the background for the particular material providing the highest radiation level.

In addition to the solid material samples above, a representative selection of solid material samples was also taken from the underside of the pier. These samples were taken in the vicinity of the processed radioactive liquid waste piping discharge which had been removed. These sample locations and individual results are not included in this report, however, all additional samples analyzed indicated less than 1 pCi/g specific cobalt 60.

Quarterly environmental monitoring of the river bottom sediment samples surrounding Pier H and in the vicinity of the RL piping discharge location were performed as required. Available CNSY records dating from 1972 through 1977 indicated no significant increases in background radioactivity. Since 1978

6. Pier H

analysis specific cobalt 60 indicated all sediment samples were less than 1 pCi/g.

A total of 1,226 solid material samples were taken. Each solid sample was removed from the grid location indicating the area of highest potential. The following naturally occurring radionuclides were typical isotopes identified during analysis of solid material samples: lead 212, lead 214, beryllium 7, and potassium 40.

c. Summary:

Surveys performed with the IM-247/PD detected three areas greater than 450 $\mu\mu Ci/20cm^2$.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 44 areas greater than or equal to twice background.

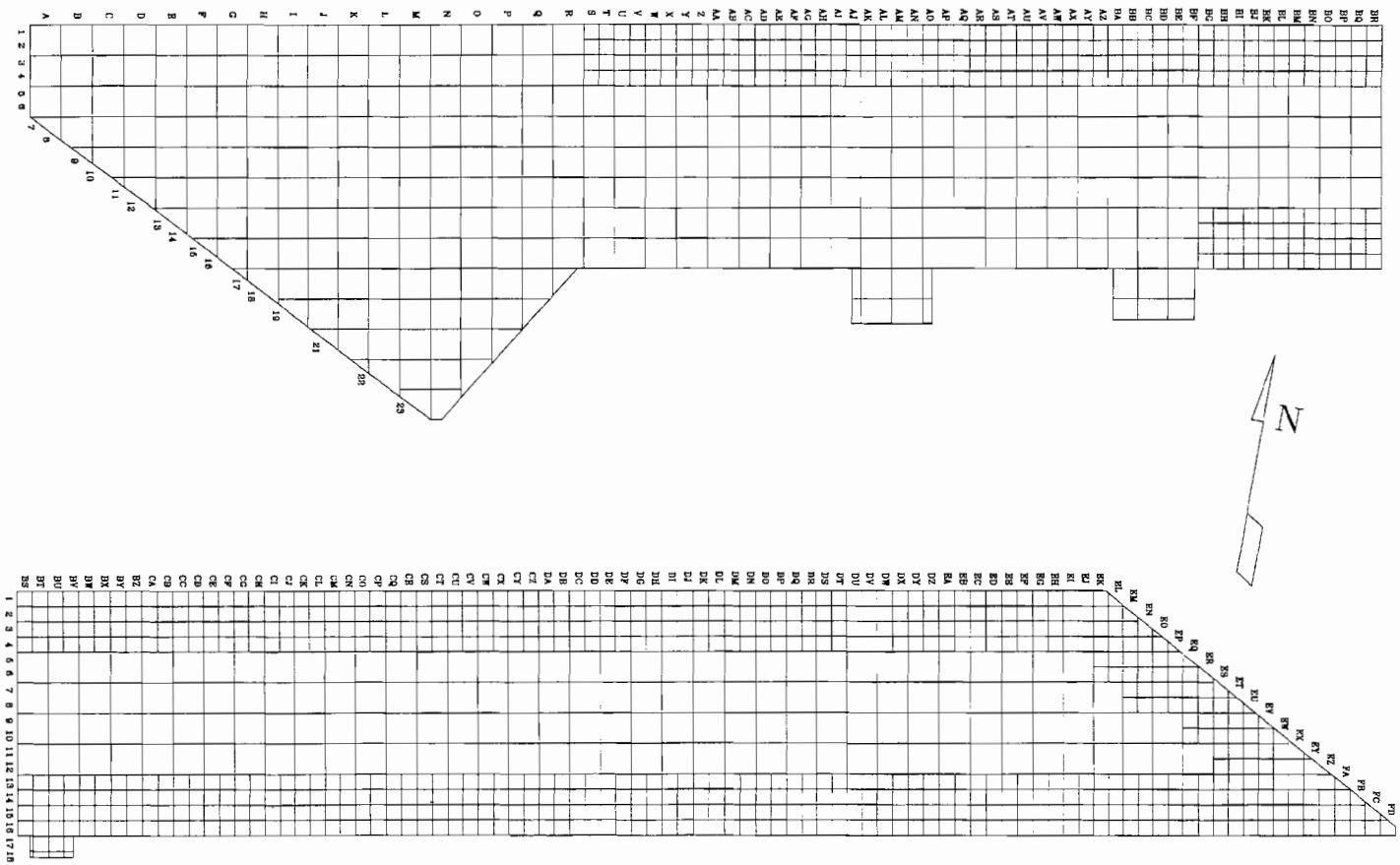
Surveys performed with the IM-253/PD (HV-2 GROSS) detected 38 areas greater than or equal to twice background.

Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of less than 0.11 pCi/g to a high of 7.28 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all solid material samples were less than 1 pCi/g.

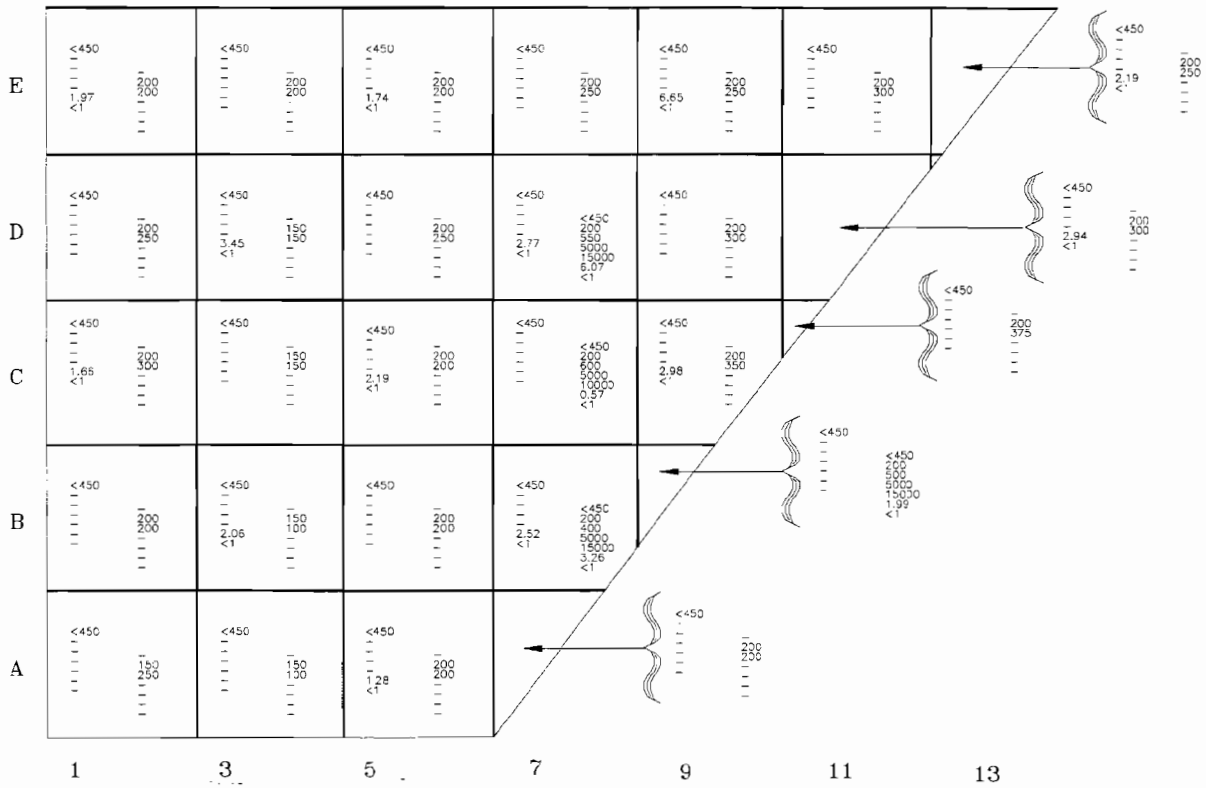
6. Pier H

d. Overall Grid Maps



6. Pier H

e. Localized Grid Maps

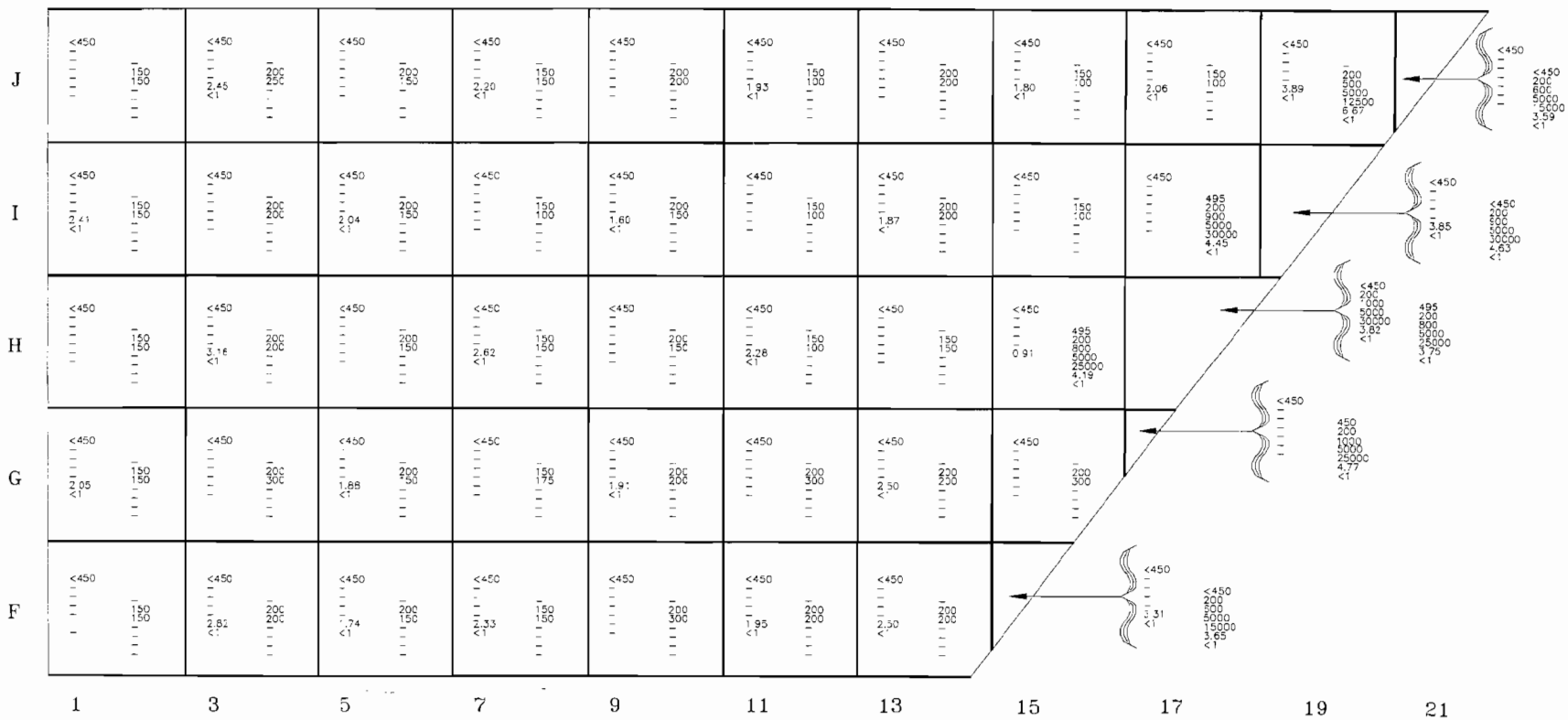


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV=1 PHA) [bkg.]
300 – IM-253/PD (HV=1 PHA) [cpm]
7000 – M-253/PD (HV-2 GROSS) [bkg.]
7300 – M-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Ec. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps



Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than or equal to 450μμCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results (μμCi/20cm²)
200 – IM-253/PD (HV-1 PHA) (tkg.)
300 – IM-253/PD (HV-1 PHA) (cpm)
7000 – IM-253/PD (HV-2 GROSS) (tkg.)
7300 – IM-253/PD (HV-2 GROSS) (cpm)
1.82 – MCA Gross Gamma Eq. Co-60 (pCi/g)
<1 – MCA Specific Co-60 Results (pCi/g)

6. Pier H

e. Localized Grid Maps

	1	3	5	7	9	11	13	15	17	19	21
O	<450 – – – 1.94 <1 – 150 100 – – –	<450 – – – – – – 200 225 – – –	<450 – – – 1.50 <1 – 200 150 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – 1.37 <1 – 200 200 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – 3.48 <1 – 200 200 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – 1.40 <1 – 150 275 – – –	<450 – – – – – – 150 250 – – –
N	<450 – – – – – – 150 100 – – –	<450 – – – – 2.76 – 200 250 – – –	<450 – – – – – – 200 100 – – –	<450 – – – – 2.84 <1 – 150 100 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – 1.77 <1 – 200 200 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – 2.22 <1 – 150 150 – – –	<450 – – – – – – <450 150 350 3000 10000 1.99 <1	<450 – – – – – – <450 150 400 3000 10000 2.25 <1	<450 – – – – 2.46 <1 – <450 150 450 3000 10000 2.76 <1
M	<450 – – – – 1.73 – 150 150 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – 1.98 <1 – 150 150 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – 1.46 <1 – 150 125 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – 2.79 <1 – 200 200 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – 3.12 – 150 150 – – –	<450 – – – – – – 150 250 – – –
L	<450 – – – – – – 150 150 – – –	<450 – – – – 3.34 <1 – 200 200 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – 2.46 <1 – 150 150 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – 1.54 <1 – 150 100 – – –	<450 – – – – – – 200 150 – – –	<450 – – – – 1.74 <1 – 150 150 – – –	<450 – – – – 1.50 <1 – 150 250 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – 2.16 <1 – 150 200 – – –
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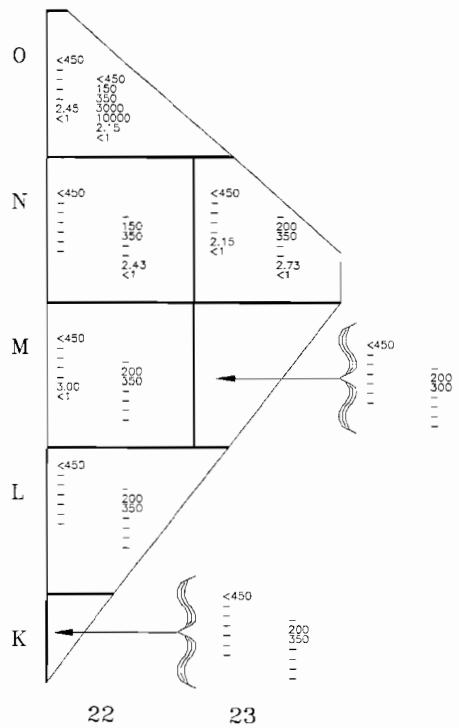
Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

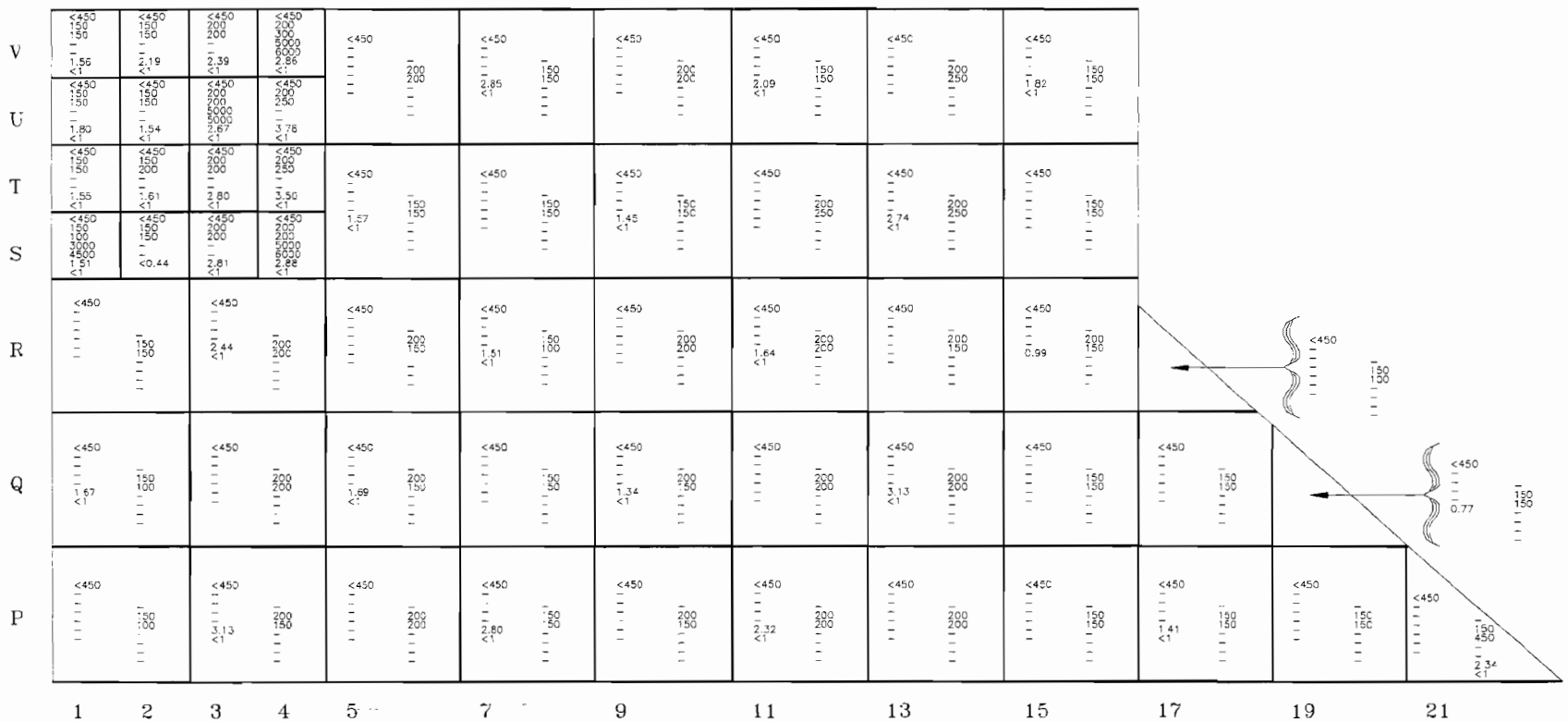


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5		7		9		11		13		15	
AF	<450 150 150 – – 1.18 <1	<450 150 150 – – 1.73 <1	<450 200 250 – – 2.61 <1	<450 200 155 5000 6000 2.89 <1	<450 – – – – 2.16 <1	– 200 275 – – – –	<450 – – – – – –	– 200 250 – – – –	<450 – – – – 1.68 <1	– 150 150 – – – –	<450 – – – – – –	– 200 250 – – – –	<450 – – – – 3.43 <1	– 200 300 – – – –	<450 – – – – – –	– 150 200 – – – –
AE	<450 150 150 – – 1.29 <1	<450 150 200 – – 1.18 <1	<450 200 300 – – 2.76 <1	<450 200 275 5000 6250 3.21 <1												
AD	<450 150 200 4000 3500 1.02 <1	<450 150 200 – – 1.52 <1	<450 200 300 – – 3.23 <1	<450 200 300 – – 2.64 <1	<450 – – – – – –	– 150 150 – – – –	<450 – – – – 3.06 <1	– 200 300 – – – –	<450 – – – – – –	– 150 150 – – – –	<450 – – – – 3.24 <1	– 150 150 – – – –	<450 – – – – – –	– 200 250 – – – –	<450 – – – – 2.43 <1	– 150 150 – – – –
AC	<450 150 150 – – 1.89 <1	<450 150 150 – – 1.70 <1	<450 200 250 5000 6500 3.72 <1	<450 200 200 – – 3.11 <1												
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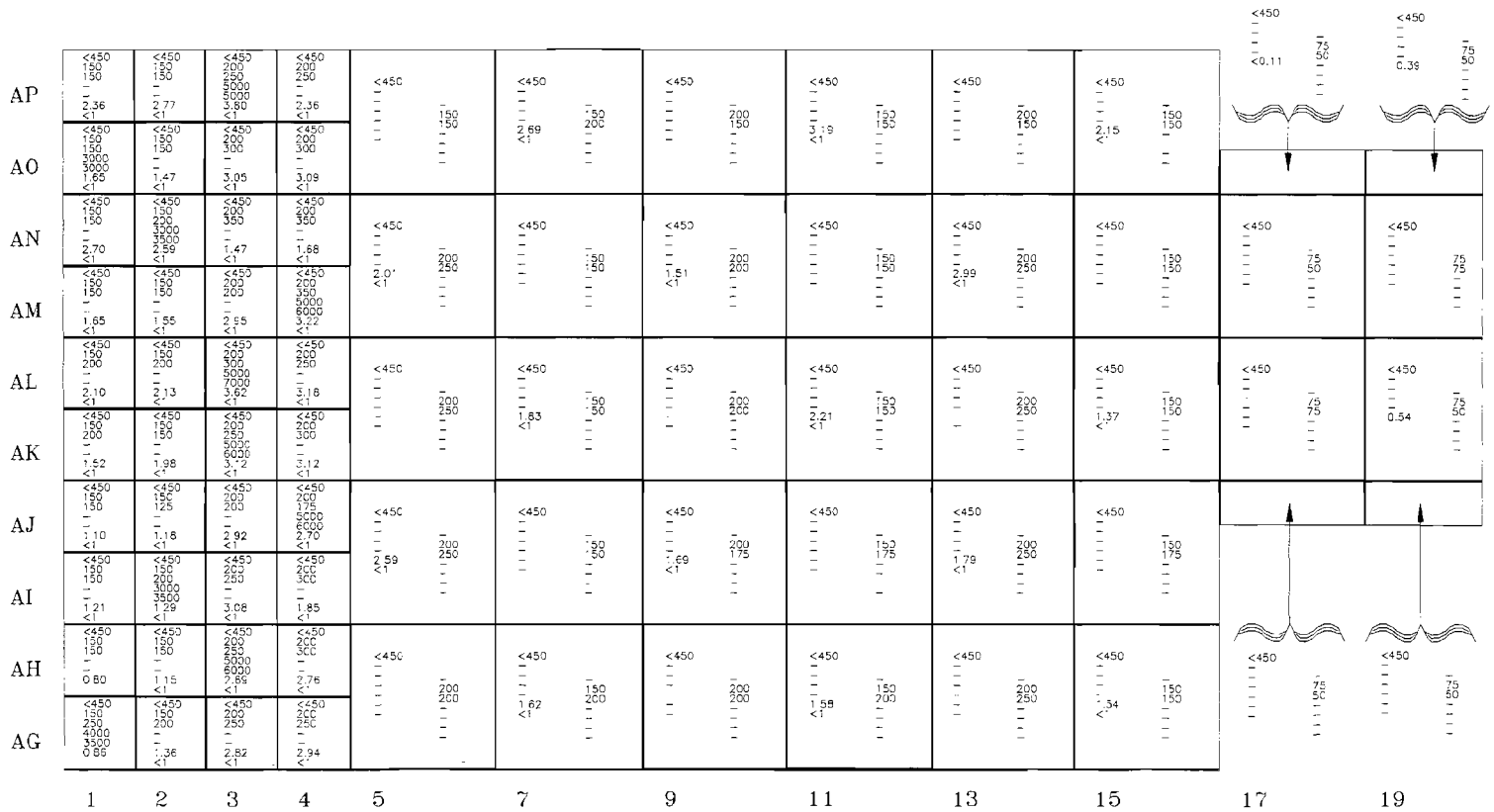
AA	<450 150 150 – – 1.78 <1	<450 150 150 3000 3000 1.25 <1	<450 200 200 – – 2.84 <1	<450 200 250 – – 2.68 <1												
Z	<450 150 150 – – 1.40 <1	<450 150 175 – – 2.05 <1	<450 200 250 5000 5500 2.66 <1	<450 200 250 – – 2.58 <1	<450 – – – – – –	– 200 200 – – – –	<450 – – – – 1.11 <1	– 200 150 – – – –	<450 – – – – – –	– 200 200 – – – –	<450 – – – – 2.40 <1	– 150 100 – – – –	<450 – – – – – –	– 200 200 – – – –	<450 – – – – 1.43 <1	– 150 150 – – – –
Y	<450 150 150 4000 5000 1.48 <1	<450 150 150 – – 1.57 <1	<450 200 250 – – 3.04 <1	<450 200 250 – – 3.12 <1												
X	<450 150 150 – – 1.62 <1	<450 150 150 3000 3500 1.41 <1	<450 200 250 – – 3.59 <1	<450 200 250 – – 3.61 <1	<450 – – – – 1.13 <1	– 200 200 – – – –	<450 – – – – – –	– 150 150 – – – –	<450 – – – – 2.92 <1	– 200 200 – – – –	<450 – – – – – –	– 150 250 – – – –	<450 – – – – 2.49 <1	– 200 200 – – – –	<450 – – – – – –	– 150 150 – – – –
W	<450 150 150 – – 1.87 <1	<450 150 150 – – 1.76 <1	<450 200 200 – – 2.94 <1	<450 200 200 5000 5500 3.14 <1												

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-252/PD (HV-2 GROSS) [bkg.]
7300 – IM-252/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results (μμC/20cm²)
200 – IM-253/PD (HV-1 PHA) (bkg.)
300 – IM-253/PD (HV-1 PHA) (cpm)
7000 – IM-253/PD (HV-2 GROSS) (bkg.)
7300 – IM-253/PD (HV-2 GROSS) (cpm)
1.82 – MCA Gross Gamma Eq. Co-60 (pCi/g)
<1 – MCA Specific Co-60 Results (pCi/g)

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	15
AZ	<450 150 150 – – 1.11 <1	<450 150 150 – – 0.97	<450 200 150 5000 6750 3.00 <1	<450 200 150 – – 3.50 <1	<450 – – – – – 1.20 <1	<450 – – – – – – –	<450 – – – – – 1.11 <1	<450 – – – – – – –	<450 – – – – – 3.00 <1	<450 – – – – – – –
AY	<450 150 150 – – – 1.67 <1	<450 150 150 3000 4250 1.33 <1	<450 200 250 – – 2.50 <1	<450 200 275 – – 3.13 <1	– 150 150 – – – –	– 150 125 – – – –	– 150 125 – – – –	– 150 150 – – – –	– 200 200 – – – –	– 150 150 – – – –
AX	<450 150 175 – – 3.82 <1	<450 150 175 – – 2.19 <1	<450 200 175 5000 6500 2.80 <1	<450 200 200 – – 2.83 <1	<450 – – – – – –	<450 – – – – 1.01 <1	<450 – – – – – –	<450 – – – – 2.49 <1	<450 – – – – – –	<450 – – – – 4.42 <1
AW	<450 150 100 4000 4500 2.83 <1	<450 150 125 – – 1.72 <1	<450 200 200 – – 2.05 <1	<450 200 225 – – 3.14 <1	– 200 175 – – – –	– 150 150 – – – –	– 200 200 – – – –	– 150 150 – – – –	– 200 175 – – – –	– 150 100 – – – –
AV	<450 150 200 – – 2.07 <1	<450 150 150 3000 3500 1.48 <1	<450 200 250 – – 3.36 <1	<450 200 200 – – 2.53 <1	<450 – – – – – 2.03 <1	<450 – – – – – –	<450 – – – – – 1.47 <1	<450 – – – – – –	<450 – – – – – 3.27 <1	<450 – – – – – –
AU	<450 150 150 – – – 1.13 <1	<450 150 150 – – 1.79 <1	<450 200 200 – – 3.09 <1	<450 200 200 5000 6500 3.13 <1	– 200 150 – – – –	– 150 100 – – – –	– 200 200 – – – –	– 150 150 – – – –	– 200 200 – – – –	– 150 150 – – – –
AT	<450 150 150 3000 3000 1.98 <1	<450 150 200 – – 1.82 <1	<450 200 250 – – 3.56 <1	<450 200 200 – – 3.44 <1	<450 – – – – – –	<450 – – – – 1.99 <1	<450 – – – – – –	<450 – – – – 2.60 <1	<450 – – – – – –	<450 – – – – 1.24 <1
AS	<450 150 200 – – 1.51 <1	<450 150 200 – – 1.49 <1	<450 200 300 5000 6500 3.16 <1	<450 200 300 – – 3.09 <1	– 150 150 – – – –	– 150 150 – – – –	– 150 175 – – – –	– 150 175 – – – –	– 200 200 – – – –	– 150 150 – – – –
AR	<450 150 150 – – 2.08 <1	<450 150 150 – – 4.08 <1	<450 200 250 5000 7000 3.54 <1	<450 200 300 – – 2.74 <1	<450 – – – – – 1.92 <1	<450 – – – – – –	<450 – – – – – 1.56 <1	<450 – – – – – –	<450 – – – – – 2.83 <1	<450 – – – – – –
AQ	<450 150 150 – – 1.66 <1	<450 150 150 3000 3000 2.62 <1	<450 200 375 – – 3.03 <1	<450 200 300 – – 2.75 <1	– 150 150 – – – –	– 153 150 – – – –	– 200 200 – – – –	– 150 100 – – – –	– 200 200 – – – –	– 150 100 – – – –

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	15	17	19
BJ	<450 150 150 – – 1.81 <1	<450 150 150 3000 3000 1.52 <1	<450 200 250 – – 2.77 <1	<450 200 200 – – 2.53 <1	<450 – – – – – – 200 200 – – –	<450 – – – – – – 2.67 <1 – 150 150 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 1.43 <1 – 150 150 – – –	<450 200 150 5000 4500 2.07 <1	<450 200 100 – – 2.32 <1	<450 150 100 – – 1.80 <1	<450 150 100 – – 1.41 <1
BI	<450 150 150 – – 1.85 <1	<450 150 150 – – 1.49 <1	<450 200 250 – – 2.73 <1	<450 200 250 5000 5500 2.85 <1					<450 200 150 – – 2.14 <1	<450 200 150 – – 1.33 <1	<450 150 100 3000 3000 1.59 <1	<450 150 100 – – 1.83 <1
BH	<450 150 200 – – 2.11 <1	<450 150 175 – – 2.39 <1	<450 200 225 – – 2.25 <1	<450 200 225 – – 2.98 <1	<450 – – – – – – 200 175 – – –	<450 – – – – – – 150 200 – – –	<450 – – – – – – 200 200 – – –	<450 – – – – – – 150 150 – – –	<450 200 150 – – 1.96 <1	<450 200 150 – – 2.52 <1	<450 150 100 – – 1.19 <1	<450 150 100 – – 1.79 <1
BG	<450 150 200 3000 3000 1.85 <1	<450 150 175 – – 1.87 <1	<450 200 200 – – 3.75 <1	<450 200 250 5000 5000 3.18 <1					<450 200 150 5000 4500 1.48 <1	<450 200 200 – – 2.80 <1	<450 150 150 3000 3000 1.9[illegible] <1	<450 150 150 – – 1.85 <1
BF	<450 150 150 – – 1.77 <1	<450 150 200 3000 3500 2.12 <1	<450 200 300 – – 2.38 <1	<450 200 300 – – 3.26 <1	<450 – – – – – – 200 200 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 200 350 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 200 225 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 75 75 – – –	<450 – – – – – – 75 75 – – –
BE	<450 150 150 3000 4000 3500 1.88 <1	<450 150 150 – – 1.39 <1	<450 200 250 – – 3.37 <1	<450 200 250 – – 3.54 <1								
BD	<450 150 150 – – 1.90 <1	<450 150 150 – – 1.65 <1	<450 200 250 – – 3.32 <1	<450 200 250 5000 7000 3.18 <1	<450 – – – – – – 150 200 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 150 125 – – –	<450 – – – – – – 150 150 – – –	<450 – – – – – – 200 225 – – –	<450 – – – – – – 150 100 – – –	<450 – – – – – – 75 50 – – –	<450 – – – – – – 75 50 – – –
BC	<450 150 200 4000 3000 2.36 <1	<450 150 150 – – 2.03 <1	<450 200 200 – – 2.41 <1	<450 200 250 – – 3.50 <1								
BB	<450 150 175 – – 1.45 <1	<450 150 175 – – 2.30 <1	<450 200 300 5000 6000 2.68 <1	<450 200 300 – – 3.03 <1	<450 – – – – – – 200 250 – – –	<450 – – – – – – 150 175 – – –	<450 – – – – – – 200 225 – – –	<450 – – – – – – 150 175 – – –	<450 – – – – – – 200 250 – – –	<450 – – – – – – 150 175 – – –	<450 – – – – – – 75 75 – – –	<450 – – – – – – 75 75 – – –
BA	<450 150 150 – – 1.56 <1	<450 150 150 – – 1.33 <1	<450 200 275 5000 5750 2.13 <1	<450 200 300 – – 2.90 <1								

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

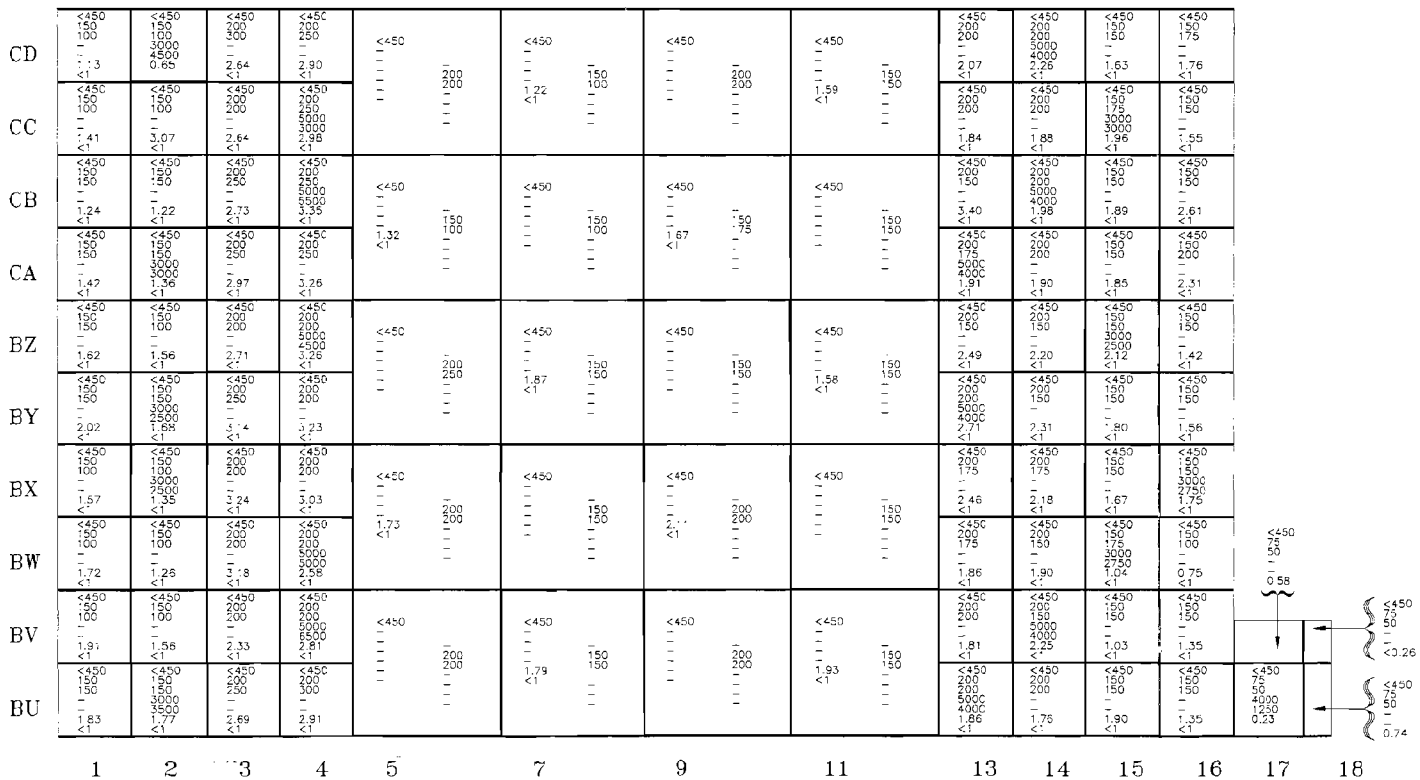
	1	2	3	4	5	7	9	11	13	14	15	16	17	18
BT	<450 150 150 – – 1.62 <1	<450 150 150 3000 3000 1.46 <1	<450 200 250 – – 2.78 <1	<450 200 250 – – 2.64 <1	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 200 225 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 200 175 – – 2.11 <1	<450 200 175 – – 1.64 <1	<450 150 100 – – 1.05 <1	<450 150 150 – – 1.69 <1	<450 75 50 4000 1500 <0.19	<450 75 50 4000 1500 0.64
BS	<450 150 150 – – 1.10 <1	<450 150 150 – – 2.37 <1	<450 200 300 – – 2.58 <1	<450 200 250 5000 4000 3.03 <1					<450 200 150 – – 1.92 <1	<450 200 200 5000 4000 1.46 <1	<450 150 100 3000 3000 1.74 <1	<450 200 175 – – 0.85 –	<450 75 50 – – <0.21	
BR	<450 150 200 – – 1.58 <1	<450 150 200 – – 1.3 <1	<450 200 300 – – 2.51 <1	<450 200 300 5000 5500 2.99 <1	<450 – – – – – – – – – – 150 200 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 160 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 200 200 – – 2.12 <1	<450 200 200 – – 1.92 <1	<450 150 100 – – 1.04 <1	<450 150 100 3000 3000 1.68 <1	<450 75 50 – – 0.29	
BQ	<450 150 200 – – 1.65 <1	<450 150 200 3000 3500 1.26 <1	<450 200 250 – – 2.32 <1	<450 200 250 – – 2.99 <1					<450 200 200 5000 4000 2.28 <1	<450 200 200 – – 1.97 <1	<450 150 100 – – 1.25 <1	<450 150 150 – – 0.90		
BP	<450 150 150 – – 1.94 <1	<450 150 200 – – 2.05 <1	<450 200 300 – – 3.79 <1	<450 200 300 5000 5000 3.22 <1	<450 – – – – – – – – – – 150 175 – – – –	<450 – – – – – – – – – – 150 175 – – – –	<450 – – – – – – – – – – 150 200 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 200 150 – – 3.23 <1	<450 200 175 – – 1.72 <1	<450 150 100 – – 1.38 <1	<450 150 175 – – 1.66 <1		
BO	<450 150 200 – – 1.53 <1	<450 150 200 3000 3500 2.02 <1	<450 200 350 – – 3.37 <1	<450 200 350 – – 2.75 <1					<450 200 150 5000 4500 2.32 <1	<450 200 200 – – 1.99 <1	<450 150 150 3000 2500 1.96 <1	<450 150 150 – – 1.51 <1		
BN	<450 150 150 – – 1.81 <1	<450 150 150 3000 3000 1.73 <1	<450 200 250 – – 2.54 <1	<450 200 250 – – 3.08 <1	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 100 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 200 175 5000 5000 3.30 <1	<450 200 150 – – 1.67 <1	<450 150 150 – – 1.60 <1	<450 150 150 – – 1.18 <1		
BM	<450 150 150 – – 1.92 <1	<450 150 175 – – 1.92 <1	<450 200 225 – – 2.92 <1	<450 200 250 5000 5000 3.74 <1					<450 200 200 – – 2.56 <1	<450 200 150 – – 2.13 <1	<450 150 100 3000 3000 1.81 <1	<450 150 100 – – 1.93 <1		
BL	<450 150 150 – – 2.27 <1	<450 150 150 – – 1.58 <1	<450 200 300 – – 2.62 <1	<450 200 300 5000 5500 3.08 <1	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 150 – – – –	<450 – – – – – – – – – – 150 100 – – – –	<450 – – – – – – – – – – 150 200 – – – –	<450 200 200 – – 2.05 <1	<450 200 125 – – 2.04 <1	<450 150 175 3000 2500 1.22 <1	<450 150 150 – – 1.47 <1		
BK	<450 150 200 – – 1.49 <1	<450 150 100 3000 3500 1.35 <1	<450 200 225 – – 2.31 <1	<450 200 250 – – 2.98 <1					<450 200 100 5000 4000 2.53 <1	<450 200 150 – – 1.86 <1	<450 150 100 – – 1.04 <1	<450 150 200 – – 1.52 <1		

Sample Data

<450 – IM-247/PD Results [$\mu\mu$C/20cm^2]
200 – IM-253/PD (HV-1 PHA) [pkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [pkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps



Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
CN	<450 150 175 – – 0.84	<450 150 200 3000 3000 1.20 <1	<450 200 300 – – 3.07 <1	<450 200 250 – – 2.64 <1	<450 – – – – 1.85 <1 – 150 175 – – –	<450 – – – – – 150 175 – – –	<450 – – – – 7.43 <1 – 150 150 – – –	<450 – – – – – 150 150 – – –	<450 200 100 – – 1.65 <1	<450 200 150 5000 4000 1.85 <1	<450 150 100 – – 2.76 <1	<450 150 100 – – 1.73 <1
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CK	<450 150 100 3000 3000 1.52 <1	<450 150 100 – – 1.48 <1	<450 200 200 – – 2.69 <1	<450 200 200 – – 2.94 <1					<450 150 150 – – 1.39 <1	<450 200 200 – – 1.71 <1	<450 150 100 – – 1.40 <1	<450 150 200 3000 3000 1.73 <1
CJ	<450 150 200 – – 3.14 <1	<450 150 200 3000 3500 2.27 <1	<450 200 250 – – 3.81 <1	<450 200 300 – – 3.54 <1	<450 – – – – 1.37 <1 – 150 150 – – –	<450 – – – – – 150 150 – – –	<450 – – – – 1.36 <1 – 200 200 – – –	<450 – – – – – 150 200 – – –	<450 200 100 – – 2.70 <1	<450 200 100 5500 4000 2.73 <1	<450 150 175 – – 1.54 <1	<450 150 150 – – 1.57 <1
CI	<450 150 150 – – 2.66 <1	<450 150 150 – – 1.30 <1	<450 200 200 – – 3.06 <1	<450 200 250 5000 5500 3.08 <1					<450 200 250 – – 1.75 <1	<450 200 250 5500 4000 2.39 <1	<450 150 200 – – 2.08 <1	<450 150 200 – – 2.48 <1
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CG	<450 150 150 – – 1.18 <1	<450 150 150 – – 0.93	<450 200 200 5000 5000 3.05 <1	<450 200 200 – – 2.92 <1					<450 200 200 – – 3.07 <1	<450 200 250 5000 5500 1.53 <1	<450 150 100 – – 1.99 <1	<450 150 100 – – <0.32
CF	<450 150 150 – – 0.84	<450 150 100 – – 1.15 <1	<450 200 150 – – 2.79 <1	<450 200 250 5000 4500 3.29 <1	<450 – – – – 1.19 <1 – 200 200 – – –	<450 – – – – – 150 150 – – –	<450 – – – – 0.74 – 200 200 – – –	<450 – – – – – 150 175 – – –	<450 200 150 – – 2.11 <1	<450 200 175 – – 2.52 <1	<450 200 175 – – 2.23 <1	<450 200 175 – – 1.78 <1
CE	<450 150 100 – – 1.79 <1	<450 150 100 3000 3500 1.09 <1	<450 200 250 – – 2.51 <1	<450 200 250 – – 3.33 <1					<450 200 175 5000 4000 2.26 <1	<450 200 200 – – 2.08 <1	<450 200 250 – – 1.31 <1	<450 200 175 5000 4000 1.50 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5		7		9		11		13	14	15	16
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CW	<450 150 100 3000 2500 1.57 <1	<450 150 100 – – 1.57 <1	<450 200 200 – – 3.32 <1	<450 200 200 – – 3.15 <1									<450 200 250 – – 2.44 <1	<450 200 100 5000 3500 2.58 <1	<450 150 100 – – 1.96 <1	<450 150 100 – – 1.79 <1
CV	<450 150 150 – – 1.21 <1	<450 150 200 – – 1.85 <1	<450 200 250 5000 7300 3.26 <1	<450 200 300 – – 3.02 <1	<450 – – – – – – – – – – – 150 100 – – – –		<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 150 100 – – – –		<450 150 100 – – 2.70 <1	<450 150 100 – – 2.29 <1	<450 150 100 3000 2000 1.72 <1	<450 150 100 – – 2.04 <1
CU	<450 150 150 – – 1.85 <1	<450 150 150 3000 3500 1.32 <1	<450 200 250 – – 3.79 <1	<450 200 250 – – 2.88 <1									<450 150 100 – – 2.43 <1	<450 200 100 5000 4000 2.10 <1	<450 150 100 – – 1.48 <1	<450 150 100 – – 0.94
CT	<450 150 150 – – 3.23 <1	<450 150 150 – – 2.21 <1	<450 150 150 5000 6000 3.01 <1	<450 150 150 – – 3.26 <1	<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 2.06 <1	– 150 125 – – – –	<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 3.32 <1	– 150 150 – – – –	<450 150 150 – – 2.16 <1	<450 200 100 – – 1.29 <1	<450 150 100 – – 1.50 <1	<450 150 100 3000 2500 2.02 <1
CS	<450 150 200 – – 1.62 <1	<450 150 150 – – 1.84 <1	<450 200 250 5000 6000 2.97 <1	<450 150 200 – – 3.90 <1									<450 200 150 5000 4000 2.52 <1	<450 200 100 – – 2.24 <1	<450 150 100 – – 1.32 <1	<450 150 100 3000 2500 1.84 <1
CR	<450 150 150 – – 1.81 <1	<450 150 150 – – 2.00 <1	<450 200 250 5000 6500 3.23 <1	<450 200 350 – – 4.33 <1	<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 150 175 – – – –		<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 150 150 – – – –		<450 200 150 – – 2.26 <1	<450 200 150 – – 2.48 <1	<450 150 100 – – 1.50 <1	<450 150 100 – – 0.53
CQ	<450 150 150 3000 4500 2.04 <1	<450 150 175 – – 1.34 <1	<450 200 250 – – 3.50 <1	<450 200 250 – – 3.93 <1									<450 200 150 – – 2.38 <1	<450 200 100 5000 3500 1.62 <1	<450 150 100 3000 2000 2.65 <1	<450 150 75 – – 0.92
CP	<450 150 150 – – 0.67	<450 150 150 – – 0.93	<450 200 225 5000 6000 3.43 <1	<450 200 250 – – 3.31 <1	<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 2.14 <1	– 150 150 – – – –	<450 – – – – – – – – – – – 150 150 – – – –		<450 – – – – – – – – – – – 1.31 <1	– 150 150 – – – –	<450 200 150 – – 2.16 <1	<450 200 150 – – 1.63 <1	<450 150 150 3000 2000 1.48 <1	<450 150 100 – – 2.09 <1
CO	<450 150 150 – – 1.04 <1	<450 150 200 3000 4000 1.75 <1	<450 200 200 – – 3.12 <1	<450 200 300 – – 2.76 <1									<450 200 150 – – 1.78 <1	<450 200 150 – – 2.06 <1	<450 150 100 – – 1.84 <1	<450 150 100 3000 2000 2.05 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DH	<450 150 150 – – 2.18 <1	<450 150 150 – – 0.81	<450 200 250 – – 2.95 <1	<450 200 300 5000 5000 2.66 <1	<450 – – –

6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DR	<450 150 150 – – 2.31 <1	<450 150 150 – – 1.48 <1	<450 200 275 – – 3.32 <1	<450 200 250 – – 3.36 <1	<450 – – –

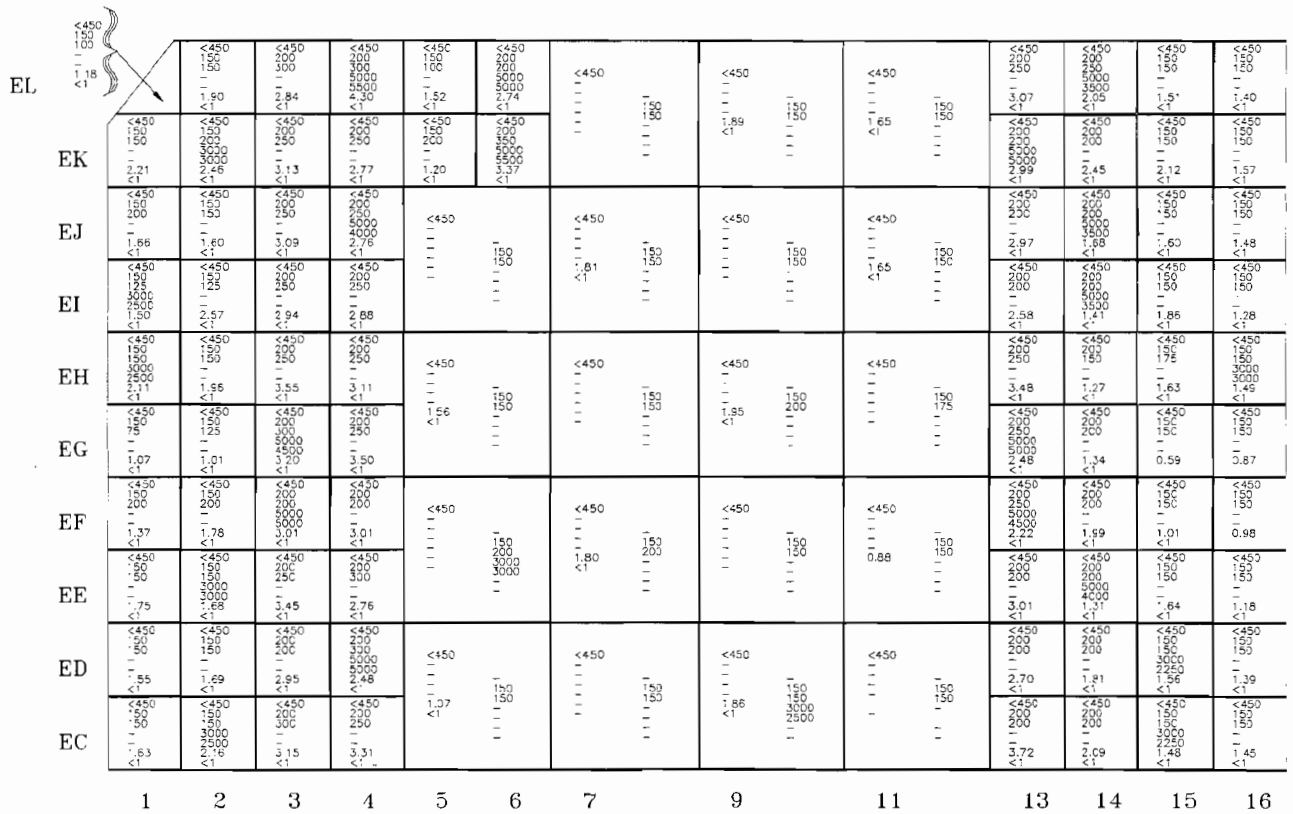
6. Pier H

e. Localized Grid Maps

	1	2	3	4	5	7	9	11	13	14	15	16
EB	<450 150 150 – – 2.05 <1	<450 150 200 3000 3000 1.93 <1	<450 200 300 – – 3.03 <1	<450 200 300 – – 3.57 <1	<450 – – –

6. Pier H

e. Localized Grid Maps

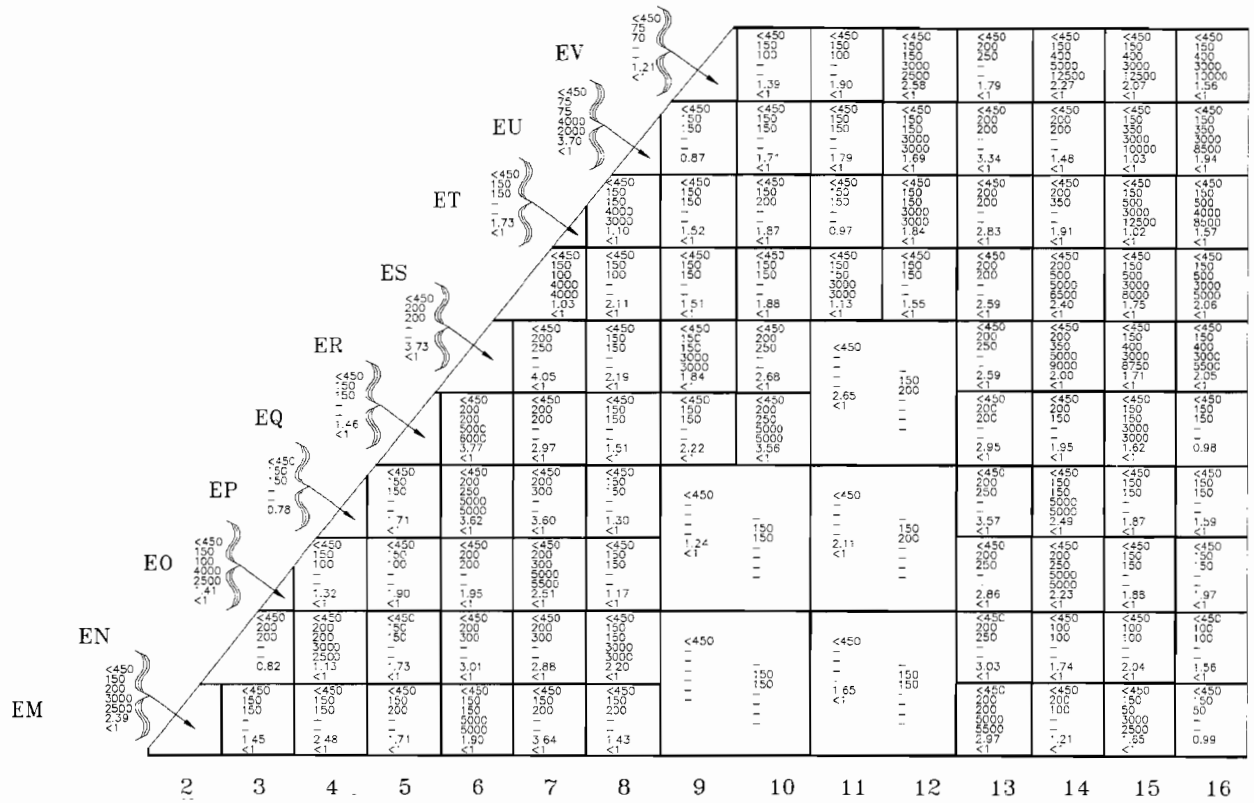


Sample Data

<450 – IM-247/PD Results [µCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7300 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps

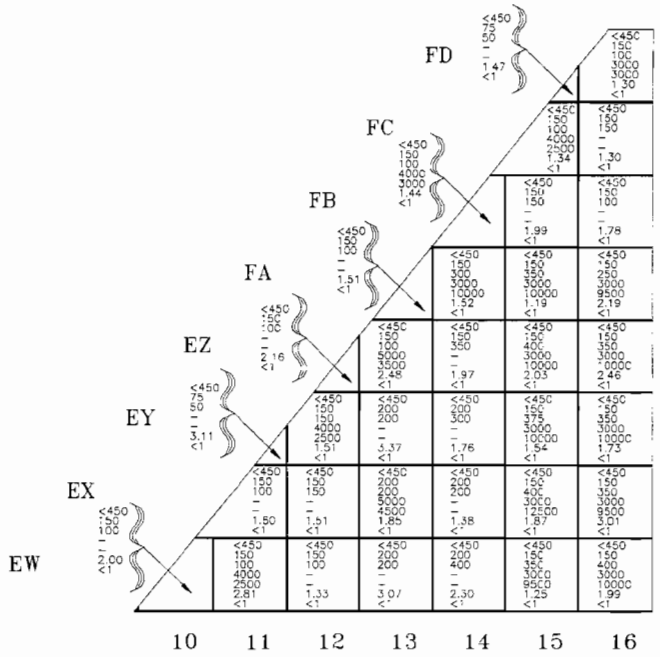


Sample Data

<450 – IM-247/PD Results [µµCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

6. Pier H

f. Prior Photograph

Midway viewing head of pier.

6. Pier H

f. Prior Photograph

Midway viewing end of pier.

6. Pier H

g. After Photograph

Midway viewing head of pier.

6. Pier H

g. After Photograph

Midway viewing end of pier.

7. Pier J

a. Introduction:

Pier J is located adjacent to the intersection of River Road and Tenth Street, in grid E-9 of the Charleston Naval Shipyard map (Figure 10).

(1) **Description:**

Pier J is a 750' long by 80' wide by 11' high wooden pier with an asphalt and cement covering.

(2) **Brief History:**

(a) **Use:** In addition to a berthing area for nuclear submarines, Pier J was the location of a refueling training complex and a spent fuel transfer facility. Radioactive material was regularly transported over the pier.

(b) **Radiological History:** Areas of Pier J have been controlled as radiation areas and radioactive material storage areas. Localized controlled surface contamination areas were established to support fuel transfer. A spill of radioactive liquid caused a spread of contamination of several thousand $\mu\mu Ci/100cm^2$. All spill areas were decontaminated and surface contamination levels were maintained less than $450\mu\mu Ci/100cm^2$.

(3) **Survey Requirements:**

(a) Pier and Berthing Area survey.
(b) Group 3 Survey

b. Discussion:

Pier J was divided into 2568 grids. The major portion of Pier J was surveyed as a radioactive material (RAM) storage area. The RAM storage areas received a Group 3 Survey and was divided into 5' by 5' grids.

Approximately 40' at the foot of the pier was surveyed as a Pier and Berthing Area, which was divided into approximately 10' by 10' grids. Each of these grids were subdivided into two 3' by 3' subsections. These subsections were located in the area of highest potential. Each grid had its own unique designator.

In the RAM storage areas, 100% of all grids were surveyed with the IM-247/PD and the IM-253/PD (HV-1 PHA). A minimum of 25% of all grids were surveyed with the IM-253/PD (HV-2 GROSS). The former guard shack at the foot of the pier did not require survey since radiological material was not transported over this structure. Additionally, solid material samples were taken from each grid.

7. Pier J

At the foot of Pier J one subsection per grid received a survey with the IM-247/PD and the other subsection of each grid received a survey with the IM-253/PD (HV-1 PHA). Additionally, solid material samples were taken from a minimum of 50% of the 10' by 10' grids.

A total of 2549 solid material samples were taken from Pier J. The solid material samples were removed from the location indicating the area of highest potential. The following typical naturally occurring radionuclides were identified during isotopic analysis of the solid material samples: lead-212, lead-214, thallium-208, and potassium-40.

Individual backgrounds were used for Pier J cement and asphalt. Due to variations in natural radioactivity among the construction materials, different background levels exist. The IM-247/PD, IM-253/PD (HV-1 PHA and HV-2 GROSS), backgrounds of 40, 150, 4250 counts per minute used for the cement were based on the radiation levels obtained from Building 1605. The IM-247/PD, IM-253/PD (HV-1 PHA and HV-2 GROSS), backgrounds of 60, 200, 6000 counts per minute used for the asphalt were based on the radiation levels obtained from Building NS-53.

c. Summary:

Surveys performed with the IM-247/PD did not detect areas greater than 450$\mu\mu$Ci/20cm^2.

Surveys performed with the IM-253/PD (HV-1 PHA) detected 181 areas greater than or equal to twice background.

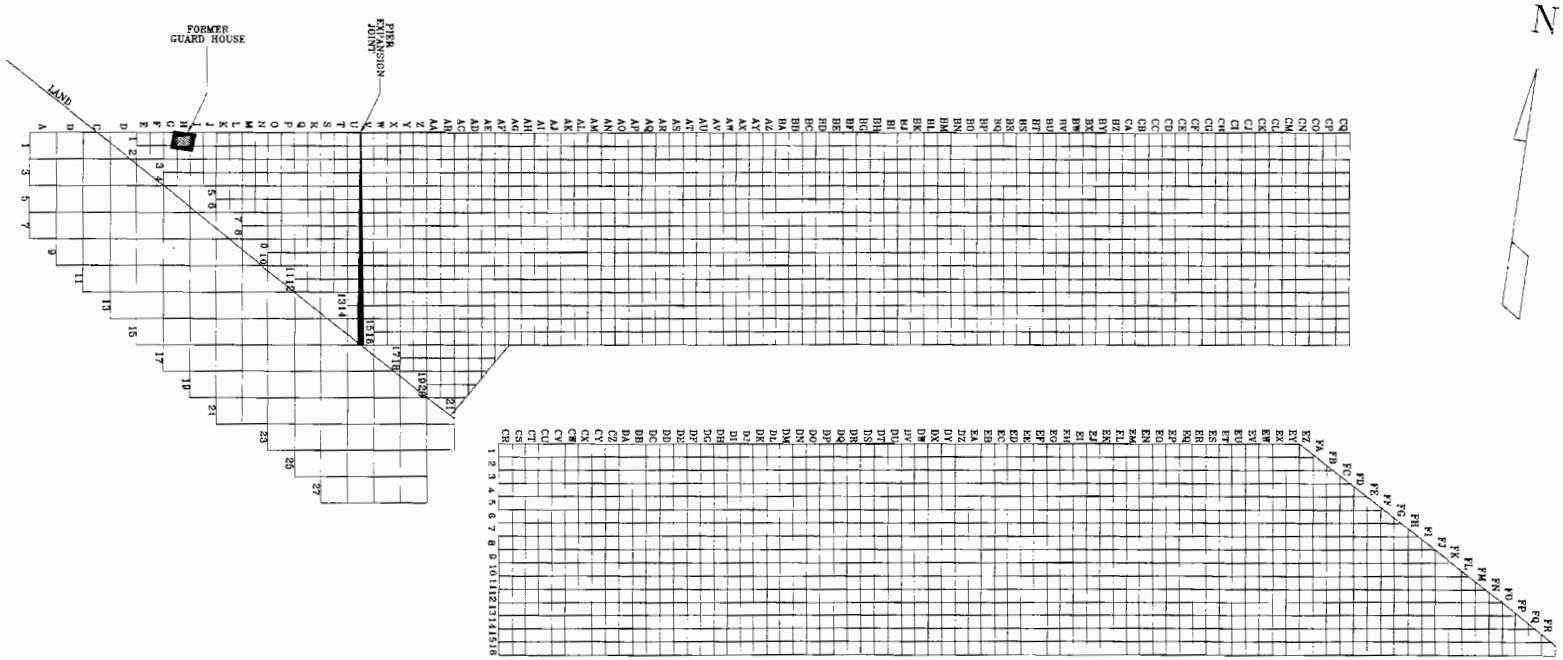
Surveys performed with the IM-253/PD (HV-2 GROSS) detected 11 areas greater than or equal to twice background.

Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from less than minimum detectable activity of 0.27 pCi/g to a high of 12.61 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that solid material samples were less than 1 pCi/g. However, 10 samples with traces of Co-60 greater than the minimum detectable activity were identified. For each sample, the extent of Co-60 radioactivity was identified by taking additional solid material samples in the surrounding vicinity. Due to the small effort involved, the shipyard remediated each area where Co-60 was identified. Remeditation consisted of excavation of material in the identifed areas. Following remediation, additional solid material samples were taken in the areas and all were less than 1 pCi/g specific Co-60. No traces of Co-60 were identified.

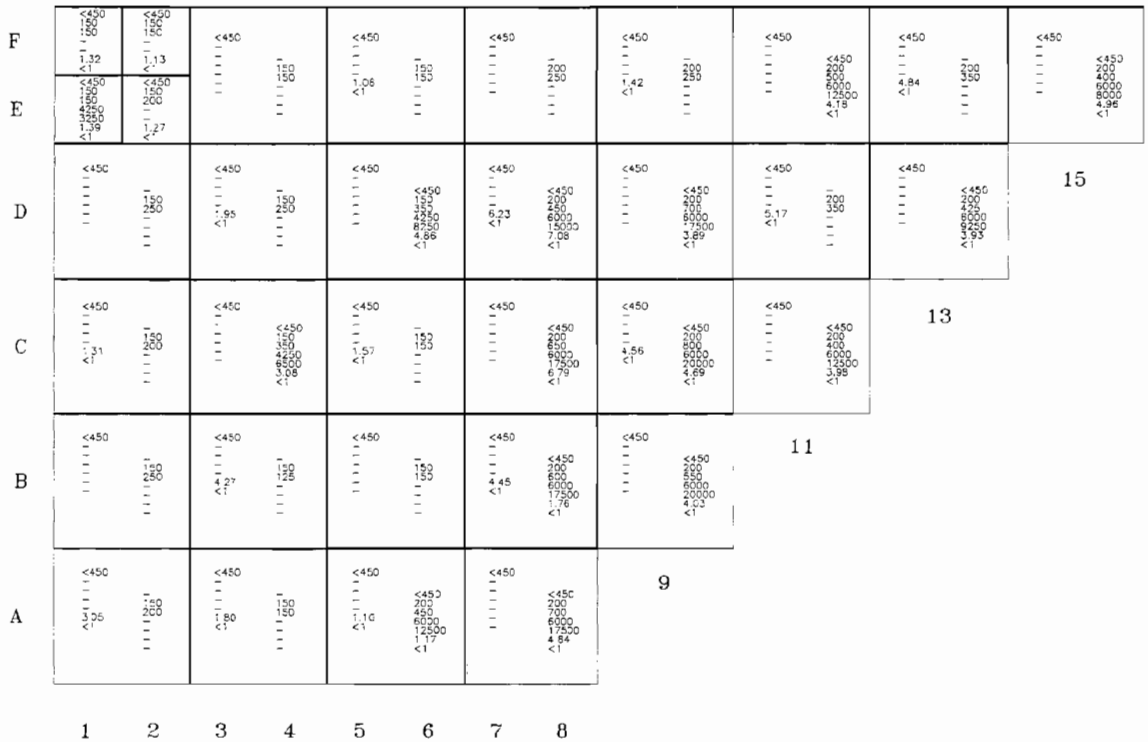
7. Pier J

d. Site Map



7. Pier J

e. Localized Grid Maps

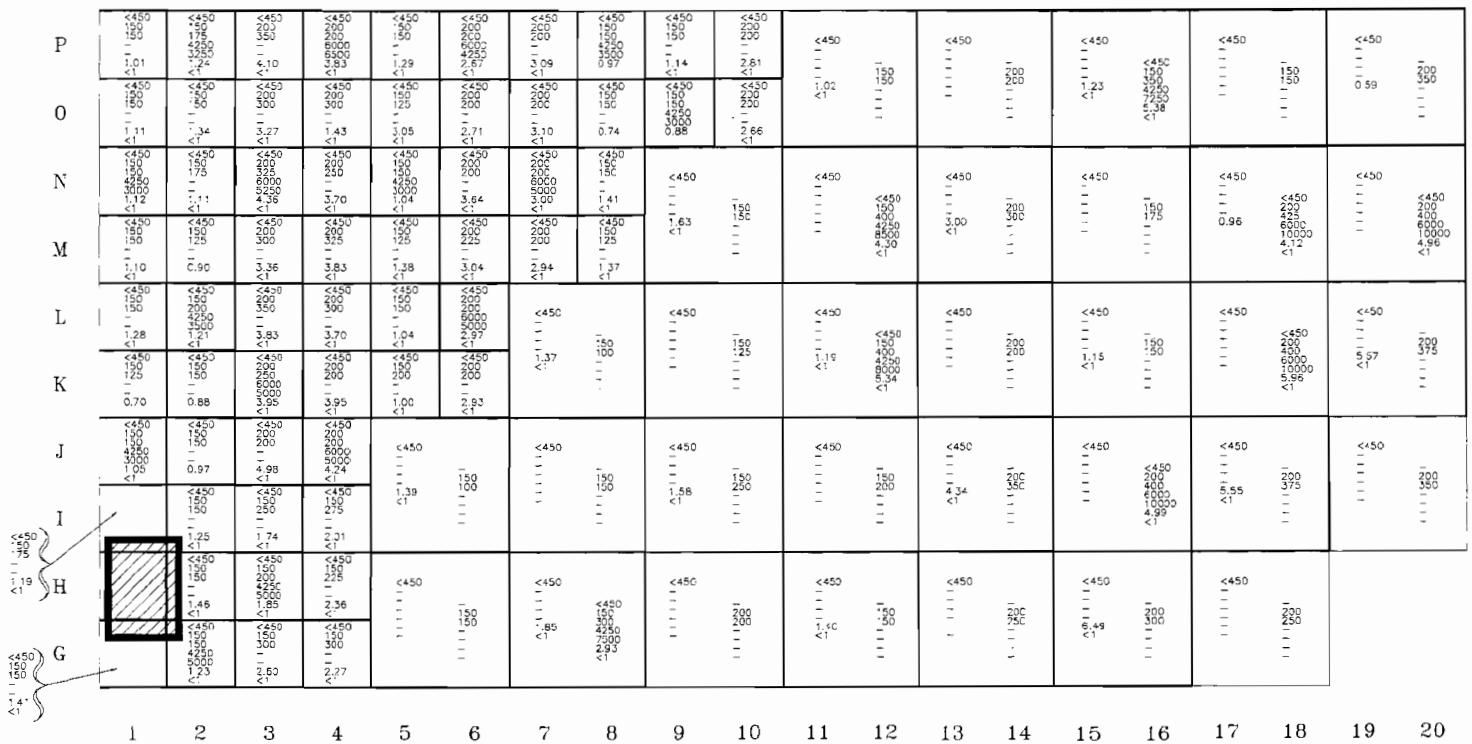


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

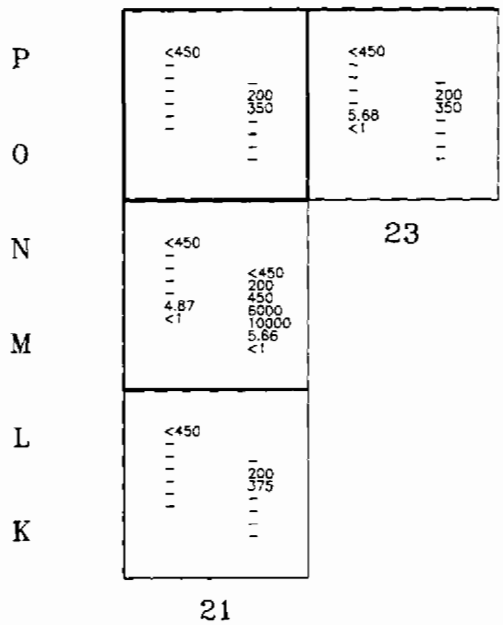


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

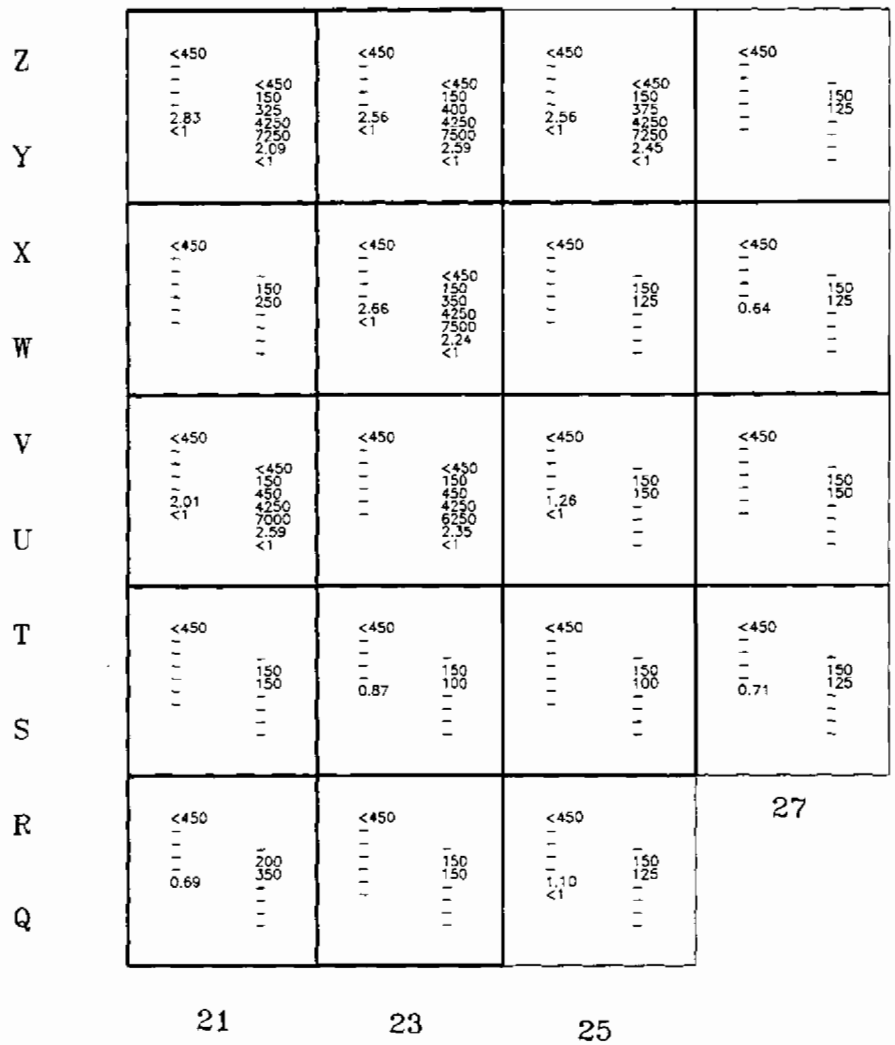
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Z	<450 150 125 – – 0.90	<450 150 150 – – 1.00 <1	<450 200 250 – – 4.83 <1	<450 200 200 – – 3.08 <1	<450 150 100 – – 0.78	<450 200 175 – – 3.64 <1	<450 200 175 – – 3.40 <1	<450 150 150 – – 1.31 <1	<450 150 175 – – 0.91	<450 200 200 – – 3.68 <1	<450 200 200 – – 4.11 <1	<450 200 200 – – 3.93 <1	<450 200 350 – – 5.91 <1	<450 200 300 – – 6.37 <1	<450 150 100 – – 0.91	<450 150 125 – – 0.62	<450 150 100 – – 0.86	<450 150 100 – – 0.75	<450 – – – –	– 150 250 – – –
Y	<450 150 175 4250 3000 2.68 <1	<450 150 150 – – 1.34 <1	<450 200 350 6000 6500 2.57 <1	<450 200 200 – – 5.08 <1	<450 150 125 4250 3500 1.27 <1	<450 200 175 – – 3.08 <1	<450 200 175 6000 4000 2.78 <1	<450 150 175 – – 1.09 <1	<450 150 150 4250 3000 0.93	<450 200 200 – – 3.14 <1	<450 200 150 6000 4500 3.72 <1	<450 200 200 – – 4.58 <1	<450 200 375 6000 5000 5.28 <1	<450 200 350 – – 5.02 <1	<450 150 100 4250 2500 0.50	<450 150 75 – – 0.86	<450 150 125 – – 1.08 <1	<450 150 175 4250 3000 0.71		
X	<450 150 100 – – 0.76	<450 150 150 – – 0.55	<450 200 350 – – 6.05 <1	<450 200 250 – – 3.93 <1	<450 150 100 – – 1.10 <1	<450 150 150 – – 0.85	<450 200 200 – – 3.45 <1	<450 150 125 – – 1.10 <1	<450 150 150 – – 1.13 <1	<450 200 200 – – 3.59 <1	<450 200 150 – – 3.92 <1	<450 150 100 – – 0.55	<450 200 375 – – 4.01 <1	<450 200 375 – – 3.68 <1	<450 150 75 – – 3.18 <1	<450 150 100 – – 1.24 <1	<450 – – – –	– 150 100 – –	<450 – – – –	– 150 250 – –
W	<450 150 100 – – 0.36	<450 150 100 4250 3000 1.15 <1	<450 200 200 – – 4.12 <1	<450 200 250 6000 6000 3.94 <1	<450 150 100 – – 0.92	<450 200 200 6000 5000 2.84 <1	<450 200 200 – – 2.89 <1	<450 150 175 4250 3500 1.32 <1	<450 150 150 – – 1.42 <1	<450 200 175 – – 3.84 <1	<450 200 200 – – 3.18 <1	<450 200 250 – – 4.09 <1	<450 200 300 – – 3.79 <1	<450 200 300 – – 4.12 <1	<450 150 75 – – 0.83	<450 150 100 – – 1.32 <1			<450 – – 2.28 <1	– 150 250 – –
V	<450 150 150 4250 3000 1.09 <1	<450 150 125 – – 0.85	<450 200 300 6000 6500 5.65 <1	<450 200 300 – – 3.52 <1	<450 150 150 4250 4000 1.20 <1	<450 200 200 – – 3.36 <1	<450 200 200 6000 5000 3.10 <1	<450 150 125 – – 0.94	<450 150 150 4250 2750 1.07 <1	<450 200 200 – – 3.15 <1	<450 200 200 – – 5.42 <1	<450 150 125 – – 1.41 <1	<450 200 300 6000 5500 3.43 <1	<450 200 300 – – 4.62 <1	<450 – – – –	– 150 200 – –	<450 – – – 0.90	– 150 200 – –	<450 – – – –	<450 150 450 4250 8000 4.69 <1
U	<450 150 100 – – 1.53 <1	<450 150 100 – – 1.01 <1	<450 200 300 – – 6.47 <1	<450 200 300 – – 5.13 <1	<450 150 150 – – 1.33 <1	<450 200 200 – – 2.84 <1	<450 200 200 – – 3.91 <1	<450 150 125 – – 1.10 <1	<450 150 150 – – 2.54 <1	<450 200 350 – – 3.69 <1	<450 200 350 6000 6500 3.47 <1	<450 150 200 – – 0.86	<450 200 350 – – 4.33 <1	<450 200 350 6000 6500 4.44 <1						
T	<450 150 150 – – 1.57 <1	<450 150 150 4250 3000 1.42 <1	<450 200 250 – – 5.43 <1	<450 200 300 6000 7000 4.66 <1	<450 150 100 – – 1.59 <1	<450 200 250 6000 5000 3.24 <1	<450 200 200 – – 3.41 <1	<450 150 150 4250 3500 0.80	<450 150 150 – – 1.26 <1	<450 200 200 6000 4500 3.83 <1	<450 200 200 – – 3.15 <1	<450 150 125 – – 0.56	<450 – – – –		<450 – – – 0.97	– 150 150 – –	<450 – – – –	– 150 100 – –	<450 – – – 1.02 <1	– 150 100 – –
S	<450 150 150 4250 3250 1.80 <1	<450 150 150 – – 1.19 <1	<450 200 250 6000 5000 3.84 <1	<450 200 275 – – 3.79 <1	<450 150 150 4250 3000 1.24 <1	<450 200 200 – – 3.66 <1	<450 200 250 6000 3000 3.64 <1	<450 150 200 – – 0.86	<450 150 150 4250 5500 0.97	<450 200 225 – – 3.78 <1	<450 200 200 – – 3.56 <1	<450 150 150 4250 3500 1.28 <1								
R	<450 150 150 – – 1.00 <1	<450 150 150 – – 1.12 <1	<450 200 300 – – 4.21 <1	<450 200 300 – – 5.41 <1	<450 150 150 – – 0.68	<450 200 250 – – 3.68 <1	<450 200 200 – – 2.66 <1	<450 150 150 – – 1.03 <1	<450 150 225 – – 1.04 <1	<450 200 200 – – 3.37 <1	<450 200 200 – – 6.60 <1	<450 150 125 – – 1.52 <1	<450 – – – –		<450 – – – –	– 150 250 – –	<450 – – – –	– 150 125 – –	<450 – – – –	– 150 150 – –
Q	<450 150 150 – – 1.16 <1	<450 150 100 – – 1.19 <1	<450 200 350 – – 3.97 <1	<450 200 225 – – 3.38 <1	<450 150 150 – – 1.19 <1	<450 200 200 – – 3.27 <1	<450 200 200 – – 3.24 <1	<450 150 150 – – 1.17 <1	<450 150 150 – – 2.08 <1	<450 200 175 6000 4750 4.07 <1	<450 200 200 6000 5000 2.94 <1	<450 150 125 – – 1.09 <1	4.27 <1				1.01 <1			

Sample Data

<450 – IM-247/PD Results (μμCi/20cm²)
200 – IM-253/PD (HV-1 PHA) (bkg)
300 – IM-253/PD (HV-1 PHA) (cpm)
7000 – IM-253/PD (HV-2 GROSS) (bkg)
7300 – IM-253/PD (HV-2 GROSS) (cpm)
1.82 – MCA Gross Gamma Eq. Co-60 (pCi/g)
<1 – MCA Specific Co-60 Results (pCi/g)

7. Pier J

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AK	<450 150 150 – – 1.17 <1	<450 150 150 – – 1.39 <1	<450 200 350 – – 5.05 <1	<450 200 325 – – 2.74 <1	<450 150 125 – – 1.40 <1	<450 200 250 – – 4.12 <1	<450 200 300 – – 3.52 <1	<450 150 250 – – 2.75 <1	<450 200 300 – – 3.67 <1	<450 200 350 – – 4.28 <1	<450 200 300 – – 3.49 <1	<450 150 300 – – 1.65 <1	<450 200 450 – – 3.98 <1	<450 200 600 – – 3.86 <1	<450 150 250 – – 1.81 <1	<450 150 250 – – 1.45 <1				
AJ	<450 150 125 4250 3000 2.28 <1	<450 150 150 – – 2.54 <1	<450 200 350 6000 5000 5.55 <1	<450 200 325 – – 2.82 <1	<450 150 100 4250 2750 0.98	<450 200 225 – – 2.87 <1	<450 200 150 6000 5000 2.68 <1	<450 150 250 – – 2.46 <1	<450 150 300 4250 6000 1.58 <1	<450 200 250 – – 2.98 <1	<450 200 200 6000 6000 3.25 <1	<450 150 125 – – 0.95	<450 200 300 6000 6750 4.51 <1	<450 200 250 – – 3.25 <1	<450 150 200 4250 4250 1.48 <1	<450 150 200 – – 1.35 <1				
AI	<450 150 175 – – 1.14 <1	<450 150 150 – – 5.67 <1	<450 200 350 – – 0.98	<450 200 300 – – 4.37 <1	<450 150 75 – – 1.37 <1	<450 150 100 – – 0.95	<450 150 150 – – 1.73 <1	<450 150 150 – – 1.13 <1	<450 150 150 – – 2.83 <1	<450 200 300 – – 4.20 <1	<450 200 275 – – 5.56 <1	<450 200 200 – – 2.19 <1	<450 200 325 – – 4.78 <1	<450 200 325 – – 3.41 <1	<450 150 200 – – 2.04 <1	<450 150 200 – – 2.33 <1				
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AF	<450 150 150 4250 3000 1.47 <1	<450 150 200 – – 1.57 <1	<450 200 200 6000 10000 4.09 <1	<450 200 200 – – 3.77 <1	<450 150 75 4250 3250 1.20 <1	<450 200 200 – – 2.19 <1	<450 200 225 6000 5000 3.43 <1	<450 150 150 – – 1.33 <1	<450 150 150 4250 3000 1.59 <1	<450 200 225 – – 4.08 <1	<450 200 225 6000 6500 3.32 <1	<450 200 250 – – 3.71 <1	<450 200 250 6000 6000 3.99 <1	<450 200 300 – – 3.93 <1	<450 150 200 4250 3250 1.70 <1	<450 150 150 – – 1.41 <1				
AE	<450 150 150 – – 1.84 <1	<450 150 150 4250 3500 2.69 <1	<450 200 300 – – 6.95 <1	<450 200 350 6000 5000 5.27 <1	<450 150 75 – – 3.47 <1	<450 200 200 6000 5500 3.60 <1	<450 200 200 – – 3.84 <1	<450 150 150 4250 5000 1.41 <1	<450 200 150 – – 1.46 <1	<450 200 200 6000 6000 3.57 <1	<450 200 200 – – 5.21 <1	<450 200 350 6000 7000 4.89 <1	<450 200 350 – – 5.00 <1	<450 200 300 6000 6000 4.06 <1	<450 200 200 – – 2.07 <1	<450 200 200 – – 3.85 <1	<450 150 150 – – 1.00 <1				
AD	<450 150 125 4250 3500 3.74 <1	<450 150 150 – – 0.50	<450 200 350 6000 6500 5.51 <1	<450 200 250 – – 7.51 <1	<450 150 100 4250 3250 2.58 <1	<450 200 150 – – 2.42 <1	<450 200 200 6000 4500 4.91 <1	<450 150 150 – – 2.22 <1	<450 150 150 4250 3500 1.32 <1	<450 200 200 – – 3.05 <1	<450 200 150 6000 5500 4.08 <1	<450 200 200 – – 4.17 <1	<450 200 250 6000 6500 4.12 <1	<450 200 275 – – 3.94 <1	<450 150 200 – – 1.55 <1	<450 150 150 6000 4000 4.96 <1	<450 150 100 – – 1.08 <1	<450 150 125 – – 0.57	<450 150 150 4250 3000 1.44 <1	
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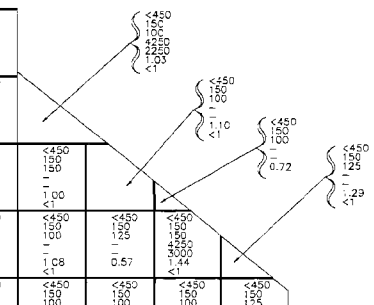
AB	<450 150 100 – – 2.55 <1	<450 150 125 – – 1.60	<450 200 200 – – 6.00 <1	<450 200 250 – – 4.46 <1	<450 150 200 – – 1.25 <1	<450 150 175 – – 1.75 <1	<450 150 175 – – 1.61 <1	<450 150 125 – – 1.83 <1	<450 150 125 – – 2.31 <1	<450 150 125 – – 1.88 <1	<450 200 125 – – 3.17 <1	<450 200 225 – – 4.40 <1	<450 200 350 – – 2.86 <1	<450 200 350 – – 4.26 <1	<450 150 125 4250 2750 1.14 <1	<450 150 100 – – 1.17 <1	<450 150 125 – – 1.12 <1	<450 150 125 – – 2.00 <1	<450 150 150 4250 3500 0.87	<450 150 125 – – 0.77
AA	<450 150 125 – – 1.13 <1	<450 150 125 4250 4000 1.18 <1	<450 200 250 – – 5.27 <1	<450 200 250 6000 10000 3.59 <1	<450 150 225 – – 0.90	<450 150 200 4250 6000 1.75 <1	<450 150 150 – – 2.77 <1	<450 150 175 4250 4500 1.71 <1	<450 150 125 – – 2.04 <1	<450 200 200 6000 5000 3.58 <1	<450 150 125 – – 1.19 <1	<450 200 200 6000 5500 4.18 <1	<450 200 300 – – 4.50 <1	<450 200 300 6000 7500 3.74 <1	<450 150 100 – – 0.88	<450 150 125 4250 2500 0.72	<450 150 100 4250 2750 0.92	<450 150 100 – – 1.61 <1	<450 150 125 – – 1.76 <1	<450 150 125 – – 1.72 <1

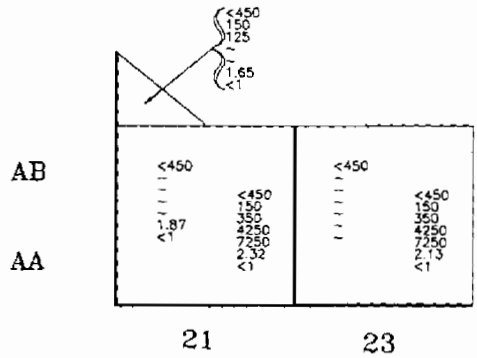


Sample Data

<450 – IM-247/PD Results [μμCu20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results (μμCi/20cm²)
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
AV	<450 150 200 – – 1.00 <1	<450 150 150 4250 3000 1.38 <1	<450 200 350 – – 3.70 <1	<450 200 325 6000 5500 2.96 <1	<450 200 300 – – 3.65 <1	<450 200 325 6000 7000 4.33 <1	<450 200 350 – – 4.10 <1	<450 150 200 4250 3500 1.13 <1	<450 150 225 – – 1.42 <1	<450 200 250 6000 6500 3.76 <1	<450 200 200 – – 3.50 <1	<450 150 175 4250 3000 0.76	<450 200 225 – – 5.52 <1	<450 200 225 6000 4500 5.24 <1	<450 150 100 – – 0.87	<450 150 100 4250 4500 0.80
AU	<450 150 200 4250 3000 0.93	<450 150 200 – – 1.26 <1	<450 200 400 6000 6000 3.97 <1	<450 200 300 – – 3.42 <1	<450 200 300 6000 7500 2.53 <1	<450 200 300 – – 3.58 <1	<450 200 300 6000 6500 2.99 <1	<450 150 125 – – 0.90	<450 150 125 4250 3000 1.03 <1	<450 200 100 – – 2.46 <1	<450 200 150 6000 2500 2.92 <1	<450 150 75 – – 1.21 <1	<450 200 275 6000 6000 4.73 <1	<450 200 200 – – 2.55 <1	<450 150 150 4250 3000 0.76 <1	<450 150 100 – – 1.12 <1
AT	<450 150 125 – – 0.53	<450 150 150 – – 0.90	<450 200 375 – – 4.19 <1	<450 200 300 – – 3.52 <1	<450 150 175 – – 1.05 <1	<450 200 300 – – 3.57 <1	<450 200 375 – – 3.55 <1	<450 200 300 – – 2.89 <1	<450 150 150 – – 0.87	<450 200 225 – – 2.94 <1	<450 200 200 – – 4.11 <1	<450 150 150 – – 1.02 <1	<450 200 250 – – 4.72 <1	<450 200 250 – – 4.30 <1	<450 150 125 – – 1.27 <1	<450 150 125 – – 0.77
AS	<450 150 200 – – 1.23 <1	<450 150 150 – – 1.06 <1	<450 200 350 – – 3.88 <1	<450 200 350 – – 4.68 <1	<450 200 150 – – 1.22 <1	<450 200 300 – – 3.95 <1	<450 200 300 – – 4.21 <1	<450 200 200 – – 4.05 <1	<450 150 150 – – 1.87 <1	<450 200 150 – – 3.72 <1	<450 200 225 – – 2.08 <1	<450 150 175 – – 1.31 <1	<450 200 350 – – 4.63 <1	<450 200 300 – – 3.40 <1	<450 150 150 – – 0.97	<450 150 150 – – 1.78 <1
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AQ	<450 150 125 4250 2500 0.68	<450 150 125 – – 0.38	<450 200 350 6000 5000 4.05 <1	<450 200 350 – – 3.9[illegible] <1	<450 200 100 4250 4500 0.34	<450 200 300 – – 2.90 <1	<450 200 300 6000 5000 3.49 <1	<450 200 300 – – 4.66 <1	<450 150 175 4250 4000 0.99	<450 200 200 – – 2.39 <1	<450 200 200 6000 3000 3.21 <1	<450 150 150 – – 1.29 <1	<450 200 275 6000 5750 3.72 <1	<450 200 350 – – 4.67 <1	<450 150 150 4250 3000 1.23 <1	<450 150 150 – – 1.17 <1
AP	<450 150 250 – – 1.00 <1	<450 150 250 – – 0.83	<450 200 350 – – 5.47 <1	<450 200 350 – – 4.06 <1	<450 200 100 – – 0.80	<450 200 125 – – 3.51 <1	<450 200 125 – – 3.30 <1	<450 200 200 – – 3.95 <1	<450 200 200 – – 4.28 <1	<450 200 150 – – 7.59 <1	<450 200 200 – – 4.31 <1	<450 150 175 – – 1.61 <1	<450 200 250 – – 3.89 <1	<450 200 300 – – 3.32 <1	<450 150 150 – – 0.94	<450 150 400 – – 0.62
AO	<450 150 200 – – 1.04 <1	<450 150 200 4250 3000 1.09 <1	<450 200 175 – – 5.03 <1	<450 200 150 6000 6000 5.26 <1	<450 200 100 – – 1.75 <1	<450 200 275 6000 4750 3.33 <1	<450 200 250 – – 3.76 <1	<450 200 350 6000 6500 4.52 <1	<450 150 200 – – 4.66 <1	<450 150 175 4250 5000 1.36 <1	<450 200 200 – – 4.74 <1	<450 150 175 4250 3500 1.85 <1	<450 200 250 – – 4.58 <1	<450 200 325 6000 6000 4.22 <1	<450 150 200 – – 0.98	<450 150 200 4250 4250 1.87 <1
AN	<450 150 100 – – 0.55	<450 150 100 – – 1.29 <1	<450 200 350 – – 3.40 <1	<450 200 300 – – 4.34 <1	<450 200 125 – – 1.83 <1	<450 200 200 – – 3.24 <1	<450 200 250 – – 3.5[illegible] <1	<450 200 350 – – 3.60 <1	<450 200 250 – – 3.79 <1	<450 200 250 – – 3.45 <1	<450 200 150 – – 3.06 <1	<450 150 150 – – 0.85	<450 200 300 – – 4.65 <1	<450 200 350 – – 3.91 <1	<450 150 200 – – 6.28 <1	<450 150 200 – – 1.59 <1
AM	<450 150 200 4250 3000 0.93	<450 150 200 – – 1.26 <1	<450 200 400 6000 5500 5.38 <1	<450 200 300 – – 3.4[illegible] <1	<450 200 200 4250 4500 0.93	<450 200 200 – – 2.95 <1	<450 200 250 6000 5250 3.53 <1	<450 200 350 – – 3.24 <1	<450 200 350 6000 6500 3.82 <1	<450 200 300 – – 3.91 <1	<450 200 250 6000 5500 2.97 <1	<450 150 200 – – 1.06 <1	<450 200 275 6000 6000 3.58 <1	<450 200 325 – – 3.28 <1	<450 150 200 4250 4250 1.22 <1	<450 150 200 – – 1.27 <1
AL	<450 150 125 – – 1.46 <1	<450 150 150 4250 3000 1.32 <1	<450 200 150 – – 6.07 <1	<450 200 300 6000 5500 4.73 <1	<450 200 150 – – 1.19 <1	<450 200 200 6000 5000 2.00 <1	<450 200 250 – – 3.38 <1	<450 150 250 4250 3500 1.18 <1	<450 200 400 – – 2.79 <1	<450 200 400 6000 7000 4.78 <1	<450 200 250 – – 3.66 <1	<450 150 150 4250 3500 1.30 <1	<450 200 250 – – 4.60 <1	<450 200 255 6000 6000 3.80 <1	<450 150 200 – – 1.25 <1	<450 150 250 4250 3000 0.77

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BG	<450 150 150 – – 0.71	<450 150 200 4250 3250 1.54 <1	<450 200 275 6000 6000 4.48 <1	<450 200 275 6000 6000 5.13 <1	<450 200 175 6000 5500 2.50 <1	<450 200 175 6000 5500 2.05 <1	<450 200 300 – – 4.10 <1	<450 200 250 6000 4000 5.43 <1	<450 200 250 – – 5.80 <1	<450 200 300 6000 6500 6.36 <1	<450 200 350 – – 5.46 <1	<450 150 150 4250 4250 0.99 <1	<450 200 200 – – 4.64 <1	<450 200 100 175 6000 5000 4.30 <1	<450 150 125 – – 1.05 <1	<450 150 100 4250 2500 1.21 <1
BF	<450 150 125 4250 3000 0.80	<450 150 125 4250 3000 0.63	<450 200 300 6000 7500 3.55 <1	<450 200 300 6000 8000 4.62 <1	<450 150 150 4250 6750 0.36	<450 200 300 6000 6500 3.03 <1	<450 200 200 6000 4750 2.40 <1	<450 150 175 – – 1.38 <1	<450 200 175 6000 4000 5.26 <1	<450 200 200 – – 5.58 <1	<450 200 200 6000 6000 5.27 <1	<450 150 175 – – 1.26 <1	<450 200 250 6000 5500 4.81 <1	<450 200 225 – – 4.86 <1	<450 150 100 4250 2500 1.26 <1	<450 150 150 – – 1.54 <1
BE	<450 150 100 – – 0.43	<450 150 100 – – 0.31	<450 200 300 – – 3.85 <1	<450 200 300 – – 4.85 <1	<450 150 100 – – 1.18 <1	<450 200 150 – – 3.47 <1	<450 200 150 – – 4.72 <1	<450 150 100 – – 1.14 <1	<450 150 100 – – 1.32 <1	<450 200 300 – – 3.72 <1	<450 200 200 – – 3.91 <1	<450 150 100 – – 0.92	<450 200 225 – – 3.51 <1	<450 200 175 – – 3.98 <1	<450 150 100 – – <0.28	<450 150 100 – – <0.27
BD	<450 150 150 4250 2500 1.32 <1	<450 150 150 4250 2500 0.72	<450 200 250 5000 5500 4.54 <1	<450 200 300 6000 5750 4.74 <1	<450 200 300 6000 5000 4.40 <1	<450 200 300 6000 5000 3.91 <1	<450 200 225 – – 3.83 <1	<450 150 200 4250 2750 1.64 <1	<450 150 150 – – 1.03 <1	<450 200 250 6000 5750 1.72 <1	<450 150 150 – – 2.18 <1	<450 200 275 4250 2000 0.83	<450 200 150 – – 3.09 <1	<450 200 150 6000 4750 3.40 <1	<450 150 125 – – 1.54 <1	<450 150 100 4250 2500 0.63 <1
BC	<450 150 200 – – 1.20 <1	<450 150 200 – – 0.89	<450 200 250 – – 3.02 <1	<450 200 250 – – 3.96 <1	<450 200 250 – – 5.12 <1	<450 200 175 – – 3.24 <1	<450 200 200 – – 2.25 <1	<450 150 125 – – 1.32 <1	<450 150 125 – – 0.98	<450 200 250 – – 2.99 <1	<450 200 250 – – 3.23 <1	<450 150 125 – – 1.16 <1	<450 200 250 – – 3.77 <1	<450 200 150 – – 4.07 <1	<450 150 125 – – 0.77	<450 150 100 – – 0.60
BB	<450 150 125 4250 2500 1.22 <1	<450 150 150 – – 1.35	<450 200 300 5000 5000 3.46 <1	<450 200 375 – – 4.53 <1	<450 200 275 6000 6500 4.02 <1	<450 200 225 – – 3.36 <1	<450 200 175 6000 4500 2.31 <1	<450 150 125 – – 2.07 <1	<450 150 100 4250 3000 1.03 <1	<450 200 200 – – 3.40 <1	<450 150 75 6000 5000 1.00 <1	<450 150 100 – – 0.97	<450 200 225 6500 5500 3.66 <1	<450 200 300 – – 2.88 <1	<450 150 125 4250 2500 1.22 <1	<450 150 100 – – 1.01 <1
BA	<450 150 125 – – 0.82	<450 150 150 – – 3.58 <1	<450 200 300 – – 4.41 <1	<450 200 350 – – 3.28 <1	<450 200 200 – – 3.45 <1	<450 200 225 – – 2.48 <1	<450 200 250 – – 2.70 <1	<450 150 150 – – 1.23 <1	<450 150 100 – – 1.14 <1	<450 200 200 – – 3.37 <1	<450 150 175 – – 0.82	<450 150 100 – – 1.45 <1	<450 200 300 – – 4.42 <1	<450 200 300 – – 3.55 <1	<450 150 150 – – 1.18 <1	<450 150 100 – – 1.76 <1
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AX	<450 150 200 4250 4000 1.25 <1	<450 150 200 – – 1.50 <1	<450 200 150 6000 5000 5.66 <1	<450 200 200 – – 4.68 <1	<450 200 300 5000 7000 4.35 <1	<450 200 300 – – 3.88 <1	<450 150 150 4750 3000 1.60 <1	<450 150 150 – – 1.14 <1	<450 150 150 4250 3300 1.76 <1	<450 150 200 – – 1.70 <1	<450 150 200 4250 3000 4.85 <1	<450 150 150 – – 1.92 <1	<450 200 150 6000 4000 4.29 <1	<450 200 200 – – 4.79 <1	<450 150 200 4750 2500 2.44 <1	<450 150 200 – – 2.08 <1
AW	<450 150 200 – – 1.33 <1	<450 150 250 – – 1.19 <1	<450 200 350 – – 5.46 <1	<450 200 275 – – 3.15 <1	<450 200 300 – – 4.33 <1	<450 200 200 – – 4.01 <1	<450 200 275 – – 3.81 <1	<450 150 150 – – 1.83 <1	<450 150 125 – – 1.59 <1	<450 150 150 – – 3.31 <1	<450 150 100 – – 1.31 <1	<450 150 100 – – 0.52	<450 200 250 – – 3.84 <1	<450 200 200 – – 3.59 <1	<450 150 100 – – 0.83	<450 150 100 – – 1.29 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BR	<450 150 100 – – 1.24 <1	<450 150 100 4250 3000 1.47 <1	<450 200 300 6000 3500 4.40 <1	<450 200 250 6000 2000 4.97 <1	<450 150 150 – – 1.42 <1	<450 200 350 6500 5500 3.32 <1	<450 200 375 – – 5.50 <1	<450 150 400 4250 6000 1.90 <1	<450 150 350 – – 1.86 <1	<450 200 400 6000 6000 4.37 <1	<450 150 – – – 1.47 <1	<450 150 100 4250 3000 1.41 <1	<450 200 200 – – 4.73 <1	<450 200 200 6000 5000 4.29 <1	<450 150 100 – – 1.35 <1	<450 150 100 4250 2250 1.90 <1
BQ	<450 150 100 4250 2500 1.32 <1	<450 150 150 – – 1.55 <1	<450 200 225 6000 4000 3.74 <1	<450 200 300 – – 4.45 <1	<450 150 150 4250 4000 1.61 <1	<450 200 375 – – 5.35 <1	<450 200 400 6000 6750 5.67 <1	<450 150 250 – – 1.15 <1	<450 150 100 4250 5000 0.84	<450 200 350 – – 3.27 <1	<450 150 – 4250 2500 4.74 <1	<450 150 100 – – 1.40 <1	<450 200 250 6000 2500 3.48 <1	<450 200 300 – – 4.21 <1	<450 150 100 4250 2250 1.39 <1	<450 150 100 – – 1.30 <1
BP	<450 150 100 – – 2.46 <1	<450 150 100 – – 0.98	<450 200 250 6000 5000 4.10 <1	<450 200 250 – – 3.01 <1	<450 150 150 – – 1.04 <1	<450 200 375 – – 11.52 <1	<450 200 400 – – 5.61 <1	<450 150 125 – – 0.98	<450 150 150 – – 0.87	<450 200 400 – – 4.36 <1	<450 200 250 – – 5.86 <1	<450 150 175 – – 1.68 <1	<450 200 250 – – 3.84 <1	<450 200 300 – – 3.09 <1	<450 150 100 – – <0.43	<450 150 75 – – 1.35 <1
BO	<450 150 100 – – 1.73 <1	<450 150 100 4250 2500 1.42 <1	<450 200 275 – – 4.35 <1	<450 200 300 6000 6000 3.51 <1	<450 150 150 – – 1.07 <1	<450 200 300 6000 5500 5.61 <1	<450 200 375 – – 7.12 <1	<450 150 100 4250 3000 1.27 <1	<450 150 125 – – 1.34 <1	<450 200 350 6000 7500 5.63 <1	<450 200 200 – – 5.41 <1	<450 150 175 6000 5500 1.73 <1	<450 200 350 – – 4.90 <1	<450 200 350 6000 6500 3.52 <1	<450 150 100 – – 1.66 <1	<450 150 100 4250 2000 1.30 <1
BN	<450 150 100 – – 0.51	<450 150 125 – – 0.65	<450 200 225 6000 5500 2.90 <1	<450 200 225 6000 5000 3.17 <1	<450 150 150 4250 2500 0.55	<450 200 300 6000 6000 4.63 <1	<450 200 200 – – 3.59 <1	<450 150 100 – – 0.93	<450 150 100 – – 0.96	<450 200 350 – – 6.16 <1	<450 200 200 – – 4.87 <1	<450 150 150 – – 0.82	<450 200 200 – – 4.84 <1	<450 200 200 – – 5.37 <1	<450 150 100 – – 1.10 <1	<450 150 150 – – 2.35 <1
BM	<450 150 150 4250 4250 1.07 <1	<450 150 150 4250 4250 1.29 <1	<450 200 300 6000 6000 3.80 <1	<450 200 300 6000 6000 5.04 <1	<450 150 150 4250 3000 1.02 <1	<450 200 300 6000 5500 4.76 <1	<450 200 250 6000 4050 3.87 <1	<450 150 100 – – 1.17 <1	<450 150 100 4250 2650 0.59	<450 200 300 – – 3.75 <1	<450 200 300 6000 5500 3.03 <1	<450 150 150 – – 0.83	<450 200 350 6000 6500 4.32 <1	<450 200 350 – – 3.33 <1	<450 150 125 4250 3000 0.97	<450 150 100 – – 0.85
BL	<450 150 150 – – 1.02 <1	<450 150 100 – – 0.88	<450 200 200 – – 4.86 <1	<450 200 250 – – 4.53 <1	<450 150 150 – – 1.15 <1	<450 200 150 – – 3.91 <1	<450 200 150 – – 4.12 <1	<450 150 150 – – 1.14 <1	<450 150 150 – – 0.92	<450 200 250 – – 5.01 <1	<450 200 350 – – 5.57 <1	<450 150 150 – – 1.01 <1	<450 200 300 – – 4.47 <1	<450 200 300 – – 3.97 <1	<450 150 150 – – 1.35 <1	<450 150 100 – – 1.38 <1
BK	<450 150 100 – – 0.95	<450 150 150 4250 2500 0.78	<450 200 250 – – 4.21 <1	<450 200 200 6000 3000 3.02 <1	<450 150 150 – – 0.90	<450 200 200 4250 3000 3.62 <1	<450 200 200 – – 4.20 <1	<450 150 175 4250 2500 0.83	<450 150 150 – – 1.01 <1	<450 200 350 6000 7500 5.82 <1	<450 200 375 – – 6.01 <1	<450 150 100 6000 6000 0.77	<450 200 200 – – 3.78 <1	<450 200 200 6000 3500 2.61 <1	<450 150 125 – – 1.16 <1	<450 150 125 4250 2500 1.35 <1
BJ	<450 150 100 – – 0.88	<450 150 125 – – 1.12 <1	<450 200 250 – – 3.77 <1	<450 200 250 – – 4.72 <1	<450 150 150 – – 0.84	<450 200 250 – – 3.91 <1	<450 200 325 – – 3.82 <1	<450 150 175 – – 0.70	<450 150 200 – – 0.95	<450 200 350 – – 5.08 <1	<450 200 200 – – 4.62 <1	<450 150 150 – – 1.09 <1	<450 200 200 – – 3.31 <1	<450 200 325 – – 3.78 <1	<450 150 100 – – 1.26 <1	<450 150 100 – – 1.13 <1
BI	<450 150 150 4250 2500 1.55 <1	<450 150 150 – – 1.51 <1	<450 200 300 6000 6500 4.31 <1	<450 200 275 – – 3.52 <1	<450 200 150 4250 3000 1.41 <1	<450 200 350 – – 4.63 <1	<450 200 200 6000 5000 4.43 <1	<450 200 275 – – 4.61 <1	<450 200 250 4250 3500 3.54 <1	<450 200 300 – – 6.37 <1	<450 200 300 6000 6000 5.84 <1	<450 150 150 – – 0.87	<450 200 200 6000 5000 4.32 <1	<450 200 200 – – 2.26 <1	<450 150 100 4250 2500 1.03 <1	<450 150 100 – – 1.10 <1
BH	<450 150 225 – – 1.58 <1	<450 150 125 – – 1.25 <1	<450 200 225 – – 5.02 <1	<450 200 275 – – 4.53 <1	<450 150 200 – – 1.76 <1	<450 200 250 – – 3.96 <1	<450 200 225 – – 5.54 <1	<450 200 250 – – 4.65 <1	<450 200 250 – – 5.59 <1	<450 200 350 – – 5.85 <1	<450 200 350 – – 6.26 <1	<450 150 150 – – 1.13 <1	<450 200 225 – – 3.28 <1	<450 200 200 – – 3.49 <1	<450 150 100 – – 1.12 <1	<450 150 50 – – 1.77 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CC	<450 150 125 – – 0.89	<450 150 125 4250 2500 2.38 <1	<450 200 250 – – 3.48 <1	<450 150 150 4250 3000 1.27 <1	<450 150 150 – – 0.95	<450 150 150 4250 3800 1.25 <1	<450 150 125 – – 0.63	<450 150 125 4250 3500 1.14 <1	<450 150 100 – – 0.9[illegible]	<450 200 250 4250 3500 3.11 <1	<450 200 200 – – 3.49 <1	<450 150 150 4250 2300 0.76	<450 200 300 – – 4.37 <1	<450 200 200 6000 5000 4.11 <1	<450 150 150 – – 1.39 <1	<450 150 125 4250 3500 1.31 <1
CB	<450 150 125 4250 2500 0.61	<450 150 125 – – 0.88	<450 150 150 4250 3000 0.84	<450 150 100 – – 1.04 <1	<450 150 125 4250 3500 1.22 <1	<450 150 150 – – 1.29 <1	<450 150 150 4250 4000 1.16 <1	<450 150 100 – – 1.14 <1	<450 150 125 4250 3250 1.75 <1	<450 200 250 – – 3.49 <1	<450 200 175 6000 3000 3.90 <1	<450 150 100 – – 1.90 <1	<450 200 125 6000 4500 4.04 <1	<450 200 150 – – 3.55 <1	<450 150 150 4250 2750 0.70	<450 150 125 – – 0.72
CA	<450 150 125 – – 1.56 <1	<450 150 100 – – 0.74	<450 200 250 – – 3.57 <1	<450 150 200 – – 1.11 <1	<450 150 150 – – 1.50 <1	<450 150 250 – – 1.83 <1	<450 150 200 – – 1.43 <1	<450 150 200 – – 1.57 <1	<450 150 300 – – 1.41 <1	<450 200 250 – – 3.59 <1	<450 200 100 – – 3.60 <1	<450 150 150 – – 0.97	<450 200 200 – – 5.59 <1	<450 200 300 – – 2.14 <1	<450 150 150 – – 1.07 <1	<450 150 100 – – 0.81
BZ	<450 150 100 – – 1.34 <1	<450 150 100 4250 2250 1.28 <1	<450 200 200 – – 3.39 <1	<450 200 250 6000 5000 4.68 <1	<450 150 250 – – 0.80	<450 150 150 4250 6500 1.59 <1	<450 150 200 – – 1.51 <1	<450 150 250 4250 6000 2.30 <1	<450 150 250 – – 2.47 <1	<450 150 250 4250 4500 2.36 <1	<450 200 225 – – 4.12 <1	<450 150 150 4250 3500 0.99	<450 200 250 – – 4.74 <1	<450 200 250 6000 6750 3.90 <1	<450 150 125 – – 1.05 <1	<450 150 125 4250 2500 0.82
BY	<450 150 100 – – 1.25 <1	<450 150 100 – – 1.08 <1	<450 200 200 6000 5500 3.76 <1	<450 200 300 – – 3.67 <1	<450 150 125 – – 0.83	<450 150 275 – – 1.28 <1	<450 200 350 – – 4.51 <1	<450 150 175 – – 1.59 <1	<450 150 200 – – 1.75 <1	<450 200 – – – 4.21 <1	<450 150 150 – – 1.93 <1	<450 150 150 – – 0.67	<450 200 300 – – 4.23 <1	<450 200 300 – – 4.37 <1	<450 150 150 – – 1.97 <1	<450 150 150 – – 0.91
BX	<450 150 100 4250 2000 1.38 <1	<450 150 100 – – 1.29 <1	<450 200 200 6000 4750 4.2[illegible] <1	<450 200 275 – – 4.63 <1	<450 150 100 4250 4500 0.82	<450 200 250 – – 4.96 <1	<450 200 200 4250 3500 3.97 <1	<450 150 150 – – 1.16 <1	<450 150 200 4250 3250 1.38 <1	<450 200 200 – – 4.11 <1	<450 150 150 4750 4000 1.21 <1	<450 150 150 – – 1.00 <1	<450 200 300 6000 3000 3.31 <1	<450 200 300 – – 3.77 <1	<450 150 150 4250 3000 2.05 <1	<450 150 400 – – 1.41 <1
BW	<450 150 100 – – 1.30 <1	<450 150 100 – – 1.63 <1	<450 200 250 6000 5500 4.22 <1	<450 200 250 – – 4.61 <1	<450 150 300 – – 0.93	<450 200 250 – – 5.83 <1	<450 200 200 – – 4.14 <1	<450 150 200 – – 0.71	<450 150 200 – – 0.85	<450 200 200 – – 2.88 <1	<450 150 100 – – 0.94	<450 150 150 – – 0.93	<450 200 300 – – 2.97 <1	<450 200 250 – – 1.82 <1	<450 150 100 – – 1.60 <1	<450 150 200 – – 1.82 <1
BV	<450 150 100 – – 1.53 <1	<450 150 100 4250 3000 1.70 <1	<450 200 250 6000 6000 4.84 <1	<450 200 250 6000 4750 6.13 <1	<450 150 300 – – 1.69 <1	<450 200 300 4250 6000 6.30 <1	<450 150 350 – – 2.04 <1	<450 150 350 4250 5750 1.76 <1	<450 150 300 – – 1.87 <1	<450 150 300 4250 4000 1.59 <1	<450 150 100 – – 1.00 <1	<450 150 150 4250 3500 1.03 <1	<450 200 300 – – 3.14 <1	<450 200 300 6000 5000 4.12 <1	<450 150 100 – – 1.24 <1	<450 150 100 4250 3000 1.01 <1
BU	<450 150 100 – – 0.73	<450 150 100 – – 1.27 <1	<450 200 300 6000 5500 3.65 <1	<450 200 250 – – 2.76 <1	<450 150 150 – – 0.72	<450 150 150 – – 1.15 <1	<450 150 350 – – 1.69 <1	<450 150 350 – – 1.69 <1	<450 150 300 – – 1.69 <1	<450 150 300 – – 1.41 <1	<450 150 150 – – 0.81	<450 150 150 – – 1.35 <1	<450 200 300 – – 3.78 <1	<450 200 300 – – 3.20 <1	<450 150 100 – – 1.33 <1	<450 150 75 – – 0.89
BT	<450 150 150 4250 2000 1.49 <1	<450 150 150 – – 1.41 <1	<450 200 225 6000 5500 4.52 <1	<450 200 300 – – 4.47 <1	<450 150 150 4250 4000 1.10 <1	<450 200 200 – – 5.32 <1	<450 200 425 6000 7550 4.99 <1	<450 150 350 – – 1.98 <1	<450 150 400 4250 7000 2.04 <1	<450 200 400 – – 6.04 <1	<450 150 100 4250 3000 1.25 <1	<450 150 150 – – 1.46 <1	<450 200 250 6000 4000 4.42 <1	<450 200 200 – – 3.66 <1	<450 150 100 4250 2750 1.30 <1	<450 150 75 – – 1.1[illegible] <1
BS	<450 150 100 – – 1.17 <1	<450 150 150 – – 1.30 <1	<450 200 300 6000 6000 5.02 <1	<450 200 250 – – 4.30 <1	<450 150 150 – – 1.57 <1	<450 200 250 – – 6.[illegible]3 <1	<450 200 425 – – 5.46 <1	<450 150 400 – – 2.37 <1	<450 150 400 – – 2.90 <1	<450 200 450 – – 4.77 <1	<450 150 100 – – 1.20 <1	<450 150 100 – – 1.55 <1	<450 200 200 – – 4.58 <1	<450 200 200 – – 3.69 <1	<450 150 125 – – 1.31 <1	<450 150 125 – – 0.99

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CN	<450 150 100 – – 1.63 <1	<450 150 100 4250 2500 1.94 <1	<450 200 400 – – 3.56 <1	<450 200 200 6000 5000 4.19 <1	<450 150 125 – – 1.75 <1	<450 200 175 6000 6000 7.97 <1	<450 200 325 – – 3.04 <1	<450 150 175 4250 2750 1.25 <1	<450 150 125 – – 0.76 <1	<450 200 350 6000 4750 3.19 <1	<450 200 250 – – 3.66 <1	<450 150 100 4250 3000 1.90 <1	<450 200 250 – – 3.50 <1	<450 200 275 6000 5000 3.51 <1	<450 150 150 – – 0.83 <1	<450 150 125 4250 2500 0.77 <1
CM	<450 150 100 4250 3000 1.56 <1	<450 150 150 – – 1.29 <1	<450 200 300 6000 6000 3.83 <1	<450 200 250 – – 3.66 <1	<450 150 400 4250 7750 3.07 <1	<450 150 375 – – 2.07 <1	<450 200 300 6000 6000 6.14 <1	<450 150 300 – – 1.99 <1	<450 150 150 4250 5500 1.18 <1	<450 150 200 – – 0.91 <1	<450 200 250 6000 5000 3.16 <1	<450 150 150 – – <0.40 <1	<450 200 250 6000 4750 3.29 <1	<450 200 275 – – 3.31 <1	<450 150 200 4250 4000 0.99 <1	<450 150 125 – – 0.92 <1
CL	<450 150 150 – – 1.58 <1	<450 150 150 – – 1.00 <1	<450 200 300 – – 4.23 <1	<450 200 300 – – 4.28 <1	<450 150 475 – – 2.62 <1	<450 150 450 – – 2.98 <1	<450 150 300 – – 2.23 <1	<450 150 400 – – 0.57 <1	<450 150 350 – – 1.67 <1	<450 150 350 – – 1.09 <1	<450 150 225 – – 1.71 <1	<450 150 250 – – 1.15 <1	<450 150 300 – – 2.00 <1	<450 200 225 – – 3.45 <1	<450 150 200 – – 2.08 <1	<450 150 150 – – 1.84 <1
CK	<450 150 100 – – 0.73	<450 150 100 4250 3000 0.84	<450 200 300 – – 4.00 <1	<450 200 300 6000 5500 2.49 <1	<450 150 400 – – 1.41 <1	<450 150 450 4250 8000 2.93 <1	<450 150 350 – – 2.44 <1	<450 150 150 4250 3500 1.35 <1	<450 150 300 – – 1.24 <1	<450 150 200 4250 5500 1.54 <1	<450 150 200 – – 1.65 <1	<450 150 150 4250 5500 1.37 <1	<450 150 275 – – 2.06 <1	<450 200 225 6000 5500 3.05 <1	<450 150 200 – – 0.90	<450 150 150 4250 2750 0.73
CJ	<450 150 125 – – 0.53	<450 150 100 – – 0.74	<450 200 300 – – 3.86 <1	<450 200 300 – – 3.46 <1	<450 150 425 – – 2.23 <1	<450 150 450 – – 3.95 <1	<450 150 250 – – 3.64 <1	<450 150 150 – – 0.77 <1	<450 150 350 – – 1.88 <1	<450 150 250 – – 1.35 <1	<450 150 200 – – 1.27 <1	<450 150 200 – – 1.85 <1	<450 150 375 – – 2.04 <1	<450 150 300 – – 2.89 <1	<450 150 125 – – 0.68 <1	<450 150 150 – – 0.90 <1
CI	<450 150 100 4250 3000 0.89	<450 150 150 – – 1.19 <1	<450 200 250 6000 5500 5.03 <1	<450 200 200 – – 3.57 <1	<450 150 425 4250 8000 3.04 <1	<450 150 450 – – 2.36 <1	<450 150 300 4250 7500 4.45 <1	<450 150 150 – – 1.42 <1	<450 150 300 4250 6000 2.11 <1	<450 150 300 – – 1.75 <1	<450 150 150 4250 5500 2.19 <1	<450 150 350 – – 2.36 <1	<450 150 400 4250 6500 1.79 <1	<450 150 350 – – 2.57 <1	<450 150 200 4250 3000 0.92 <1	<450 150 125 – – 1.05 <1
CH	<450 150 100 – – 4.04 <1	<450 150 125 – – 1.43 <1	<450 200 250 – – 3.55 <1	<450 200 250 – – 3.29 <1	<450 150 250 – – 3.25 <1	<450 150 250 – – 4.22 <1	<450 150 250 – – 3.00 <1	<450 150 125 – – 1.27 <1	<450 150 300 – – 1.14 <1	<450 150 300 – – 1.50 <1	<450 150 350 – – 1.65 <1	<450 150 350 – – 1.57 <1	<450 150 350 – – 1.40 <1	<450 200 200 – – 2.76 <1	<450 150 150 – – 7.22 <1	<450 150 125 – – 1.01 <1
CG	<450 150 100 – – 1.83 <1	<450 150 100 4250 2250 1.45 <1	<450 200 250 – – 4.68 <1	<450 200 175 6000 4500 1.43 <1	<450 150 100 – – 0.57 <1	<450 150 100 4250 3000 1.24 <1	<450 150 100 – – 1.35 <1	<450 150 100 4250 4500 1.15 <1	<450 150 120 – – 0.80 <1	<450 150 150 4250 7500 0.51 <1	<450 200 350 – – 2.60 <1	<450 150 250 4250 3000 0.60 <1	<450 200 250 – – 4.00 <1	<450 200 250 6000 6500 2.84 <1	<450 150 150 – – 1.15 <1	<450 150 125 4250 2500 1.80 <1
CF	<450 150 125 – – 1.72 <1	<450 150 100 – – 1.84 <1	<450 200 250 – – 3.88 <1	<450 150 100 – – 1.81 <1	<450 150 100 – – 1.42 <1	<450 150 125 – – 1.33 <1	<450 150 100 – – 1.19 <1	<450 150 100 – – 1.31 <1	<450 150 150 – – 1.10 <1	<450 200 250 – – 4.12 <1	<450 200 300 – – 3.30 <1	<450 150 200 – – 0.97 <1	<450 200 400 – – 4.68 <1	<450 200 300 – – 4.28 <1	<450 150 150 – – 1.57 <1	<450 150 100 – – 1.37 <1
CE	<450 150 125 4250 2000 1.21 <1	<450 150 150 – – 1.41 <1	<450 200 250 6000 5500 4.37 <1	<450 150 125 – – 1.34 <1	<450 150 150 4250 3250 1.34 <1	<450 150 150 – – 1.57 <1	<450 150 125 4250 3500 1.26 <1	<450 150 125 – – 1.07 <1	<450 150 125 4250 3500 1.42 <1	<450 200 250 – – 1.02 <1	<450 200 300 6000 5500 3.43 <1	<450 150 200 – – 1.12 <1	<450 200 300 6000 6500 3.78 <1	<450 200 300 – – 4.70 <1	<450 150 100 4250 2750 1.23 <1	<450 150 125 – – 1.26 <1
CD	<450 150 100 – – 1.44 <1	<450 150 100 – – 1.38 <1	<450 200 250 – – 3.85 <1	<450 150 125 – – 1.33 <1	<450 150 125 – – 1.13 <1	<450 150 150 – – 1.29 <1	<450 150 125 – – 1.02 <1	<450 150 125 – – 0.86 <1	<450 150 150 – – 1.08 <1	<450 200 250 – – 2.31 <1	<450 200 100 – – 2.97 <1	<450 150 100 – – 1.15 <1	<450 200 300 – – 3.73 <1	<450 200 250 – – 4.86 <1	<450 150 150 – – 0.78	<450 150 100 – – 0.98

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
CY	<450 150 125 – – 0.87	<450 150 150 4250 3500 0.70	<450 200 250 – – 4.16 <1	<450 200 200 6000 4500 4.02 <1	<450 150 150 – – 1.03 <1	<450 200 450 8000 8500 6.90 <1	<450 200 300 – – 5.51 <1	<450 150 200 4250 5000 2.39 <1	<450 150 200 – – 1.59 <1	<450 200 300 6000 6000 4.24 <1	<450 200 225 – – 4.57 <1	<450 150 150 4250 7500 1.39 <1	<450 200 200 – – 4.12 <1	<450 200 200 6000 4500 4.64 <1	<450 150 100 – – 1.17 <1	<450 150 100 4250 2000 0.76
CX	<450 150 100 4250 2000 1.97 <1	<450 150 150 – – 0.75	<450 200 225 6000 5000 3.66 <1	<450 200 250 – – 3.30 <1	<450 150 150 4250 3000 1.41 <1	<450 200 325 – – 6.20 <1	<450 200 350 6000 7000 5.88 <1	<450 150 200 – – 1.51 <1	<450 150 200 4250 3000 1.15 <1	<450 200 300 – – 4.98 <1	<450 200 225 6000 5500 5.05 <1	<450 150 150 – – 1.22 <1	<450 200 250 6000 5000 4.59 <1	<450 200 200 – – 4.22 <1	<450 150 100 4250 2500 1.23 <1	<450 150 125 – – 1.30 <1
CW	<450 150 100 – – 1.11 <1	<450 150 150 – – 1.16 <1	<450 200 225 – – 3.52 <1	<450 200 200 – – 3.60 <1	<450 150 150 – – 0.81	<450 200 325 – – 5.76 <1	<450 200 350 – – 6.75 <1	<450 150 150 – – 1.01 <1	<450 150 150 – – 0.94	<450 200 250 – – 4.63 <1	<450 200 250 – – 4.21 <1	<450 150 175 – – 0.78	<450 200 200 – – 2.70 <1	<450 200 200 – – 3.05 <1	<450 150 100 – – 0.87	<450 150 125 – – 0.95
CV	<450 150 125 – – 1.86 <1	<450 150 100 4250 2500 1.74 <1	<450 200 200 – – 4.80 <1	<450 200 200 6000 4500 4.31 <1	<450 150 150 – – 0.53	<450 150 175 6000 7000 5.99 <1	<450 200 300 – – 5.47 <1	<450 150 150 4250 3000 1.04 <1	<450 150 175 – – 1.75 <1	<450 200 300 6000 6500 4.56 <1	<450 200 250 – – 4.92 <1	<450 150 175 4250 2500 0.89	<450 200 300 – – 3.80 <1	<450 200 300 6000 6000 2.22 <1	<450 150 200 – – 0.98	<450 150 200 4250 4500 0.88
CU	<450 150 100 – – 0.72	<450 150 100 – – 1.50 <1	<450 200 325 – – 4.57 <1	<450 200 200 – – 3.51 <1	<450 150 200 – – 1.04 <1	<450 200 400 – – 4.51 <1	<450 200 450 – – 6.81 <1	<450 150 200 – – 1.44 <1	<450 150 175 – – 1.62 <1	<450 200 300 – – 4.57 <1	<450 200 250 – – 4.15 <1	<450 150 175 – – 1.59 <1	<450 200 250 – – 3.94 <1	<450 200 175 – – 3.98 <1	<450 150 125 – – 1.56 <1	<450 150 200 – – 1.57 <1
CT	<450 150 150 4250 2500 1.25 <1	<450 150 200 – – 1.33 <1	<450 200 350 6000 4000 5.73 <1	<450 150 200 – – 3.93 <1	<450 150 400 4250 5500 1.47 <1	<450 200 400 – – 6.76 <1	<450 200 450 6000 7000 5.10 <1	<450 200 450 – – 1.12 <1	<450 150 175 4250 4500 1.07 <1	<450 200 300 – – 3.90 <1	<450 200 250 6000 5000 3.94 <1	<450 150 100 – – 0.84	<450 200 250 6000 5000 4.19 <1	<450 200 150 – – 3.11 <1	<450 150 150 4250 4000 <0.40	<450 150 150 – – 0.62
CS	<450 150 200 – – 1.54 <1	<450 150 350 – – 1.28 <1	<450 150 350 – – 2.03 <1	<450 150 350 – – 1.49 <1	<450 150 325 – – 2.03 <1	<450 150 325 – – 1.50 <1	<450 150 325 – – 2.72 <1	<450 150 300 – – 1.98 <1	<450 150 400 – – 1.47 <1	<450 150 350 – – 1.93 <1	<450 200 175 – – 4.57 <1	<450 150 100 – – 1.18 <1	<450 200 300 – – 3.59 <1	<450 200 250 – – 4.10 <1	<450 150 150 – – 1.33 <1	<450 150 150 – – 0.97
CR	<450 150 200 – – 1.63 <1	<450 150 350 4250 6500 1.76 <1	<450 150 350 – – 2.30 <1	<450 150 350 4250 6500 1.94 <1	<450 150 325 – – 1.99 <1	<450 150 375 4250 6500 1.97 <1	<450 150 350 – – 1.35 <1	<450 150 275 4250 5500 1.91 <1	<450 150 300 – – 1.80 <1	<450 150 400 4250 6000 2.08 <1	<450 200 150 – – 3.83 <1	<450 150 100 4250 3000 0.85	<450 200 250 – – 4.60 <1	<450 200 250 6000 4250 3.34 <1	<450 150 150 – – 0.65	<450 150 100 4250 2500 1.45 <1
CQ	<450 150 200 – – 2.24 <1	<450 150 350 – – 1.90 <1	<450 150 350 – – 1.89 <1	<450 150 400 – – 1.85 <1	<450 150 375 – – 1.58 <1	<450 150 350 – – 2.28 <1	<450 150 350 – – 2.00 <1	<450 150 275 – – 1.56 <1	<450 150 300 – – 1.67 <1	<450 150 450 – – 2.28 <1	<450 200 175 – – 4.11 <1	<450 150 125 – – 0.94	<450 200 300 – – 4.14 <1	<450 200 250 – – 2.83 <1	<450 150 150 – – 1.07 <1	<450 150 75 – – 0.92
CP	<450 150 200 4250 4500 1.82 <1	<450 150 350 – – 1.20 <1	<450 150 350 4250 6500 1.84 <1	<450 150 350 – – 1.48 <1	<450 150 375 4250 7250 1.45 <1	<450 150 350 – – 2.30 <1	<450 150 250 4250 6500 1.86 <1	<450 150 275 – – 1.05 <1	<450 150 300 4250 6000 1.87 <1	<450 150 400 – – 1.67 <1	<450 200 250 6000 4500 4.46 <1	<450 150 100 – – 1.49 <1	<450 200 175 6000 5750 4.07 <1	<450 200 200 – – 3.48 <1	<450 150 200 4250 4000 1.45 <1	<450 150 125 – – 0.90
CO	<450 150 150 – – 0.78	<450 150 250 – – 1.33 <1	<450 150 300 – – 1.84 <1	<450 150 400 – – 1.66 <1	<450 150 350 – – 2.60 <1	<450 150 400 – – 2.44 <1	<450 150 300 – – 2.32 <1	<450 150 350 – – 2.11 <1	<450 150 350 – – 2.62 <1	<450 150 350 – – 2.30 <1	<450 200 250 – – 3.75 <1	<450 150 100 – – 1.18 <1	<450 200 225 – – 4.27 <1	<450 200 200 – – 4.08 <1	<450 150 150 – – 1.07 <1	<450 150 100 – – 3.87 <1

Sample Data

<450 – IM-247/PD Results [μμCv/2Ccm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pC/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DJ	<450 150 100 – – 1.25 <1	<450 150 200 4250 4500 3.56 <1	<450 150 250 – – 1.46 <1	<450 200 250 6000 7000 3.78 <1	<450 150 125 – – 1.00 <1	<450 200 250 6000 6250 5.86 <1	<450 200 300 – – 6.11 <1	<450 150 100 4250 2500 1.23 <1	<450 150 100 – – 1.56 <1	<450 150 150 4250 3000 1.06 <1	<450 200 150 – – 3.88 <1	<450 150 125 4250 3000 1.14 <1	<450 200 250 – – 3.46 <1	<450 200 250 6000 6000 3.79 <1	<450 150 150 – – 1.35 <1	<450 150 150 4250 3000 1.41 <1
DI	<450 150 100 4250 2500 1.23 <1	<450 150 100 – – 0.97	<450 200 300 6000 6500 4.79 <1	<450 200 300 – – 4.22 <1	<450 150 125 4250 2500 0.88	<450 200 300 – – 6.02 <1	<450 200 300 6000 6250 5.74 <1	<450 150 175 – – 0.92	<450 150 150 4250 3000 1.05 <1	<450 200 225 – – 4.30 <1	<450 200 200 4250 4000 3.79 <1	<450 150 125 – – 1.40 <1	<450 200 300 6000 5500 4.01 <1	<450 200 250 – – 3.17 <1	<450 150 200 4250 3000 1.28 <1	<450 150 200 – – 1.21 <1
DH	<450 150 150 – – 1.64 <1	<450 150 125 – – 1.34 <1	<450 200 300 – – 4.4[illegible] <1	<450 200 300 – – 4.00 <1	<450 150 200 – – 1.61 <1	<450 200 350 – – 5.54 <1	<450 200 400 – – 5.63 <1	<450 150 300 – – 2.26 <1	<450 150 150 – – 0.52	<450 200 300 – – 3.54 <1	<450 200 400 – – [illegible].37 <1	<450 200 300 – – 0.97	<450 200 300 – – 4.14 <1	<450 200 250 – – 3.54 <1	<450 150 200 – – 2.01 <1	<450 150 200 – – 1.58 <1
DG	<450 150 175 – – 1.34 <1	<450 150 150 4250 3000 1.00 <1	<450 200 200 – – 4.43 <1	<450 200 250 6000 5500 3.31 <1	<450 150 150 – – 1.01 <1	<450 200 225 6000 4000 3.63 <1	<450 200 200 – – 6.00 <1	<450 150 175 4250 3000 1.12 <1	<450 150 175 – – 1.52 <1	<450 200 200 6000 3500 4.85 <1	<450 200 300 – – 4.06 <1	<450 150 125 4250 2500 <0.43	<450 200 150 – – 5.46 <1	<450 200 200 6000 4500 4.17 <1	<450 150 100 – – 1.03 <1	<450 150 100 4250 2500 0.96
DF	<450 150 150 – – 1.13 <1	<450 150 125 – – 1.17 <1	<450 200 225 – – 3.53 <1	<450 200 250 – – 3.27 <1	<450 150 125 – – 2.27 <1	<450 200 375 – – 5.50 <1	<450 200 350 – – 5.81 <1	<450 150 150 – – 1.34 <1	<450 150 150 – – 1.77 <1	<450 200 250 – – 4.55 <1	<450 200 250 – – 4.34 <1	<450 150 150 – – 2.01 <1	<450 200 225 – – 4.97 <1	<450 200 200 – – 4.38 <1	<450 150 100 – – 0.87	<450 150 100 – – 0.95
DE	<450 150 100 4250 2250 1.01 <1	<450 150 150 – – 1.18 <1	<450 200 300 6000 6500 4.88 <1	<450 200 250 – – 4.12 <1	<450 150 100 4250 3000 0.90	<450 200 300 – – 0.79	<450 200 350 6000 6500 6.07 <1	<450 150 150 – – 6.05 <1	<450 150 100 4250 2500 0.88	<450 200 250 – – 5.06 <1	<450 200 250 5000 5500 4.32 <1	<450 150 150 – – 1.59 <1	<450 200 200 6000 5000 4.34 <1	<450 200 200 – – 3.70 <1	<450 150 100 4250 2500 0.84	<450 150 100 – – 1.22 <1
DD	<450 150 100 – – 1.23 <1	<450 150 125 – – 1.33 <1	<450 200 300 – – 4.75 <1	<450 200 300 – – 3.92 <1	<450 150 300 – – 1.15 <1	<450 200 300 – – 5.49 <1	<450 200 350 – – 5.89 <1	<450 150 150 – – 1.46 <1	<450 150 100 – – 1.04 <1	<450 200 250 – – 3.84 <1	<450 200 300 – – 3.93 <1	<450 150 150 – – 0.89	<450 200 225 – – 4.06 <1	<450 200 300 – – 4.32 <1	<450 150 125 – – 1.06 <1	<450 150 100 – – 1.07 <1
DC	<450 150 100 – – 1.69 <1	<450 150 125 4250 2500 1.35 <1	<450 200 250 – – 4.89 <1	<450 200 250 6000 4500 3.77 <1	<450 150 125 – – 1.10 <1	<450 200 250 6000 5000 5.12 <1	<450 200 250 – – 8.69 <1	<450 150 175 4250 2500 1.93 <1	<450 150 150 – – 1.84 <1	<450 200 300 6000 5000 5.05 <1	<450 200 250 – – 4.56 <1	<450 150 150 4250 2500 1.0[illegible] <1	<450 200 300 – – 3.90 <1	<450 200 225 6000 4000 2.93 <1	<450 150 125 – – 0.49 <1	<450 150 100 4250 2500 1.15 <1
DB	<450 150 100 – – 1.07 <1	<450 150 100 – – 1.08 <1	<450 200 150 – – 4.11 <1	<450 200 200 – – 4.02 <1	<450 150 100 – – 0.66	<450 200 200 – – 5.76 <1	<450 200 200 – – 5.61 <1	<450 150 100 – – 1.16 <1	<450 150 125 – – 1.69 <1	<450 200 200 – – 5.14 <1	<450 200 150 – – 3.91 <1	<450 150 175 – – 1.70 <1	<450 200 200 – – 4.31 <1	<450 200 200 – – 4.4[illegible] <1	<450 150 100 – – 0.94	<450 150 50 – – 0.95
DA	<450 150 125 4250 2500 0.90	<450 150 100 – – 0.89	<450 200 300 6000 5000 4.78 <1	<450 200 350 – – 4.02 <1	<450 150 150 4250 2500 0.97	<450 200 350 – – 5.59 <1	<450 200 300 6000 5000 5.51 <1	<450 150 50 – – 1.32 <1	<450 150 125 4250 2500 1.06 <1	<450 200 200 – – 4.85 <1	<450 200 200 5000 4.47 <1	<450 150 125 – – 1.06 <1	<450 200 250 6000 5000 4.18 <1	<450 200 225 – – 4.04 <1	<450 150 100 4250 2000 0.99	<450 150 50 – – 0.69
CZ	<450 150 150 – – 1.35 <1	<450 150 120 – – 0.63	<450 200 300 – – 4.56 <1	<450 200 250 – – 4.22 <1	<450 150 150 – – 0.84	<450 200 300 – – 5.08 <1	<450 200 350 – – 6.14 <1	<450 150 125 – – 0.94	<450 150 100 – – 1.23 <1	<450 200 200 – – 5.16 <1	<450 200 200 – – 4.15 <1	<450 150 150 – – 1.03 <1	<450 200 250 – – 3.79 <1	<450 200 250 – – 4.29 <1	<450 150 100 – – 1.12 <1	<450 150 50 – – 0.93

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co 60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DU	<450 150 150 – – 1.37 <1	<450 150 150 4250 2500 1.02 <1	<450 200 300 – – 4.34 <1	<450 200 350 6000 5500 3.97 <1	<450 200 300 – – 3.18 <1	<450 200 350 6000 6000 2.84 <1	<450 200 300 – – 2.65 <1	<450 150 150 4250 2750 1.66 <1	<450 150 150 – – 1.20 <1	<450 200 375 6000 4500 4.71 <1	<450 200 225 – – 5.33 <1	<450 150 125 4250 3000 0.54	<450 200 350 – – 4.23 <1	<450 200 300 6000 4000 4.02 <1	<450 150 125 – – 1.89 <1	<450 150 125 4250 2500 1.68 <1
DT	<450 150 150 4250 2750 <0.38	<450 150 100 – – 0.44	<450 200 200 6000 6000 2.99 <1	<450 200 250 – – 3.41 <1	<450 200 350 6000 5500 3.39 <1	<450 200 350 – – 1.58 <1	<450 200 350 6000 4000 3.55 <1	<450 150 150 – – 0.92	<450 150 150 4250 2500 1.04 <1	<450 200 250 – – 4.67 <1	<450 200 225 6000 5000 3.92 <1	<450 150 150 – – 1.12 <1	<450 200 350 6000 5000 4.08 <1	<450 200 300 – – 3.58 <1	<450 150 125 4250 2500 1.51 <1	<450 150 250 – – 3.19 <1
DS	<450 150 150 – – 1.22 <1	<450 150 100 – – 1.29 <1	<450 150 200 – – 4.97 <1	<450 200 250 – – 3.15 <1	<450 150 150 – – 1.03 <1	<450 200 300 – – 2.77 <1	<450 200 175 – – 1.55 <1	<450 150 150 – – 1.38 <1	<450 150 150 – – <0.43	<450 200 225 – – 4.18 <1	<450 150 175 – – <0.41	<450 150 150 – – 0.60	<450 200 250 – – 3.25 <1	<450 200 275 – – 3.71 <1	<450 150 150 – – 1.22 <1	<450 150 250 – – 2.26 <1
DR	<450 150 200 – – 1.29 <1	<450 150 200 4250 3000 1.10 <1	<450 200 200 – – 5.84 <1	<450 200 250 6000 5500 4.03 <1	<450 200 150 – – 3.41 <1	<450 200 150 6000 5000 3.39 <1	<450 200 125 – – 2.76 <1	<450 150 150 4250 2500 1.34 <1	<450 150 100 – – 0.88	<450 150 100 4250 3000 1.02 <1	<450 150 150 – – 4.78 <1	<450 150 150 4250 3000 1.48 <1	<450 200 350 – – 4.93 <1	<450 200 250 6000 5500 4.82 <1	<450 150 150 – – 1.40 <1	<450 150 150 4250 3000 1.00 <1
DQ	<450 150 125 – – 1.18 <1	<450 150 125 – – 0.89	<450 200 275 – – 4.73 <1	<450 200 325 – – 4.44 <1	<450 200 250 – – 3.39 <1	<450 200 250 – – 4.18 <1	<450 200 100 – – 4.84 <1	<450 150 150 – – 0.94	<450 150 100 – – 1.35 <1	<450 200 200 – – 4.74 <1	<450 150 175 – – 3.78 <1	<450 150 150 – – 1.08 <1	<450 200 300 – – 3.50 <1	<450 200 300 – – 3.20 <1	<450 150 125 – – 1.11 <1	<450 150 150 – – 0.97
DP	<450 150 150 4250 2500 <0.34	<450 150 175 – – 0.85	<450 200 250 6000 5500 4.36 <1	<450 200 225 – – 4.64 <1	<450 200 300 6000 5000 3.40 <1	<450 200 250 – – 5.83 <1	<450 200 300 6000 5000 5.11 <1	<450 150 150 – – 0.93	<450 150 100 4250 2000 1.23 <1	<450 200 225 – – 4.64 <1	<450 150 150 4250 3000 4.67 <1	<450 150 150 – – 1.02 <1	<450 200 350 6000 5000 4.63 <1	<450 200 350 – – 3.56 <1	<450 150 150 4250 2500 0.93 <1	<450 150 150 – – 1.42 <1
DO	<450 150 150 – – 0.56	<450 150 125 – – 0.59	<450 200 225 – – 3.48 <1	<450 200 300 – – 4.03 <1	<450 200 275 – – 3.54 <1	<450 200 350 – – 5.56 <1	<450 200 300 – – 5.23 <1	<450 150 100 – – 0.58	<450 150 125 – – <0.34	<450 200 225 – – 3.92 <1	<450 150 150 – – <0.35	<450 150 100 – – 0.82	<450 200 350 – – 3.87 <1	<450 200 300 – – 3.48 <1	<450 150 150 – – 0.68	<450 150 150 – – <0.33
DN	<450 150 75 – – – –	<450 150 150 4250 2500 0.87	<450 200 300 – – 4.57 <1	<450 200 300 6000 5000 4.12 <1	<450 200 200 – – 2.32 <1	<450 200 350 6000 6500 4.91 <1	<450 200 350 – – 6.08 <1	<450 150 125 4250 2500 <0.34	<450 150 100 – – <0.33	<450 150 100 4250 3000 0.53	<450 200 150 – – 3.49 <1	<450 150 150 4250 2750 <0.32	<450 200 300 – – 3.27 <1	<450 200 300 6000 5500 4.93 <1	<450 150 200 – – 0.64	<450 150 150 4250 3000 0.87
DM	<450 150 100 – – 1.02 <1	<450 150 150 – – 1.25 <1	<450 200 300 – – 4.52 <1	<450 200 325 – – 3.91 <1	<450 150 200 – – 0.90	<450 200 175 – – 6.74 <1	<450 200 325 – – 6.26 <1	<450 150 150 – – 1.51 <1	<450 150 100 – – 1.61 <1	<450 150 100 – – 1.84 <1	<450 200 200 – – 3.98 <1	<450 150 200 – – 0.83	<450 200 250 – – 3.81 <1	<450 200 200 – – 3.12 <1	<450 150 200 – – 1.32 <1	<450 150 150 – – 1.20 <1
DL	<450 150 100 4250 2500 1.87 <1	<450 150 100 – – 0.87	<450 200 300 6000 5000 4.56 <1	<450 200 250 – – 3.43 <1	<450 150 100 4250 3000 1.19 <1	<450 200 175 – – 6.55 <1	<450 200 175 6000 4500 6.45 <1	<450 150 100 – – 0.60	<450 200 150 4250 2750 1.60 <1	<450 200 175 – – 4.35 <1	<450 200 250 6000 5000 5.53 <1	<450 150 125 – – 1.52 <1	<450 200 250 6000 5000 3.63 <1	<450 200 200 – – 3.56 <1	<450 150 100 4250 2500 1.66 <1	<450 150 125 – – 1.60 <1
DK	<450 150 150 – – <0.39	<450 150 150 – – 0.71	<450 200 350 – – 4.62 <1	<450 200 300 – – 3.72 <1	<450 150 150 – – 1.24 <1	<450 200 350 – – 5.26 <1	<450 200 350 – – 5.95 <1	<450 150 150 – – 1.03 <1	<450 150 125 – – 0.81 <1	<450 200 300 – – 4.62 <1	<450 200 200 – – 3.78 <1	<450 150 125 – – 1.05 <1	<450 200 250 – – 3.85 <1	<450 200 225 – – 4.23 <1	<450 150 125 – – 1.41 <1	<450 150 200 – – 1.53 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
EF	<450 150 100 – – 1.43 <1	<450 150 100 4250 3000 0.85	<450 200 250 – – 3.60 <1	<450 200 250 6000 5000 4.26 <1	<450 150 125 – – 1.48 <1	<450 200 250 6000 4500 5.75 <1	<450 150 100 – – 0.51	<450 150 100 4250 3000 0.53	<450 200 250 – – 4.08 <1	<450 200 250 6000 6000 3.54 <1	<450 200 250 – – 3.54 <1	<450 150 150 4250 2750 1.01 <1	<450 200 250 – – 3.78 <1	<450 200 250 6000 5000 3.59 <1	<450 150 150 – – 0.80	<450 150 150 4250 2500 0.80
EE	<450 150 100 4250 3000 2.01 <1	<450 150 100 – – 2.36 <1	<450 200 200 6000 5000 4.97 <1	<450 200 200 – – 4.59 <1	<450 150 125 4250 2500 1.45 <1	<450 200 250 – – 6.45 <1	<450 200 375 6000 7750 5.07 <1	<450 200 150 – – 2.25 <1	<450 200 250 6000 6000 3.39 <1	<450 200 250 – – 3.79 <1	<450 200 250 6000 6000 2.81 <1	<450 150 150 – – 1.64 <1	<450 200 250 6000 5000 3.99 <1	<450 200 250 – – 3.35 <1	<450 150 200 4250 3000 1.36 <1	<450 150 150 – – 1.38 <1
ED	<450 150 125 – – 1.87 <1	<450 150 150 – – 1.24 <1	<450 200 250 – – 3.66 <1	<450 200 200 – – 3.22 <1	<450 200 200 – – 1.01 <1	<450 200 200 – – 4.77 <1	<450 200 250 – – 4.85 <1	<450 200 350 – – 3.53 <1	<450 200 350 – – 5.2[illegible] <1	<450 200 300 – – 4.63 <1	<450 200 250 – – 5.27 <1	<450 150 150 – – 2.56 <1	<450 200 200 – – 6.24 <1	<450 200 250 – – 5.83 <1	<450 150 100 – – 2.06 <1	<450 150 150 – – 1.79 <1
EC	<450 150 175 – – 0.95	<450 150 175 4250 2500 0.71	<450 200 250 – – 3.70 <1	<450 200 275 6000 5500 4.24 <1	<450 150 150 – – 0.99	<450 200 200 6000 4000 2.54 <1	<450 200 200 – – 3.09 <1	<450 150 200 6000 5000 3.65 <1	<450 200 300 – – 3.36 <1	<450 200 325 6000 5500 8.62 <1	<450 200 250 – – 3.34 <1	<450 150 150 4250 2750 1.28 <1	<450 200 200 – – 3.84 <1	<450 200 200 6000 4000 3.10 <1	<450 150 125 – – 1.19 <1	<450 150 150 4250 2500 1.13 <1
EB	<450 150 150 – – 1.27 <1	<450 150 150 – – 1.04 <1	<450 200 300 – – 4.33 <1	<450 200 300 – – 3.76 <1	<450 150 150 – – 1.13 <1	<450 200 200 – – 3.37 <1	<450 200 200 – – 3.80 <1	<450 200 300 – – 3.90 <1	<450 200 300 – – 4.35 <1	<450 200 250 – – 3.29 <1	<450 200 200 – – 3.18 <1	<450 150 125 – – 0.92	<450 200 250 – – 4.07 <1	<450 200 250 – – 2.92 <1	<450 150 150 – – 1.93 <1	<450 150 150 – – 0.92
EA	<450 150 150 4250 2500 0.93	<450 150 125 – – 1.17 <1	<450 200 300 6000 5500 3.74 <1	<450 200 300 – – 4.14 <1	<450 150 150 4250 2000 1.52 <1	<450 200 150 – – 3.15 <1	<450 200 300 6000 5500 4.05 <1	<450 200 250 – – 3.26 <1	<450 200 300 6000 4500 3.23 <1	<450 200 275 – – 4.52 <1	<450 200 225 6000 3000 4.46 <1	<450 150 125 – – 0.90	<450 200 150 6000 4000 3.52 <1	<450 200 250 – – 4.05 <1	<450 150 100 4250 2500 1.14 <1	<450 150 100 – – 1.93 <1
DZ	<450 150 150 – – 0.89	<450 150 150 – – 0.91	<450 200 200 – – 3.5[illegible] <1	<450 200 300 – – 4.11 <1	<450 150 150 – – 1.52 <1	<450 200 250 – – 3.79 <1	<450 200 300 – – 4.02 <1	<450 200 275 – – 3.45 <1	<450 200 200 – – 2.91 <1	<450 200 200 – – 4.51 <1	<450 200 225 – – 5.47 <1	<450 150 125 – – 0.76	<450 200 150 – – 3.87 <1	<450 200 200 – – 3.32 <1	<450 150 100 – – 1.31 <1	<450 150 150 – – 1.21 <1
DY	<450 150 125 – – 0.80	<450 150 125 4250 2000 0.78	<450 200 275 – – 3.35 <1	<450 200 225 6000 5000 0.96	<450 150 150 – – 3.03 <1	<450 200 250 6000 4500 3.02 <1	<450 200 300 – – 3.47 <1	<450 200 300 6000 5000 3.12 <1	<450 200 225 – – 3.12 <1	<450 200 125 6000 5000 4.64 <1	<450 200 225 – – 3.34 <1	<450 150 125 4250 2500 0.84	<450 200 200 – – 3.87 <1	<450 200 225 6000 6000 3.31 <1	<450 150 125 – – <0.45	<450 150 100 4250 2500 1.05 <1
DX	<450 150 125 – – 0.97	<450 150 125 – – 1.11 <1	<450 200 225 – – 5.11 <1	<450 200 200 – – 4.13 <1	<450 150 150 – – 1.50 <1	<450 150 150 – – 3.60 <1	<450 200 325 – – 3.39 <1	<450 200 275 – – 3.78 <1	<450 200 125 – – 1.25 <1	<450 200 150 – – 1.45 <1	<450 200 125 – – 4.46 <1	<450 150 125 – – 1.58 <1	<450 200 200 – – 3.38 <1	<450 200 200 – – 3.98 <1	<450 150 150 – – 1.16 <1	<450 150 125 – – 0.66
DW	<450 150 150 4250 2250 0.51	<450 150 125 – – 1.29 <1	<450 200 250 6000 5000 5.10 <1	<450 200 250 – – 3.79 <1	<450 150 150 4250 2500 1.41 <1	<450 200 250 – – 3.33 <1	<450 200 275 6000 6000 3.26 <1	<450 200 175 – – 3.14 <1	<450 150 125 6000 5500 1.40 <1	<450 200 200 – – 4.77 <1	<450 200 250 6000 5000 5.64 <1	<450 150 150 – – 1.19 <1	<450 200 250 6000 5000 4.35 <1	<450 200 150 – – 4.50 <1	<450 150 125 4250 2750 1.53 <1	<450 150 150 – – 1.16 <1
DV	<450 150 150 – – 2.07 <1	<450 150 150 – – 0.74	<450 200 250 – – 3.66 <1	<450 200 200 – – 4.01 <1	<450 200 150 – – 3.51 <1	<450 200 200 – – 3.40 <1	<450 200 325 – – 4.50 <1	<450 150 150 – – 2.42 <1	<450 150 150 – – 1.59 <1	<450 200 200 – – 4.18 <1	<450 200 225 – – 4.63 <1	<450 150 125 – – 1.79 <1	<450 200 300 – – 4.09 <1	<450 200 300 – – 4.67 <1	<450 150 125 – – 1.16 <1	<450 150 175 – – 1.08 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7300 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – M-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
EQ	<450 150 100 – – 1.15 <1	<450 150 100 4250 2000 0.68	<450 200 300 – – 3.87 <1	<450 200 350 6000 6000 3.63 <1	<450 150 150 – – 0.70	<450 200 350 4250 7500 6.02 <1	<450 200 400 – – 5.78 <1	<450 150 150 4250 2000 1.03 <1	<450 150 150 – – 0.86	<450 200 300 6000 4500 3.75 <1	<450 200 300 – – 4.16 <1	<450 150 100 4250 3500 0.80	<450 200 300 – – 2.72 <1	<450 200 350 6000 6000 3.19 <1	<450 150 150 – – 0.69	<450 150 150 4250 2500 0.63
EP	<450 150 100 4250 2000 0.85	<450 150 100 – – 1.00 <1	<450 200 250 6000 4500 4.05 <1	<450 200 300 – – 4.09 <1	<450 200 150 4250 2500 1.01 <1	<450 200 300 – – 5.65 <1	<450 200 400 6000 6000 5.55 <1	<450 150 150 – – 0.74	<450 150 150 4250 2000 0.81	<450 200 250 – – 3.60 <1	<450 200 300 6000 4000 4.23 <1	<450 200 350 – – 4.56 <1	<450 200 400 6000 7500 4.39 <1	<450 200 350 – – 4.08 <1	<450 150 100 4250 2000 0.86	<450 150 100 – – 1.02 <1
EO	<450 150 100 – – 0.81	<450 150 100 – – 0.88	<450 200 250 – – 3.23 <1	<450 200 300 – – 3.56 <1	<450 200 200 – – 3.68 <1	<450 200 350 – – 5.69 <1	<450 200 400 – – 4.97 <1	<450 150 150 – – 1.12 <1	<450 150 100 – – 0.44	<450 200 250 – – 3.90 <1	<450 200 250 – – 4.52 <1	<450 200 300 – – 4.95 <1	<450 200 350 – – 3.46 <1	<450 200 350 – – 2.84 <1	<450 150 100 – – 0.94	<450 150 100 – – 1.32 <1
EN	<450 150 125 – – 1.43 <1	<450 150 150 4250 2500 1.29 <1	<450 200 250 – – 3.85 <1	<450 200 350 6000 4500 4.64 <1	<450 150 150 – – 1.31 <1	<450 200 400 6000 6000 5.97 <1	<450 200 400 – – 5.59 <1	<450 150 150 4250 2500 1.76 <1	<450 150 150 – – 0.80	<450 200 200 6000 6000 4.07 <1	<450 200 200 – – 4.51 <1	<450 200 400 6000 7000 4.79 <1	<450 200 250 – – 4.03 <1	<450 200 350 6000 5000 2.94 <1	<450 150 100 – – 0.66	<450 150 100 4250 2250 0.64
EM	<450 150 150 – – 0.63	<450 150 150 – – 1.11 <1	<450 200 300 – – 3.52 <1	<450 200 300 – – 4.29 <1	<450 150 150 – – 2.35 <1	<450 200 350 – – 7.44 <1	<450 200 450 – – 7.45 <1	<450 150 150 – – 1.93 <1	<450 150 200 – – 1.64 <1	<450 200 175 – – 4.67 <1	<450 200 225 – – 4.39 <1	<450 200 250 – – 5.79 <1	<450 200 250 – – 5.80 <1	<450 200 200 – – 5.60 <1	<450 150 100 – – 1.30 <1	<450 150 100 – – 1.52 <1
EL	<450 150 150 4250 2250 1.52 <1	<450 150 150 – – 1.13 <1	<450 200 250 6000 4750 4.28 <1	<450 200 250 – – 4.51 <1	<450 150 150 4250 2000 2.27 <1	<450 200 450 – – 5.48 <1	<450 200 400 6000 6000 6.21 <1	<450 150 150 – – 1.60 <1	<450 150 150 4250 2500 1.22 <1	<450 200 175 – – 2.85 <1	<450 200 250 6000 7500 4.41 <1	<450 150 300 – – 4.50 <1	<450 200 400 6000 6000 5.43 <1	<450 200 200 – – 3.88 <1	<450 150 150 4250 2500 0.49	<450 150 150 – – 0.77
EK	<450 150 100 – – 1.31 <1	<450 150 100 – – 1.46 <1	<450 200 200 – – 4.08 <1	<450 150 200 – – 2.93 <1	<450 150 150 – – 1.52 <1	<450 200 400 – – 5.53 <1	<450 200 350 – – 6.58 <1	<450 150 150 – – 1.44 <1	<450 150 150 – – 1.33 <1	<450 200 175 – – 4.02 <1	<450 200 350 – – 4.43 <1	<450 200 400 – – 4.39 <1	<450 200 325 – – 5.21 <1	<450 200 200 – – 3.76 <1	<450 150 200 – – 1.49 <1	<450 150 150 – – 0.91
EJ	<450 150 200 – – 1.29 <1	<450 150 200 4250 2500 1.11 <1	<450 200 250 – – 4.24 <1	<450 200 200 6000 4500 4.90 <1	<450 150 125 – – 1.40 <1	<450 200 125 6000 5500 5.80 <1	<450 200 400 – – 5.38 <1	<450 150 200 4250 3000 1.58 <1	<450 150 150 – – 1.89 <1	<450 200 250 6000 4500 3.23 <1	<450 200 350 – – 4.85 <1	<450 200 400 6000 8000 5.45 <1	<450 200 225 – – 4.03 <1	<450 200 200 6000 4000 2.50 <1	<450 150 100 – – 0.94	<450 150 150 4250 5000 1.53 <1
EI	<450 150 150 – – 1.64 <1	<450 150 150 – – 0.93	<450 200 300 – – 3.67 <1	<450 200 300 – – 4.52 <1	<450 150 150 – – 1.32 <1	<450 200 375 – – 7.08 <1	<450 200 450 – – 5.72 <1	<450 150 200 – – 1.45 <1	<450 150 200 – – 1.20 <1	<450 200 200 – – 2.69 <1	<450 200 300 – – 3.49 <1	<450 200 400 – – 4.29 <1	<450 200 200 – – 3.59 <1	<450 200 200 – – 3.83 <1	<450 150 125 – – 0.86	<450 150 125 – – 1.22 <1
EH	<450 150 125 4250 2500 1.67 <1	<450 150 150 – – 1.24 <1	<450 200 250 6000 5000 4.7[illegible] <1	<450 200 250 – – 4.75 <1	<450 150 150 4250 2500 1.54 <1	<450 200 250 – – 5.21 <1	<450 200 400 6000 6500 4.44 <1	<450 150 200 – – 1.08 <1	<450 150 100 4250 3000 1.52 <1	<450 200 200 – – 3.52 <1	<450 200 300 6000 7000 4.82 <1	<450 200 250 – – 4.52 <1	<450 200 250 6000 5000 4.81 <1	<450 200 150 – – 2.63 <1	<450 150 150 3500 1.12 <1	<450 150 125 – – 1.26 <1
EG	<450 150 100 – – 1.46 <1	<450 150 100 – – 1.21 <1	<450 200 250 – – 3.68 <1	<450 200 250 – – 5.55 <1	<450 150 125 – – 1.32 <1	<450 200 250 – – 5.82 <1	<450 200 300 – – 5.41 <1	<450 150 150 – – 3.05 <1	<450 200 200 – – 1.31 <1	<450 200 250 – – 3.55 <1	<450 200 250 – – 2.51 <1	<450 190 150 – – 1.68 <1	<450 200 250 – – 3.03 <1	<450 200 250 – – 3.55 <1	<450 150 150 – – 1.15 <1	<450 150 150 – – 1.38 <1

Sample Data

<450 – IM-247/PD Results [$\mu\mu C/20cm^2$]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

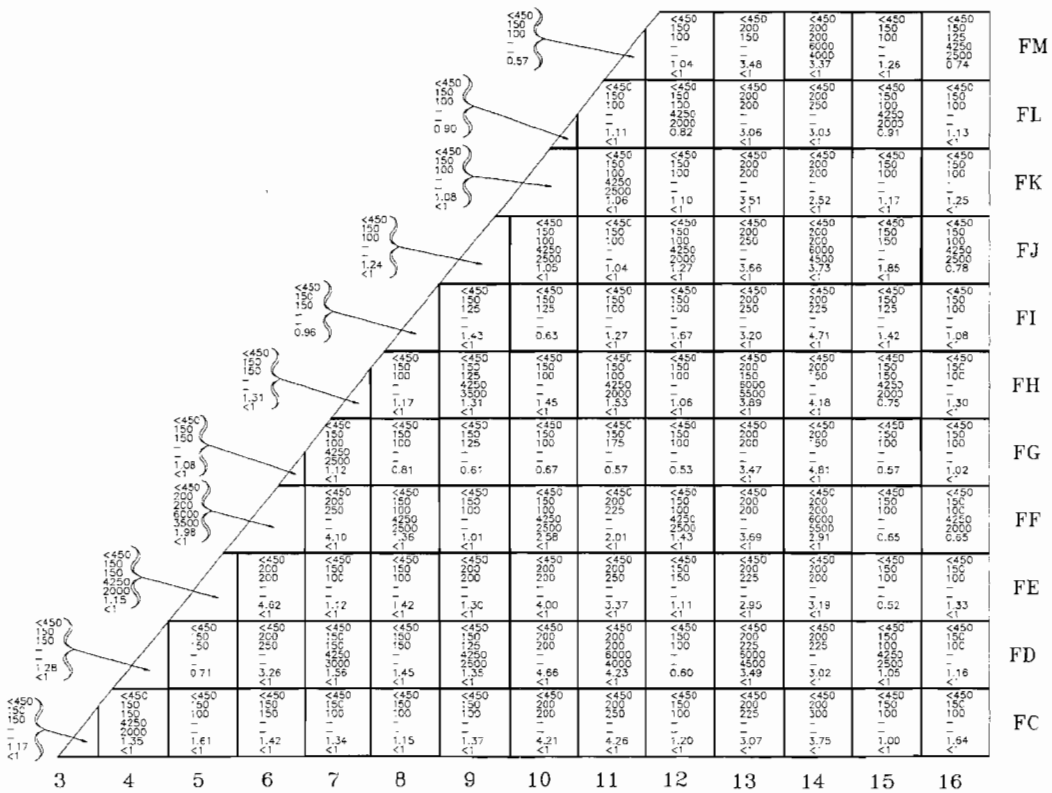
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
FB	<450 150 100 – – 1.09 <1		<450 200 275 – – 3.62 <1	<450 200 300 – – 4.11 <1	<450 150 150 4250 3000 1.54 <1	<450 200 250 – – 5.67 <1	<450 200 250 – – 5.26 <1	<450 150 100 4250 2000 1.11 <1	<450 150 150 100 – 1.84 <1	<450 200 250 6000 5500 5.60 <1	<450 200 250 – – 4.66 <1	<450 150 100 4250 2000 1.22 <1	<450 200 200 – – 4.67 <1	<450 200 200 6000 5500 3.73 <1	<450 150 100 – – 1.42 <1	<450 150 100 4250 2000 1.37 <1
FA	<450 150 50 – – 0.83		<450 200 250 6000 5500 4.48 <1	<450 200 250 – – 4.04 <1	<450 150 150 – – 1.59 <1	<450 200 250 6000 5500 5.27 <1	<450 200 200 6000 5000 5.66 <1	<450 150 100 – – 0.58	<450 150 100 4250 2500 0.49	<450 300 300 – – 3.33 <1	<450 200 250 6000 6500 3.03 <1	<450 150 125 – – 1.89 <1	<450 200 200 6000 5000 3.26 <1	<450 200 250 – – 3.99 <1	<450 150 100 4250 2000 0.94	<450 150 100 – – 0.71
EZ	<450 150 100 – – 1.43 <1	<450 150 125 – – 0.84	<450 200 350 – – 4.87 <1	<450 200 350 6000 5500 3.22 <1	<450 150 100 – – 1.31 <1	<450 200 350 – – 6.18 <1	<450 200 300 – – 4.30 <1	<450 150 125 – – 1.47 <1	<450 150 150 – – 0.87 <1	<450 200 300 – – 3.93 <1	<450 200 250 – – 3.76 <1	<450 150 100 – – 1.40 <1	<450 200 150 – – 3.48 <1	<450 200 200 – – 3.20 <1	<450 150 150 – – 0.84	<450 150 100 – – 0.63
EY	<450 150 100 – – 1.36 <1	<450 150 100 4250 1750 1.67 <1	<450 200 200 – – 3.08 <1	<450 200 250 6000 4500 3.81 <1	<450 150 100 – – 0.92	<450 200 400 6000 10000 5.44 <1	<450 200 250 – – 6.09 <1	<450 150 200 4250 3500 1.15 <1	<450 150 100 – – 1.74 <1	<450 200 300 6000 5000 4.50 <1	<450 200 200 – – 3.73 <1	<450 150 100 4250 2000 1.20 <1	<450 200 150 – – 4.00 <1	<450 200 200 6000 4500 1.44 <1	<450 150 150 – – 1.73 <1	<450 150 100 4250 2000 1.15 <1
EX	<450 150 100 – – 1.39 <1	<450 150 100 – – 0.87	<450 200 100 – – 3.82 <1	<450 200 150 – – 4.74 <1	<450 150 125 – – 1.59 <1	<450 200 400 – – 5.87 <1	<450 200 350 – – 5.14 <1	<450 150 150 – – 1.09 <1	<450 150 100 – – 1.68 <1	<450 200 350 – – 3.57 <1	<450 200 250 – – 4.00 <1	<450 150 100 – – 1.00 <1	<450 200 150 – – 3.95 <1	<450 200 200 – – 3.97 <1	<450 150 100 – – 0.56	<450 150 150 – – 0.70
EW	<450 150 150 4250 2000 1.14 <1	<450 150 125 – – 1.19 <1	<450 200 300 6000 4500 2.95 <1	<450 200 300 – – 3.92 <1	<450 150 150 4250 2500 0.85	<450 200 350 – – 4.84 <1	<450 200 350 6000 5500 5.72 <1	<450 150 250 – – 1.25 <1	<450 150 200 6000 2500 1.66 <1	<450 200 250 – – 3.98 <1	<450 200 250 6000 4500 4.03 <1	<450 150 100 – – 0.83	<450 200 200 6000 4500 4.46 <1	<450 200 150 – – 4.02 <1	<450 150 100 4250 2000 1.44 <1	<450 150 100 – – 1.64 <1
EV	<450 150 100 – – 1.05 <1	<450 150 50 – – 1.20 <1	<450 200 300 – – 4.13 <1	<450 200 250 – – 2.46 <1	<450 150 50 – – 1.00 <1	<450 150 250 – – 5.18 <1	<450 200 250 – – 4.22 <1	<450 150 200 – – 0.71 <1	<450 150 100 – – 1.07 <1	<450 200 300 – – 4.72 <1	<450 200 250 – – 4.67 <1	<450 150 125 – – 1.44 <1	<450 200 200 – – 3.74 <1	<450 200 250 – – 3.30 <1	<450 150 100 – – 0.68	<450 150 125 – – 1.06 <1
EU	<450 150 100 – – 1.21 <1	<450 150 50 4250 2000 1.17 <1	<450 200 200 – – 4.48 <1	<450 200 250 6000 5500 3.26 <1	<450 150 150 – – 1.07 <1	<450 200 250 4250 7500 5.53 <1	<450 200 400 – – 5.74 <1	<450 150 250 4250 2000 0.84	<450 150 200 – – 0.99	<450 200 300 6000 5000 3.84 <1	<450 200 200 – – 3.60 <1	<450 150 100 4250 2500 0.99	<450 200 150 – – 3.37 <1	<450 200 150 6000 4500 4.57 <1	<450 150 100 – – 1.72 <1	<450 150 100 4250 2000 0.97
ET	<450 150 100 – – 0.47	<450 150 100 – – <0.39	<450 200 200 – – 2.98 <1	<450 200 250 – – 3.74 <1	<450 150 150 – – <0.44	<450 200 250 – – 4.14 <1	<450 200 400 – – 4.25 <1	<450 150 200 – – <0.44	<450 150 250 – – <0.40	<450 200 250 – – 3.13 <1	<450 200 300 – – 3.79 <1	<450 150 100 – – 1.02 <1	<450 200 300 – – 3.35 <1	<450 200 200 – – 2.90 <1	<450 150 200 – – 3.89 <1	<450 150 150 – – 0.72
ES	<450 150 100 4250 2000 0.90	<450 150 100 – – 1.45	<450 200 350 6000 5500 3.65 <1	<450 200 300 – – 4.59 <1	<450 150 150 4250 2700 0.74	<450 200 400 – – 5.93 <1	<450 200 400 6000 6500 6.44 <1	<450 150 150 – – 4.42 <1	<450 150 200 4250 3500 0.99	<450 200 250 – – 4.37 <1	<450 200 300 6000 5000 5.19 <1	<450 150 150 – – 1.11 <1	<450 200 300 6000 5000 3.61 <1	<450 200 300 – – 3.57 <1	<450 150 150 4250 2500 1.62 <1	<450 150 150 – – 0.84
ER	<450 150 100 – – 0.90	<450 150 100 – – 0.42	<450 200 300 – – 3.81 <1	<450 200 300 – – 3.68 <1	<450 150 150 – – 1.08 <1	<450 200 350 – – 4.87 <1	<450 200 400 – – 5.41 <1	<450 150 250 – – 2.89 <1	<450 150 150 – – 0.52	<450 200 250 – – 3.63 <1	<450 200 300 – – 3.78 <1	<450 150 100 – – <0.34	<450 200 300 – – 4.54 <1	<450 200 300 – – <0.41	<450 150 150 – – 1.50 <1	<450 150 150 – – 1.14 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps

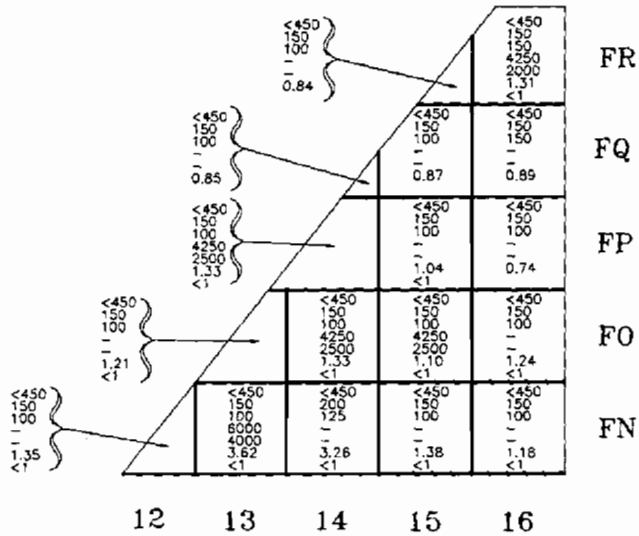


Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

e. Localized Grid Maps



Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

7. Pier J

f. Prior Photograph

Pier J

7. Pier J

h. After Photograph

Pier J

8. Wharf-F

a. Introduction:

Wharf F is located in grid D-6 of the Charleston Naval Shipyard map (Figure 10). Wharf F is also identified as structure 317-B.

(1) **Description:**

Wharf F is approximately 78 feet long by 830 feet. The wharf is constructed of wood, concrete, gravel, and asphalt. The wharf contains two sets of train rails and one set of crane rails.

(2) **Brief History:**

(a) **Use:** This area was primarily used to berth ships force living barges, support barges, and navy vessels awaiting repairs or towing. Portions of Wharf F were also used to temporarily store portable radioactive facilities prior to shipping.

(b) **Radiological History:** Portions of the wharf were controlled as radiation areas and radioactive material storage areas. On several occasions, minor spills of radioactive liquid occurred. Following these incidents all spill areas were decontaminated to less than 450 $\mu\mu Ci/100cm^2$. Loose surface contamination levels were otherwise maintained less than 450 $\mu\mu Ci/100cm^2$.

(3) **Survey Requirements:**

Group 2, Group 3 and Ships berthing area surveys were required.

b. Discussion:

Group 2 survey areas were divided into approximately 10' by 10' grids. Where physically possible, each grid was subdivided into two, 3' by 3' subsections which were located in areas of highest potential for contamination. One of these subsections was surveyed using the IM-247/PD and the other using the IM-253/PD (HV-1 PHA). Solid material samples were taken from a minimum of 50 percent of the 10' by 10' grids. Additionally, solid material samples were also taken from each 3' by 3' subsection that resulted in levels greater than 450 $\mu\mu Ci/20cm^2$ with an IM-247/PD or greater than twice background with the IM-253/PD (HV-1 PHA).

Group 3 survey areas were divided into approximately 5' by 5' grids. Each grid was surveyed using the IM-247/PD and the IM-253/PD (HV-1 PHA). Then a minimum of 25 percent of these grids were surveyed using the IM-253/PD (HV-2 GROSS). Solid material samples were taken from each 5' by 5' grid.

Wharf F was divided into 315, 10' by 10' grids and 1018, 5' by 5' grids.

8. Wharf-F

Individual backgrounds were used for this wharf. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the various natural radioactivity asphalt pours were: 40, 250, 6000; 80, 250, 6000; 50, 400, 10000; and 80, 750, 25000 counts per minute respectively. These areas were based upon background radiation levels obtained from: the Building 1601 parking area; the Building 1648 road; the Building M-1257 north road and the Building 220 east road respectively. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the high and low natural radioactivity concrete pours were: 40, 125, 4000; and 80, 350, 10000 counts per minute respectively. These areas were based upon background radiation levels obtained from the deck of Building 1605 and the deck of Building 89. The IM-247/PD and the IM-253/PD (HV-1 PHA and HV-2 GROSS) backgrounds used for the gravel was 40, 125, and 5500 counts per minute. These areas were based upon background radiation levels obtained from the Building 681 road.

Some grids have more than one material within their boundaries. The measured radiation levels recorded in each grid represent the highest radiation level found within the grid for the particular instrument and survey mode. For example, in grid BG-5 the highest IM-253/PD (HV-1 PHA) reading was detected on an asphalt covered area and the highest IM-253/PD (HV-2 GROSS) was detected from a poured cement surface. The background radiation levels in these cases represent the background for the particular material providing the highest radiation level.

A total of 1185 solid material samples were taken. Each solid sample was taken from the area of highest potential in each grid. The following naturally occurring radionuclides were typical isotopes identified during analysis of solid material samples: potassium 40, bismuth 214, lead 212, and lead 214.

c. Summary:

Surveys performed with the IM-247/PD detected one area greater than 450 $\mu\mu Ci/20cm^2$.

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

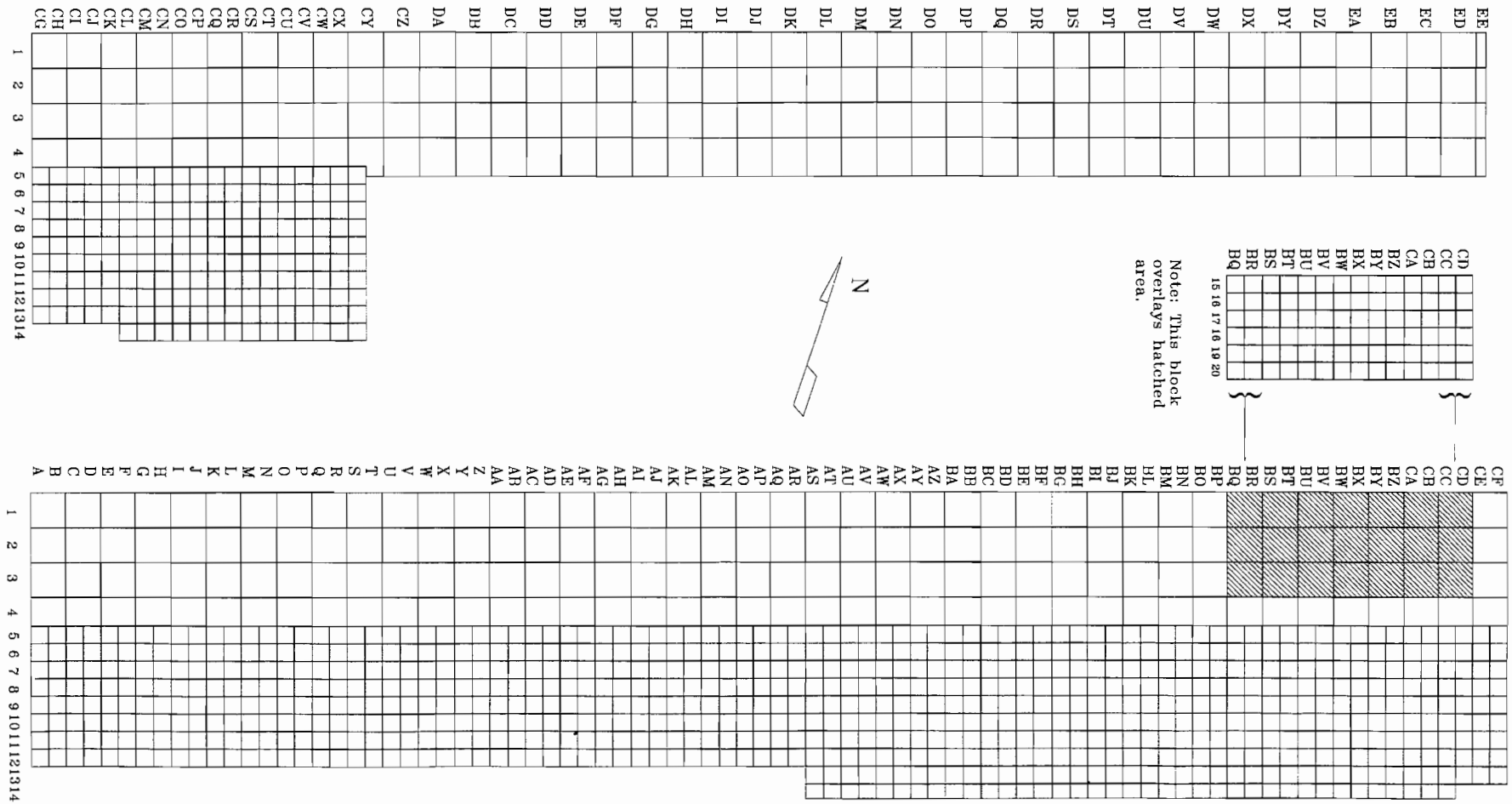
Surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background.

Analysis performed on solid material samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of less than 0.28 pCi/g to a high of 11.97 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60, indicated that all solid material samples were less than 1 pCi/g.

8. Wharf-F

d. Overall Grid Map



8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12
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I					<450 250 250 – – 7.95 <1	<450 250 300 – – 5.08 <1	<450 400 400 – – 3.32 <1	<450 400 450 10000 6000 3.24 <1	<450 400 300 – – 4.56 <1	<450 400 300 – – 3.17 <1	<450 400 250 – – 6.17 <1	<450 400 300 10000 6000 7.80 <1
H	<450 – – – 1.19 <1	<450 – – – 3.08 <1	<450 – – – – – – –	<450 – – – 2.93 <1	<450 125 200 – – 4.56 <1	<450 250 350 – – 7.61 <1	<450 400 500 10000 15000 3.47 <1	<450 400 425 – – 3.40 <1	<450 400 575 – – 3.25 <1	<450 400 425 – – 2.96 <1	<450 400 375 10000 6000 2.75 <1	<450 400 575 – – 3.48 <1
G					<450 250 375 – – 7.85 <1	<450 250 400 6000 6500 4.07 <1	<450 400 550 – – 3.05 <1	<450 400 600 – – 3.60 <1	<450 400 600 – – 2.87 <1	<450 400 450 10000 9500 3.31 <1	<450 400 400 – – 3.24 <1	<450 400 575 – – 3.13 <1
F	<450 – – – 1.20 <1	<450 – – – – – – –	<450 – – – 1.43 <1	<450 – – – – – – –	<450 250 250 4000 7500 8.67 <1	<450 250 300 – – 4.43 <1	<450 400 400 – – 3.49 <1	<450 400 450 – – 3.11 <1	<450 400 500 10000 17500 2.77 <1	<450 400 350 – – 2.95 <1	<450 400 300 – – 2.91 <1	<450 400 450 – – 2.73 <1
E					<450 250 200 – – 8.21 <1	<450 250 200 – – 3.98 <1	<450 400 450 10000 17500 4.01 <1	<450 400 500 – – 3.67 <1	<450 400 500 – – 3.23 <1	<450 400 300 – – 2.69 <1	<450 400 450 – – 3.79 <1	<450 400 400 10000 15000 3.56 <1
D	<450 – – – – – – –	<450 – – – 5.26 <1	<450 – – – – – – –	<450 – – – 4.02 <1	<450 250 275 – – 8.17 <1	<450 250 400 – – 10.71 <1	<450 125 200 4000 5755 4.26 <1	<450 400 425 – – 3.36 <1	<450 400 600 – – 3.78 <1	<450 400 600 – – 3.16 <1	<450 400 475 – – 3.61 <1	<450 400 425 10000 17500 3.87 <1
C					<450 125 200 – – 8.30 <1	<450 250 275 4000 5000 8.55 <1	<450 125 225 – – 9.74 <1	<450 400 425 – – 8.95 <1	<450 400 600 – – 7.98 <1	<450 400 475 – – 8.32 <1	<450 400 500 10000 12500 10.00 <1	<450 400 425 – – 9.02 <1
B	<450 – – – 1.94 <1	<450 – – – – – – –	<450 – – – 1.29 <1	<450 – – – – – – –	<450 125 175 – – 1.48 <1	<450 125 150 4000 5000 3.03 <1	<450 250 225 – – 3.72 <1	<450 400 400 – – 2.87 <1	<450 400 400 – – 2.64 <1	<450 400 425 – – 3.35 <1	<450 400 375 10000 17500 3.43 <1	<450 400 350 – – 3.25 <1
A					<450 125 100 6000 7000 1.99 <1	<450 250 250 – – 3.12 <1	<450 400 450 – – 2.58 <1	<450 400 425 – – 2.86 <1	<450 400 400 10000 17500 2.79 <1	<450 400 425 – – 4.49 <1	<450 400 400 – – 3.09 <1	<450 400 350 – – 2.30 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12
T	<450 – – – – – 125 125 – – –	<450 – – – 2.76 <1 – 250 400 – –	<450 – – – – – 125 125 – – –	<450 – – – 4.05 <1 – 125 125 – –	<450 125 150 – – 1.39 <1	<450 125 150 6000 10000 1.55 <1	<450 400 550 – – 3.42 <1	<450 400 550 – – 3.60 <1	<450 400 450 – – 3.46 <1	<450 400 350 10000 10000 3.32 <1	<450 400 450 – – 3.63 <1	<450 400 450 – – 4.22 <1
S					<450 125 150 – – 1.16 <1	<450 125 150 – – 1.82 <1	<450 400 600 – – 4.09 <1	<450 400 600 10000 15000 2.94 <1	<450 400 550 – – 3.19 <1	<450 400 600 – – 3.43 <1	<450 400 500 – – 4.06 <1	<450 400 600 10000 15000 3.56 <1
R	<450 – – – – 1.79 <1 125 75 – –	<450 – – – – – 250 200 – –	<450 – – – – 1.02 <1 – 125 100 – –	<450 – – – – – 250 200 – –	<450 250 330 6000 7300 9.51 <1	<450 250 300 – – 7.54 <1	<450 400 600 – – 3.44 <1	<450 400 600 – – 4.06 <1	<450 400 400 10000 12500 3.47 <1	<450 400 500 – – 4.47 <1	<450 400 350 – – 3.83 <1	<450 400 600 – – 3.89 <1
Q					<450 250 350 – – 6.79 <1	<450 250 350 – – 0.97	<450 400 550 – – 3.73 <1	<450 400 600 10000 15000 3.68 <1	<450 400 400 – – 3.88 <1	<450 400 350 – – 2.73 <1	<450 400 400 – – 3.12 <1	<450 400 450 10000 10000 4.54 <1
P	<450 – – – – – 125 100 – – –	<450 – – – 2.16 <1 – 250 350 – –	<450 – – – – – 125 100 – – –	<450 – – – 3.04 <1 – 250 250 – –	<450 250 330 – – 7.73 <1	<450 250 300 – – 5.20 <1	<450 125 150 5500 5000 1.50 <1	<450 125 150 – – 1.33 <1	<450 400 300 – – 3.87 <1	<450 400 300 – – 3.00 <1	<450 400 350 10000 10000 3.27 <1	<450 400 300 – – 3.38 <1
O					<450 250 250 – – 2.34 <1	<450 250 330 6000 6000 .99 <1	<450 125 150 – – 1.23 <1	<450 125 150 – – 1.08 <1	<450 400 325 – – 4.51 <1	<450 400 350 10000 8000 3.85 <1	<450 400 450 – – 3.20 <1	<450 400 400 – – 3.42 <1
N	<450 – – – – 1.88 <1 125 100 – –	<450 – – – – – 250 400 – –	<450 – – – 1.53 <1 – 125 100 – –	<450 – – – – – 125 100 – –	<450 250 250 – – 5.33 <1	<450 250 250 – – 8.14 <1	<450 400 450 – – 2.58 <1	<450 400 400 – – 3.92 <1	<450 400 300 10000 10000 4.93 <1	<450 400 250 – – 2.31 <1	<450 400 350 10000 6500 2.13 <1	<450 400 400 – – 2.81 <1
M					<450 250 350 – – 8.41 <1	<450 250 250 – – 8.14 <1	<450 400 400 – – 3.55 <1	<450 400 400 10000 15000 3.40 <1	<450 400 500 – – 4.66 <1	<450 400 350 – – 2.69 <1	<450 400 300 – – 2.95 <1	<450 400 300 10000 5000 2.94 <1
L	<450 – – – – – 125 100 – –	<450 – – – 3.18 <1 – 250 350 – –	<450 – – – – – 125 100 – –	<450 – – – 4.07 <1 – 125 150 – –	<450 125 175 – – 1.65 <1	<450 125 175 4000 4000 1.63 <1	<450 400 500 – – 4.18 <1	<450 400 600 – – 3.97 <1	<450 400 350 – – 3.83 <1	<450 400 350 10000 12500 3.48 <1	<450 400 350 – – 6.32 <1	<450 400 350 – – 2.92 <1
K					<450 125 175 4000 4000 1.40 <1	<450 125 175 – – 2.55 <1	<450 400 500 – – 3.25 <1	<450 400 600 – – 4.36 <1	<450 400 350 10000 12500 2.93 <1	<450 400 350 – – 3.13 <1	<450 400 350 – – 3.04 <1	<450 400 350 – – 3.49 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-' PHA) [bkg.]
300 – IM-253/PD (HV-' PHA) [cpm]
7200 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12
AD	<450 – – – – 1.32 <1	<450 – – – – 250 300	<450 – – – – 1.44 <1	<450 – – – – 125 175	<450 125 125 – – 1.17 <1	<450 250 250 – – 7.77 <1	<450 420 470 10000 12500 3.76 <1	<450 400 600 – – 2.62 <1	<450 400 350 – – 2.49 <1	<450 400 360 – – 3.01 <1	<450 400 300 – – 2.49 <1	<450 400 250 7000 7000 2.0 <1
AC					<450 250 350 – – 8.99 <1	<450 250 250 2500 5000 8.99 <1	<450 400 550 – – 3.5 <1	<450 400 500 – – 3.25 <1	<450 400 350 – – 3.07 <1	<450 400 300 – – 11.97 <1	<450 400 300 10000 8000 2.83 <1	<450 400 300 – – 2.52 <1
AB	<450 – – – – 125 100	<450 – – – 3.43 <1 250 300	<450 – – – – 125 100	<450 – – – 3.94 <1 250 250	<450 125 200 – – 7.40 <1	<450 125 200 4000 5000 1.32 <1	<450 400 550 – – 3.1 <1	<450 400 500 – – 3.34 <1	<450 400 550 – – 3.20 <1	<450 400 400 – – 3.13 <1	<450 400 400 10000 10000 3.39 <1	<450 400 400 – – 3.06 <1
AA					<450 125 200 4000 5000 4.13 <1	<450 125 200 – – 1.21 <1	<450 400 450 – – 0.71	<450 400 450 – – 3.15 <1	<450 400 400 10000 15000 3.54 <1	<450 400 450 – – 3.05 <1	<450 400 450 – – 3.33 <1	<450 400 450 – – 2.23 <1
Z	<450 – – – – 125 100	<450 – – – – 250 300	<450 – – – – 125 100	<450 – – – – 125 150	<450 125 225 – – 1.12 <1	<450 125 225 – – 1.76 <1	<450 400 500 – – 3.88 <1	<450 400 500 – – 3.76 <1	<450 400 450 – – 3.96 <1	<450 400 400 10000 15000 4.31 <1	<450 400 350 10000 15000 3.12 <1	<450 400 400 – – 2.81 <1
Y					<450 125 200 – – 1.35 <1	<450 125 200 – – 0.80	<450 125 225 – – 1.54 <1	<450 400 550 – – 3.01 <1	<450 400 565 10000 12500 3.61 <1	<450 400 500 10000 12500 3.36 <1	<450 400 400 – – 3.51 <1	<450 400 500 – – 3.11 <1
X	<450 – – – – 125 100	<450 – – – 2.68 <1 250 400	<450 – – – 0.58 – 125 100	<450 – – – 5.01 <1 125 125	<450 125 125 – – 1.45 <1	<450 125 150 – – 1.47 <1	<450 400 500 – – 2.38 <1	<450 400 600 – – 3.49 <1	<450 400 550 10000 15000 2.92 <1	<450 400 350 10000 10000 3.45 <1	<450 400 400 – – 2.45 <1	<450 400 350 – – 2.80 <1
W					<450 125 125 4000 4000 10.21 <1	<450 125 150 – – 1.51 <1	<450 400 500 – – 3.66 <1	<450 400 600 – – 3.1 <1	<450 400 500 – – 3.84 <1	<450 400 350 10000 10000 2.53 <1	<450 400 400 – – 3.47 <1	<450 400 350 – – 2.47 <1
V	<450 – – – – 125 100	<450 – – – – 250 300	<450 – – – – 125 100	<450 – – – – 125 100	<450 125 225 – – 1.59 <1	<450 125 200 – – 0.80	<450 400 550 – – 3.01 <1	<450 400 500 10000 15000 2.81 <1	<450 400 450 – – 2.41 <1	<450 400 400 – – 3.41 <1	<450 400 450 – – 3.06 <1	<450 400 400 10000 15000 3.15 <1
U					<450 125 150 – – <0.58	<450 125 150 – – <0.59	<450 400 500 10000 15000 3.36 <1	<450 400 500 – – 3.42 <1	<450 400 450 – – 3.12 <1	<450 400 400 – – 3.54 <1	<450 400 400 10000 10000 3.05 <1	<450 400 400 – – 4.0 <1

Sample Data

<450 – IM-247/PD Results [μpCi/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GRCSS) [bkg.]
7300 – IM-253/PD (HV-2 GRCSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12
AN	<450 – – – – – – 125 125 – – –	<450 – – – – – – 250 250 – – –	<450 – – – – – – 125 150 – – –	<450 – – – – – 3.11 <1 125 150 – – –	<450 250 250 – – – 8.21 <1	<450 250 250 – – – 4.89 <1	<450 400 450 – – – 3.23 <1	<450 400 450 – – – 2.79 <1	<450 400 400 10000 12500 – 2.81 <1	<450 400 450 – – – 2.46 <1	<450 400 400 10000 12500 – 3.00 <1	<450 400 500 – – – 2.79 <1
AM					<450 250 300 – – – 8.00 <1	<450 250 350 – – – 9.28 <1	<450 400 600 – – – 2.54 <1	<450 400 650 10000 15000 – 2.83 <1	<450 400 500 – – – 2.26 <1	<450 400 500 – – – 2.26 <1	<450 400 550 – – – 3.16 <1	<450 400 600 12000 15000 – 2.21 <1
AL	<450 – – – – – – 125 150 – – – 1.54 <1	<450 – – – – – – 250 300 – – –	<450 – – – – – 1.60 <1 125 150 – – –	<450 – – – – – – 125 125 – – –	<450 250 250 – – – 8.48 <1	<450 250 300 6000 6500 – 5.47 <1	<450 400 500 – – – 2.78 <1	<450 400 500 – – – 3.44 <1	<450 400 400 – – – 3.62 <1	<450 400 300 10000 7500 – 2.67 <1	<450 400 300 – – – 2.58 <1	<450 400 250 – – – 3.23 <1
AK					<450 250 250 6000 3500 – 8.88 <1	<450 250 200 – – – 5.46 <1	<450 400 450 – – – 2.89 <1	<450 400 300 – – – 3.40 <1	<450 400 300 10000 9000 – 3.07 <1	<450 400 250 – – – 3.40 <1	<450 400 230 – – – 2.54 <1	<450 400 200 – – – 3.16 <1
AJ	<450 – – – – – – 125 125 – – –	<450 – – – – – – 250 250 – – –	<450 – – – – – – 125 125 – – –	<450 – – – – – 3.26 <1 125 150 – – –	<450 250 250 – – – 9.52 <1	<450 250 350 – – – 10.18 <1	<450 400 400 10000 15000 – 3.13 <1	<450 400 450 – – – 4.09 <1	<450 400 250 – – – 2.7[illegible] <1	<450 400 300 – – – 2.29 <1	<450 400 300 10000 8500 – 3.32 <1	<450 400 350 – – – 2.94 <1
AI					<450 250 300 – – – 9.02 <1	<450 250 250 – – – 7.96 <1	<450 400 300 – – – 3.88 <1	<450 400 400 10000 8500 – 4.18 <1	<450 400 350 – – – 3.46 <1	<450 400 300 – – – 4.27 <1	<450 400 300 – – – 3.55 <1	<450 400 350 13000 10000 – 3.13 <1
AH	<450 – – – – – – 125 150 – – – 1.27 <1	<450 – – – – – – 250 275 – – –	<450 – – – – – 1.24 <1 125 150 – – –	<450 – – – – – – 125 150 – – –	<450 250 250 – – – 7.84 <1	<450 250 250 – – – 6.98 <1	<450 400 400 10000 15000 – 2.90 <1	<450 400 450 – – – 3.10 <1	<450 400 250 – – – 3.18 <1	<450 400 300 – – – 2.94 <1	<450 400 300 12000 12000 – 3.38 <1	<450 400 300 – – – 3.64 <1
AG					<450 250 300 – – – 9.47 <1	<450 250 300 6000 6500 – 8.45 <1	<450 400 425 – – – 3.09 <1	<450 400 600 – – – 3.59 <1	<450 400 400 – – – 3.10 <1	<450 400 300 10000 9500 – 3.63 <1	<450 400 350 – – – 3.00 <1	<450 400 350 – – – 3.09 <1
AF	<450 – – – – – – 125 100 – – –	<450 – – – – – 1.39 <1 250 350 – – –	<450 – – – – – – 125 100 – – –	<450 – – – – – 3.00 <1 125 125 – – –	<450 125 130 4000 3000 – 1.70 <1	<450 125 150 – – – 1.36 <1	<450 125 150 – – – 1.59 <1	<450 400 500 – – – 3.66 <1	<450 400 450 10000 15000 – 3.07 <1	<450 400 300 – – – 2.93 <1	<450 400 300 – – – 2.63 <1	<450 400 300 – – – 2.06 <1
AE					<450 125 175 – – – 0.90	<450 125 100 – – – 1.63 <1	<450 400 250 10000 6000 – 3.22 <1	<450 400 600 – – – 3.08 <1	<450 400 300 – – – 2.45 <1	<450 400 300 – – – 1.57 <1	<450 400 230 – – – 2.23 <1	<450 400 250 12000 6000 – 2.16 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AX	<450 – – – – 1.14 <1	<450 – – – – –	<450 – – – – 0.74	<450 – – – – –	<450 250 275 – – 6.53 <1	<450 250 250 6000 5500 3.95 <1	<450 125 250 – – 1.52 <1	<450 400 550 – – 4.71 <1	<450 400 650 – – 4.60 <1	<450 350 450 10000 12500 1.86 <1	<450 350 600 – – 2.09 <1	<450 350 600 – – 2.74 <1	<450 350 550 – – 2.38 <1	<450 350 500 – – 2.55 <1
AW					<450 250 250 6000 7500 7.54 <1	<450 125 175 – – 1.58 <1	<450 450 600 – – 3.09 <1	<450 450 650 – – 2.33 <1	<450 400 500 10000 15000 3.08 <1	<450 400 500 – – 2.49 <1	<450 400 500 – – 2.75 <1	<450 400 500 – – 2.44 <1	<450 400 500 – – 1.96 <1	<450 450 450 10000 17500 1.31 <1
AV	<450 – – – – –	<450 – – – – 2.51 <1	<450 – – – – –	<450 – – – – 4.55 <1	450 250 100 6000 8000 9.40 <1	<450 250 100 6000 9000 6.08 <1	<450 450 550 – – 3.49 <1	<450 450 550 – – 2.47 <1	<450 400 600 – – 3.72 <1	<450 400 400 10000 9000 2.62 <1	<450 400 400 – – 2.49 <1	<450 400 600 – – 2.54 <1	<450 400 600 10000 15000 2.59 <1	<450 400 450 – – 1.36 <1
AU					940 250 100 6000 8000 9.13 <1	<450 125 150 – – 1.08 <1	<450 400 600 10000 8000 6.24 <1	<450 400 600 – – 2.49 <1	<450 400 500 – – 2.35 <1	<450 400 450 – – 2.52 <1	<450 400 500 – – 2.70 <1	<450 400 500 10000 10000 2.31 <1	<450 400 600 – – 2.76 <1	<450 400 400 – – 1.90 <1
AT	<450 – – – – 1.12 <1	<450 – – – – –	<450 – – – – <0.54	<450 – – – – –	<450 250 300 6000 10000 9.95 <1	<450 250 250 6000 6000 3.96 <1	<450 400 400 – – 3.64 <1	<450 400 400 – – 3.65 <1	<450 400 400 – – 5.55 <1	<450 400 300 10000 10000 5.74 <1	<450 400 250 – – 3.61 <1	<450 400 400 – – 2.17 <1	<450 400 500 – – 2.94 <1	<450 400 400 – – 2.35 <1
AS					450 250 380 6000 10000 7.25 <1	<450 250 350 – – 7.76 <1	<450 400 600 – – 2.93 <1	<450 400 600 – – 3.58 <1	<450 400 550 10000 10000 4.15 <1	<450 400 450 – – 3.67 <1	<450 400 400 – – 2.79 <1	<450 400 450 – – 2.42 <1	<450 400 500 10000 11000 2.55 <1	<450 400 500 – – 3.08 <1
AR	<450 – – – – 0.80 <1	<450 – – – – 2.73 <1	<450 – – – – –	<450 – – – – 4.34 <1	<450 250 300 6000 8000 10.20 <1	<450 250 255 – – 5.76 <1	<450 400 500 – – 3.76 <1	<450 400 550 – – 3.96 <1	<450 400 400 10300 12500 2.48 <1	<450 400 400 – – 2.45 <1	<450 400 400 – – 4.14 <1	<450 400 450 – – 3.93 <1		
AQ					<450 250 300 – – 8.66 <1	<450 250 200 – – 8.53 <1	<450 400 350 – – 3.10 <1	<450 400 400 10000 10000 3.66 <1	<450 400 400 – – 2.59 <1	<450 400 350 – – 3.85 <1	<450 400 350 – – 3.55 <1	<450 400 550 10000 17500 3.05 <1		
AP	<450 – – – – 2.10 <1	<450 – – – – –	<450 – – – – 2.16 <1	<450 – – – – –	<450 250 250 – – 4.29 <1	<450 250 250 – – 6.06 <1	<450 400 350 10000 12500 3.46 <1	<450 400 400 – – 3.18 <1	<450 400 450 – – 3.19 <1	<450 400 450 – – 2.88 <1	<450 400 450 10000 12500 3.53 <1	<450 400 550 – – 2.57 <1		
AO					<450 250 250 – – 8.68 <1	<450 250 255 6000 8000 4.70 <1	<450 400 450 – – 4.15 <1	<450 400 500 – – 3.48 <1	<450 400 500 – – 2.54 <1	<450 400 500 10000 17500 3.25 <1	<450 400 450 – – 2.80 <1	<450 400 550 – – 3.18 <1		

Notes:

(1) Areas surveyed with an IM-247/PD, indicating detectable activity greater than 450μμCi/20cm² were sampled and analyzed by spectral analysis. In these cases, analysis of the spectrum indicated only photopeaks of naturally occurring isotopes not associated with the Naval Nuclear Propulsion Program. These natural isotopes include K-40, Ra-226, Pb-212, Bi-214, Be-7, Tl-208 and Ac-228.

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BH	<450 – – – – – 125 100 – – –	<450 – – – – 3.61 <1 250 200 – – –	<450 – – – – – 125 100 – – –	<450 – – – – 4.77 <1 250 200 – – –	<450 250 250 – – – 9.14 <1	<450 250 250 – – – 5.98 <1	<450 400 400 – – – 3.75 <1	<450 400 500 – – – 4.49 <1	<450 400 600 – – – 4.92 <1	<450 400 600 – – – 5.22 <1	<450 350 350 10000 8500 – 4.57 <1	<450 350 400 13000 8500 – 4.49 <1	<450 400 500 – – – 4.54 <1	<450 400 500 – – – 5.24 <1
BG					<450 250 250 4000 3000 – 9.72 <1	<450 125 250 4000 4000 – 1.54 <1	<450 400 300 19000 15000 – 0.83	<450 400 400 – – – 5.78 <1	<450 400 600 19000 15000 – 4.98 <1	<450 400 350 – – – 5.66 <1	<450 350 350 – – – 5.33 <1	<450 350 350 – – – 5.18 <1	<450 400 300 – – – 6.15 <1	<450 400 400 – – – 5.75 <1
BF	<450 – – – – – 125 100 – – 0.87	<450 – – – – – 250 100 – – –	<450 – – – – – 125 100 – – 1.26 <1	<450 – – – – – 250 150 – – –	<450 125 200 – – – 3.95 <1	<450 125 200 – – – 1.14 <1	<450 250 350 – – – 2.47 <1	<450 400 350 – – – 5.79 <1	<450 400 600 – – – 4.65 <1	<450 400 600 10000 8000 – 5.59 <1	<450 400 400 – – – 6.80 <1	<450 400 450 – – – 4.88 <1	<450 400 350 – – – 6.21 <1	<450 400 350 10000 7000 – 5.97 <1
BE					<450 250 300 – – – 9.39 <1	<450 250 250 – – – 7.91 <1	<450 400 300 3000 4000 – 1.59 <1	<450 400 400 – – – 5.30 <1	<450 400 400 – – – 3.81 <1	<450 400 400 – – – 5.34 <1	<450 400 300 10000 5000 – 4.62 <1	<450 400 350 – – – 4.52 <1	<450 400 300 1000C 9000 – 4.43 <1	<450 400 350 – – – 5.17 <1
BD	<450 – – – – – 125 100 – – –	<450 – – – – 4.31 <1 250 200 – – –	<450 – – – – – 125 100 – – –	<450 – – – – 4.31 <1 250 150 – – –	<450 250 400 – – – 9.38 <1	<450 250 300 – – – 9.13 <1	<450 125 150 – – – 0.90	<450 400 300 – – – 6.03 <1	<450 400 400 – – – 5.24 <1	<450 400 400 – – – 4.22 <1	<450 400 400 – – – 5.90 <1	<450 400 400 10000 12500 – 6.80 <1	<450 400 400 1000C 1250C – 4.32 <1	<450 400 400 – – – 4.91 <1
BC					<450 250 300 – – – 10.38 <1	<450 250 300 – – – 8.49 <1	<450 400 450 – – – 4.03 <1	<450 400 450 – – – 5.53 <1	<450 400 500 10000 10000 – 4.49 <1	<450 400 350 1000C 1000C – 5.12 <1	<450 400 400 10000 10000 – 5.21 <1	<450 400 550 – – – 6.41 <1	<450 400 600 – – – 6.80 <1	<450 400 350 – – – <0.34
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BA					<450 250 450 – – – 8.67 <1	<450 250 400 6000 6000 – 7.78 <1	<450 400 550 – – – 5.17 <1	<450 400 700 10000 15000 – 4.30 <1	<450 350 200 – – – 0.67	<450 350 450 – – – 0.79	<450 350 400 – – – 1.39 <1	<450 350 400 – – – 1.13 <1	<450 350 400 1000C 1500C – 1.40 <1	<450 350 500 – – – 1.28 <1
AZ	<450 – – – – – 125 150 – – –	<450 – – – – 3.77 <1 250 300 – – –	<450 – – – – – 125 200 – – –	<450 – – – – 4.30 <1 125 200 – – –	<450 250 300 6000 5000 – 8.96 <1	<450 250 250 – – – 2.57 <1	<450 400 350 – – – 3.95 <1	<450 400 600 – – – 4.58 <1	<450 400 600 10000 1500C – 3.64 <1	<450 350 400 – – – 1.55 <1	<450 350 400 – – – 1.65 <1	<450 350 400 – – – 1.22 <1	<450 350 425 10000 1250C – 1.18 <1	<450 350 450 – – – 2.02 <1
AY					<450 250 250 – – – 8.54 <1	<450 250 225 – – – 3.75 <1	<450 400 500 10000 17500 – 5.07 <1	<450 400 525 – – – 4.58 <1	<450 400 650 – – – 5.50 <1	<450 350 400 – – – 2.25 <1	<450 350 375 – – – 1.45 <1	<450 350 350 10000 15000 – 2.38 <1	<450 350 400 – – – 1.51 <1	<450 350 450 – – – 6.29 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm
1.82 – NCA Gross Gamma Ec. Co-60 [pCi/g]
<1 – NCA Specific Co-60 Results [pC /g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
BP	<450 – – – – – – – 125 100 – – – –	<450 – – – – – – – 250 200 – – – –	<450 – – – – – – – 125 100 – – – –	<450 – – – – – – – 250 150 – – – –	<450 250 250 6500 6500 – 6.91 <1	<450 125 250 4000 6000 – 1.72 <1	<450 400 500 – – – 6.16 <1	<450 400 600 – – – 4.86 <1	<450 400 400 – – – 6.02 <1	<450 400 500 – – – 4.36 <1	<450 750 500 25000 15000 – 4.41 <1	<450 750 600 – – – 6.83 <1	<450 750 600 – – – 5.87 <1	<450 750 550 25000 15000 – 5.36 <1
BO					<450 125 150 – – – 1.09 <1	<450 250 250 – – – 7.92 <1	<450 400 250 10000 10000 – 2.77 <1	<450 400 750 – – – 3.78 <1	<450 400 600 – – – 5.23 <1	<450 400 400 – – – 4.67 <1	<450 750 750 – – – 6.51 <1	<450 750 700 – – – 6.51 <1	<450 750 650 25000 17500 – 5.50 <1	<450 750 700 – – – 3.29 <1
BN	<450 – – – – – – – 125 100 – – – 1.08 <1	<450 – – – – – – – 250 250 – – – –	<450 – – – – – – – 125 100 – – – 0.78	<450 – – – – – – – 250 200 – – – –	<450 125 150 – – – 4.57 <1	<450 125 150 – – – 0.70	<450 400 500 10000 7500 – 4.71 <1	<450 400 650 – – – 5.07 <1	<450 400 600 10000 15000 – 4.85 <1	<450 400 400 – – – 4.69 <1	<450 750 550 – – – 5.53 <1	<450 750 600 – – – 5.42 <1	<450 750 650 – – – 4.93 <1	<450 750 650 – – – 5.38 <1
BM					<450 250 200 6000 3750 – 7.12 <1	<450 250 250 – – – 9.43 <1	<450 400 550 – – – 4.76 <1	<450 400 650 – – – 3.35 <1	<450 400 650 – – – 4.34 <1	<450 400 500 10000 8000 – 4.21 <1	<450 750 650 – – – 4.87 <1	<450 750 650 – – – 5.35 <1	<450 750 650 – – – 5.90 <1	<450 750 600 25000 15000 – 5.60 <1
BL	<450 – – – – – – – 125 200 – – – –	<450 – – – – – – – 250 250 – – – 3.64	<450 – – – – – – – 125 150 – – – –	<450 – – – – – – – 250 200 – – – –	<450 125 150 4000 3000 – 0.96	<450 125 250 – – – 1.83 <1	<450 125 200 – – – 2.92 <1	<450 400 700 – – – 5.22 <1	<450 400 700 – – – 3.96 <1	<450 400 500 10000 12500 – 4.02 <1	<450 750 650 – – – 4.85 <1	<450 750 625 – – – 5.42 <1	<450 750 600 – – – 4.85 <1	<450 750 625 25000 25000 – 6.32 <1
BK					<450 125 150 4000 3500 – 1.15 <1	<450 250 300 – – – 6.60 <1	<450 400 450 – – – 4.29 <1	<450 400 600 – – – 4.63 <1	<450 400 575 10000 12500 – 3.21 <1	<450 400 375 – – – 5.58 <1	<450 750 525 – – – 5.74 <1	<450 750 600 – – – 6.00 <1	<450 750 550 – – – 5.06 <1	<450 750 625 – – – 6.03 <1
BJ	<450 – – – – – – – 125 100 – – – 1.45 <1	<450 – – – – – – – 250 250 – – – 5.03 <1	<450 – – – – – – – 125 100 – – – 1.33 <1	<450 – – – – – – – 250 150 – – – –	<450 125 150 – – – 0.77	<450 125 150 – – – 1.10 <1	<450 400 450 – – – 4.79 <1	<450 400 650 – – – 3.67 <1	<450 400 600 – – – 4.71 <1	<450 400 400 10000 10000 – 5.33 <1	<450 750 650 – – – 5.62 <1	<450 750 600 – – – 5.40 <1	<450 750 600 25000 15000 – 5.12 <1	<450 750 600 – – – 9.24 <1
BI					<450 125 150 – – – 1.51 <1	<450 125 150 – – – 1.03 <1	<450 400 600 10000 15000 – 3.34 <1	<450 400 650 – – – 3.63 <1	<450 400 600 – – – 5.00 <1	<450 400 400 10000 15000 – 6.71 <1	<450 750 600 – – – 3.93 <1	<450 750 600 – – – 5.92 <1	<450 750 600 – – – 7.45 <1	<450 450 450 10000 10000 – <0.28

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	15	16	17	18	19	20	4	5	6	7	8	9	10	11	12	13	14
BX	<450 125 100 – – 0.99	<450 125 150 4000 3000 1.35 <1	<450 250 200 – – 4.73 <1	<450 250 200 – – 3.70 <1	<450 125 100 – – 1.94 <1	<450 125 100 4000 3000 0.50	<450 – – – – – – – – –	<450 125 250 4000 4500 1.26 <1	<450 250 250 – – 5.83 <1	<450 125 150 10000 15000 3.58 <1	<450 400 600 – – 4.69 <1	<450 400 600 – – 5.31 <1	<450 400 450 10000 10000 5.51 <1	<450 750 650 – – 2.76 <1	<450 750 600 – – 5.87 <1	<450 750 650 – – 5.37 <1	<450 750 700 25000 20000 6.60 <1
BW	<450 125 150 – – 1.03 <1	<450 125 150 – – 0.79	<450 250 250 5000 3000 4.92 <1	<450 250 250 – – 3.07 <1	<450 125 100 – – 1.05 <1	<450 125 100 – – 0.63	<450 4.37 <1 – – – – 250 150 – – – – –	<450 250 250 – – 6.40 <1	<450 250 400 – – 4.84 <1	<450 400 600 – – 4.69 <1	<450 400 600 10000 16000 4.24 <1	<450 400 600 – – 4.69 <1	<450 400 575 – – 4.93 <1	<450 750 700 – – 6.64 <1	<450 750 700 – – 6.72 <1	<450 750 700 25000 35000 4.74 <1	<450 750 700 – – 6.27 <1
BV	<450 125 250 4000 6000 0.79	<450 125 100 – – 1.09 <1	<450 250 200 – – 4.90 <1	<450 250 250 – – 2.72 <1	<450 125 150 4000 4000 1.20 <1	<450 125 100 – – 0.99	<450 – – – – – – – – –	<450 125 155 – – 1.16 <1	<450 250 500 – – 4.24 <1	<450 400 550 – – 6.24 <1	<450 400 550 – – 5.72 <1	<450 400 600 10000 17500 4.50 <1	<450 400 600 – – 4.30 <1	<450 750 500 25000 17500 5.14 <1	<450 750 500 – – 5.44 <1	<450 750 600 – – 5.57 <1	<450 750 650 – – – <0.54
BU	<450 125 250 – – 1.31 <1	<450 125 100 4000 1250 <0.37	<450 250 275 – – 4.16 <1	<450 250 275 – – 1.72 <1	<450 125 125 – – 0.59	<450 125 100 4000 3500 0.60	<450 – – – – – – – – –	<450 250 200 6000 5500 4.53 <1	<450 250 250 – – 4.79 <1	<450 400 600 – – 4.58 <1	<450 400 600 – – 5.20 <1	<450 400 600 – – 4.61 <1	<450 400 550 10000 10000 5.84 <1	<450 750 600 – – 5.96 <1	<450 750 600 25000 15000 6.33 <1	<450 750 650 – – 6.03 <1	<450 750 650 – – – <0.48
BT	<450 125 100 – – 0.80	<450 125 125 – – <0.36	<450 250 225 – – 4.06 <1	<450 250 250 6000 5500 3.95 <1	<450 125 150 – – 0.67	<450 125 125 – – <0.41	<450 – – – – – – – – –	<450 125 125 – – 0.61	<450 250 250 – – 4.17 <1	<450 400 600 – – 4.14 <1	<450 400 650 – – 4.11 <1	<450 400 700 – – 4.92 <1	<450 400 450 10000 10000 6.28 <1	<450 750 750 – – 6.28 <1	<450 750 750 – – 5.98 <1	<450 750 750 25000 15000 6.23 <1	<450 750 800 – – 6.26 <1
BS	<450 125 125 4000 3700 0.78	<450 125 150 – – 0.81	<450 250 250 – – 4.26 <1	<450 250 300 – – 3.69 <1	<450 125 150 4000 3500 1.02 <1	<450 125 150 – – 0.42	<450 – – – – – – – – –	<450 125 125 – – 0.79	<450 250 250 6000 6000 3.91 <1	<450 400 600 – – 3.89 <1	<450 400 600 10000 17000 3.40 <1	<450 400 600 – – 3.87 <1	<450 400 400 – – 5.09 <1	<450 750 750 – – 4.44 <1	<450 750 650 – – 6.06 <1	<450 750 600 – – 5.73 <1	<450 750 600 25000 15000 6.10 <1
BR	<450 125 125 – – 0.82	<450 125 125 – – 0.66	<450 250 200 6000 6500 5.89 <1	<450 250 125 – – 0.51	<450 125 150 – – 0.74	<450 125 150 – – 0.72	<450 – – – – – – – – –	<450 125 150 – – 1.89 <1	<450 125 150 – – 1.59 <1	<450 400 450 – – 4.54 <1	<450 400 500 – – 3.40 <1	<450 400 600 – – 4.06 <1	<450 400 400 10000 10000 5.98 <1	<450 750 650 25000 13000 6.75 <1	<450 750 650 – – 5.19 <1	<450 750 600 – – 6.28 <1	<450 750 700 – – 6.66 <1
BQ	<450 125 150 4000 3500 0.89	<450 125 150 – – 0.62	<450 250 300 – – 4.68 <1	<450 250 150 – – 2.25 <1	<450 125 150 4000 3500 0.84	<450 125 150 – – 0.46	<450 – – – – – – – – –	<450 125 125 – – 1.05 <1	<450 250 250 – – 3.42 <1	<450 125 200 – – 1.09 <1	<450 400 550 – – 3.86 <1	<450 400 600 10000 17500 5.76 <1	<450 400 450 – – 5.25 <1	<450 750 500 25000 15000 6.24 <1	<450 750 650 – – 7.32 <1	<450 750 600 – – 5.79 <1	<450 750 600 25000 15000 7.75 <1

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	15	16	17	18	19	20	4		5	6	7	8	9	10	11	12	13	14
CD	<450 125 150 – – <0.37	<450 125 150 4000 2750 <0.37	<450 250 – – 5.44 <1	<450 250 250 – – 2.37 <1	<450 125 150 – – 1.34 <1	<450 125 200 4000 2750 1.79 <1	<450 – – –

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CN	<450 – – – – – – – – 125 125 – – –	<450 – – – – – – – – – 250 200 – – –	<450 – – – – – – – – – 125 125 – – –	<450 – – – – – – – – – 250 175 – – –	<450 250 350 – – – 9.25 <1	<450 250 250 – – – 2.75 <1	<450 400 450 – – – 4.61 <1	<450 400 500 – – – 4.57 <1	<450 400 450 10000 12500 – 4.19 <1	<450 400 550 – – – 3.93 <1	<450 400 550 – – – 4.40 <1	<450 750 850 10000 13000 – 2.66 <1	<450 750 850 – – – 5.50 <1	<450 400 550 – – – 3.71 <1
CM					<450 250 250 – – – 9.41 <1	<450 250 200 6000 8000 – 7.07 <1	<450 400 400 – – – 4.49 <1	<450 400 350 – – – 4.86 <1	<450 400 450 – – – 5.94 <1	<450 400 350 – – – 4.53 <1	<450 400 450 10000 12500 – 3.78 <1	<450 750 750 – – – 4.05 <1	<450 750 850 – – – 10.64 <1	<450 400 650 10000 15000 – 6.63 <1
CL	<450 – – – – – – – – 125 100 – – 1.58 <1	<450 – – – – – – – – – 250 200 – – –	<450 – – – – – – – – 0.93 125 100 – – –	<450 – – – – – – – – – 250 200 – – –	<450 250 300 – – – 6.58 <1	<450 250 300 – – – 7.72 <1	<450 400 400 – – – 5.02 <1	<450 400 400 – – – 4.91 <1	<450 400 450 – – – 5.32 <1	<450 400 450 10000 15000 – 3.72 <1	<450 400 400 10000 10000 – 4.37 <1	<450 750 700 – – – 5.08 <1	<450 750 800 – – – 9.63 <1	<450 400 600 – – – 2.33 <1
CK					<450 250 350 6000 7500 – 6.92 <1	<450 250 300 – – – 5.47 <1	<450 400 450 – – – 4.48 <1	<450 400 450 – – – 4.19 <1	<450 400 400 – – – 4.65 <1	<450 400 700 10000 17500 – 4.18 <1	<450 400 650 10000 17500 – 5.24 <1	<450 750 750 – – – 4.75 <1	<450 750 800 25000 25000 – 9.21 <1	
CJ	<450 – – – – – – – – 125 150 – – –	<450 – – – – – – – – – 250 300 – – –	<450 – – – – – – – – – 125 150 – – –	<450 – – – – – – – – 4.07 <1 250 200 – – –	<450 250 250 – – – 9.72 <1	<450 250 250 – – – 8.39 <1	<450 400 450 – – – 4.71 <1	<450 400 400 – – – 5.71 <1	<450 400 400 – – – 6.01 <1	<450 400 650 10000 17500 – 6.16 <1	<450 400 600 – – – 5.43 <1	<450 750 750 – – – 5.39 <1	<450 750 800 25000 25000 – 9.61 <1	
CI					<450 250 250 6000 7500 – 3.06 <1	<450 250 200 – – – 8.28 <1	<450 400 250 10000 6500 – 4.15 <1	<450 400 350 – – – 4.27 <1	<450 400 450 – – – 1.88 <1	<450 400 600 – – – 5.07 <1	<450 400 700 – – – 5.82 <1	<450 750 830 25000 20000 – 2.42 <1	<450 750 1000 – – – 9.98 <1	
CH	<450 – – – – – – – – 125 100 – – 1.50 <1	<450 – – – – – – – – – 250 250 – – –	<450 – – – – – – – – 1.37 <1 125 150 – – –	<450 – – – – – – – – 4.08 <1 250 250 – – –	<450 250 250 6000 7000 – 9.39 <1	<450 250 250 – – – 6.57 <1	<450 400 350 10000 7000 – 5.90 <1	<450 400 350 – – – 5.51 <1	<450 400 400 – – – 2.29 <1	<450 400 400 – – – 2.15 <1	<450 400 450 – – – 3.95 <1	<450 750 800 76000 17500 – 5.46 <1	<450 750 850 – – – 9.43 <1	
CG					<450 125 200 – – – 3.34 <1	<450 125 200 – – – 7.51 <1	<450 400 500 – – – 5.10 <1	<450 400 400 – – – 4.01 <1	<450 400 350 – – – 4.97 <1	<450 400 450 10000 7000 – 3.11 <1	<450 400 400 – – – 2.62 <1	<450 750 650 – – – 7.83 <1	<450 750 850 25000 20000 – 10.88 <1	
CF	<450 – – – – – – – – 125 100 – – –	<450 – – – – – – – – – 250 250 – – –	<450 – – – – – – – – – 125 150 – – –	<450 – – – – – – – – 3.34 <1 250 200 – – –	<450 125 125 – – – 1.23 <1	<450 125 125 6000 5000 – 2.66 <1	<450 400 450 – – – 4.54 <1	<450 400 375 – – – 4.37 <1	<450 400 300 – – – 3.84 <1	<450 400 450 – – – 5.52 <1	<450 400 450 10000 10000 – 2.14 <1	<450 750 650 – – – 2.92 <1	<450 750 600 25000 20000 – 6.37 <1	
CE					<450 250 250 – – – 7.84 <1	<450 250 200 – – – 4.41 <1	<450 400 350 – – – 5.12 <1	<450 400 400 – – – 5.00 <1	<450 400 350 – – – 4.45 <1	<450 400 550 10000 15000 – 4.69 <1	<450 400 600 – – – 2.57 <1	<450 750 700 – – – 6.80 <1	<450 750 750 25000 20000 – 7.06 <1	

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – M-253/PD (HV-2 GROSS) [bkg.]
7300 – M-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
CX	<450 – – –

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
D C	<450 – – –

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4
D H	<450 – – – – 1.00 <1	<450 – – – – – 250 250	<450 – – – – 3.35 <1	<450 – – – – – 125 150
D G	<450 – – – – – 125 100	<450 – – – – 3.40 <1	<450 – – – – – 125 100	<450 – – – – 3.39 <1
D F	<450 – – – – 0.99 125 100	<450 – – – – – 250 300	<450 – – – – 1.68 <1	<450 – – – – – 125 100
D E	<450 – – – – – 125 100	<450 – – – – 3.22 <1	<450 – – – – – 125 100	<450 – – – – 4.12 <1
D D	<450 – – – – 0.84 125 125	<450 – – – – – 250 300	<450 – – – – 1.85 <1	<450 – – – – – 125 105

	1	2	3	4
DM	<450 – – – – – 125 100	<450 – – – – 3.23 <1 250 350	<450 – – – – – 125 125	<450 – – – – 3.42 <1 125 100
D L	<450 – – – – 0.93 125 100	<450 – – – – 250 300	<450 – – – – 0.75 125 100	<450 – – – – 125 100
D K	<450 – – – – 125 100	<450 – – – – 1.40 <1 250 400	<450 – – – – 250 400	<450 – – – – 1.16 <1 125 150
D J	<450 – – – – 1.26 <1 125 100	<450 – – – – 250 300	<450 – – – – 3.64 <1 250 350	<450 – – – – 125 100
D I	<450 – – – – 125 100	<450 – – – – 3.10 <1 250 250	<450 – – – – 0.92 <1 125 100	<450 – – – – 3.91 <1 125 100

Sample Data

<450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.32 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps

	1	2	3	4
DR	<450 – – – 1.01 <1 – 250 300 – – –	<450 – – – – – – 250 350 – – –	<450 – – – 1.36 <1 – 125 100 – – –	<450 – – – – – – 250 350 – – –
DQ	<450 – – – – – – 250 250 – – –	<450 – – – 2.23 <1 – 250 150 – – –	<450 – – – – – – 250 250 – – –	<450 – – – 4.06 <1 – 125 125 – – –
DP	<450 – – – 1.21 <1 – 250 150 – – –	<450 – – – – – – 250 300 – – –	<450 – – – 0.81 – – 250 200 – – –	<450 – – – – – – 125 100 – – –
DO	<450 – – – – – – 125 100 – – –	<450 – – – 4.44 <1 – 250 250 – – –	<450 – – – 0.95 <1 – 125 100 – – –	<450 – – – 3.71 <1 – 250 150 – – –
DN	<450 – – – 1.58 <1 – 250 200 – – –	<450 – – – – – – 250 350 – – –	<450 – – – 1.34 <1 – 125 100 – – –	<450 – – – – – – 250 250 – – –

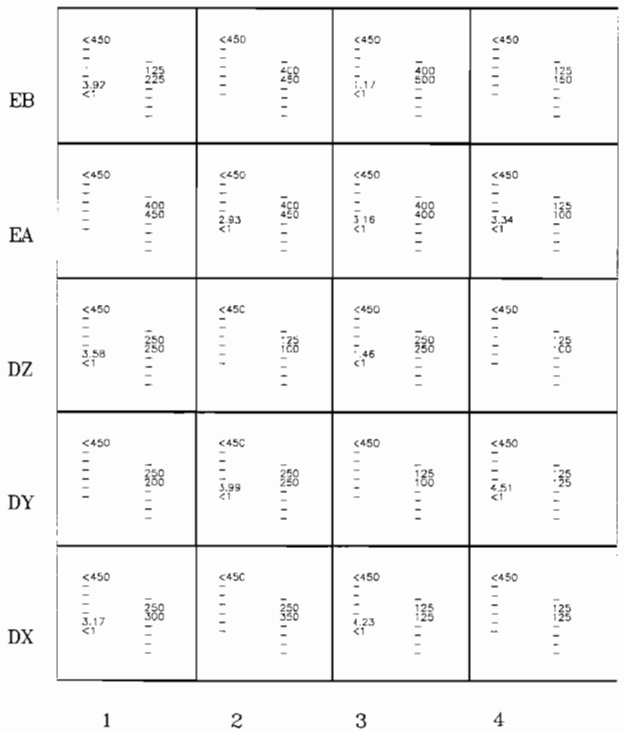
	1	2	3	4
DW	<450 – – – – – – 250 350 – – –	<450 – – – 3.75 <1 – 250 350 – – –	<450 – – – – – – 125 100 – – –	<450 – – – 3.85 <1 – 125 125 – – –
DV	<450 – – – 2.41 <1 – 250 250 – – –	<450 – – – – – – 250 250 – – –	<450 – – – 1.26 <1 – 125 125 – – –	<450 – – – – – – 125 100 – – –
DU	<450 – – – – – – 250 250 – – –	<450 – – – 1.70 <1 – 125 150 – – –	<450 – – – – – – 125 100 – – –	<450 – – – 3.84 <1 – 125 150 – – –
DT	<450 – – – 1.10 <1 – 250 300 – – –	<450 – – – – – – 125 125 – – –	<450 – – – 1.49 <1 – 125 100 – – –	<450 – – – – – – 125 100 – – –
DS	<450 – – – – – – 250 350 – – –	<450 – – – 3.97 <1 – 250 300 – – –	<450 – – – – – – 125 100 – – –	<450 – – – 3.50 <1 – 125 125 – – –

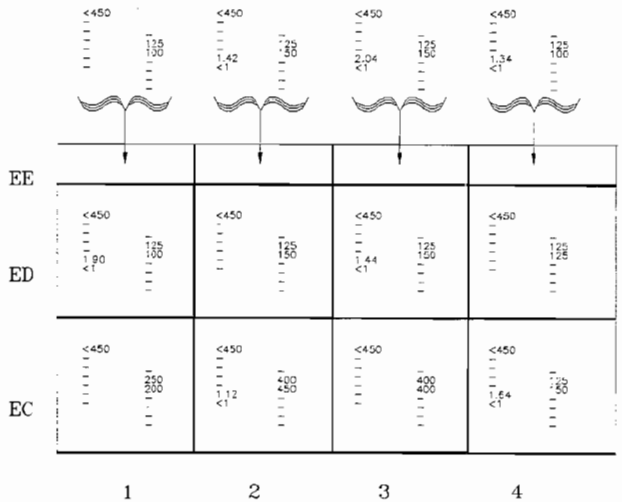
Sample Data

<450 – IM-247/PD Results [$\mu\mu$Ci/20cm^2]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<1 – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

e. Localized Grid Maps





Sample Data

< 450 – IM-247/PD Results [μμCi/20cm²]
200 – IM-253/PD (HV-1 PHA) [bkg.]
300 – IM-253/PD (HV-1 PHA) [cpm]
7000 – IM-253/PD (HV-2 GROSS) [bkg.]
7300 – IM-253/PD (HV-2 GROSS) [cpm]
1.82 – MCA Gross Gamma Eq. Co-60 [pCi/g]
<¹ – MCA Specific Co-60 Results [pCi/g]

8. Wharf-F

f. Prior Photograph

Head of pier, facing east.

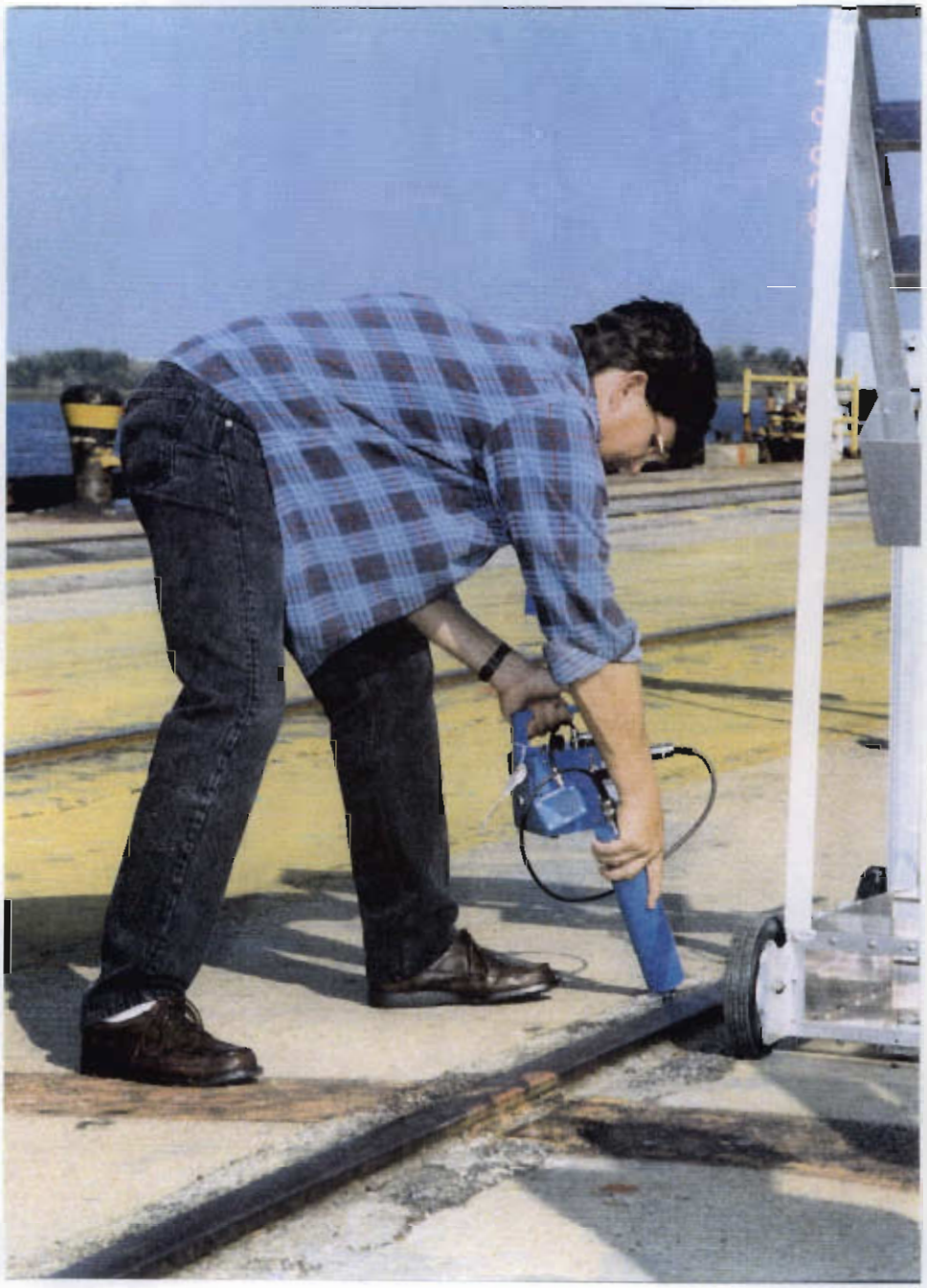
8. Wharf-F

f. Prior Photograph

Facing south.

8. Wharf-F

g. During Photograph



Surveying along side railroad track, viewing north.

8. Wharf-F

g. During Photograph

Surveying pier using survey cart, viewing west.

8. Wharf-F

h. After Photograph

Viewing west.

8. Wharf-F

h. After Photograph

Viewing east.

1. Radiological Transfer Routes

a. Introduction:

A total of 85 radioactive material transfer route intersections were surveyed in accordance with the CNSY NNPP Survey Plan.

(1) **Description:** The radioactive material transfer routes consisted of roadways and rail lines that were approved for the transfer of radioactive material. These routes are shown in section "d" of this report.

(2) **Brief History:**

(a) **Use:** Radioactive material transfer routes were established throughout the shipyard for the movement of radioactive material between ships, drydocks and buildings.

(b) **Radiological History:** Loose surface contamination levels on the radioactive material transfer routes were maintained less than 450μμCi/100cm^2.

(3) **Survey Requirements:**

(a) Group 2 survey.

b. Discussion:

A 10' by 10' grid was marked at each point where two radioactive material transfer routes intersect. The radioactive material routes contained 85 10' by 10' grids. Each of these grids was subdivided into two 3' by 3' subsections. These subsections were located in the area of highest potential for contamination. Each grid had its own unique designator.

Intersection #18 and #T2 were not included in this report because these areas overlapped surveys which had already encompassed the intersection. Intersection #18 was surveyed as part of the pier C survey and intersection #T2 was surveyed as part of the rail line RAM storage area survey.

One subsection per grid received a survey with the IM-247/PD and the other subsection of each grid received a survey with the IM-253/PD (HV-1 PHA). Solid material samples were not required to be taken.

The backgrounds used in the areas containing asphalt and rail lines over asphalt were 80 counts per minute for the IM-247/PD survey and 500 counts per minute for the IM-253/PD (HV-1 PHA) survey. These backgrounds were based on background radiation levels obtained from the north side of Building 220. The backgrounds used in the areas where the rail lines were over rocks were 120 counts per minute for the IM-247/PD survey and 600 counts per minute for the IM-253/PD (HV-1 PHA) survey. These backgrounds were

1. Radiological Transfer Routes

based on background radiation levels obtained from rail lines east of Building 32.

c. Summary:

Surveys performed with the IM-247/PD did not detect areas greater than 450μμCi/20cm^2.

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

1. Radiological Transfer Routes

INTERSECTION	IM-247 RESULTS (pCi/20 cm^2)	IM-253 PHA MODE BKGD (CPM)	IM-253 PHA MODE SURVEY (CPM)
T1	<450	600	525
T2	SEE DISCUSSION		
T3	<450	600	500
T4	<450	600	400
T5	<450	600	200
T6	<450	600	450
T7	<450	600	350
T8	<450	600	600
T9	<450	600	600
T10	<450	600	525
T11	<450	600	575
T12	<450	500	325
T13	<450	600	525
T14	<450	500	450
T15	<450	500	500
T16	<450	600	600
T17	<450	600	650
T18	<450	600	650
T19	<450	600	650
T20	<450	600	700
T21	<450	600	650
1	<450	500	525
2	<450	500	400
3	<450	500	600
4	<450	500	600
5	<450	500	600
6	<450	500	600
7	<450	500	700
8	<450	500	550
9	<450	500	550
10	<450	500	650
11	<450	500	600

1. **Radiological Transfer Routes**

INTERSECTION	IM-247 RESULTS (pCi/20 cm^2)	IM-253 PHA MODE BKGD (CPM)	IM-253 PHA MODE SURVEY (CPM)
12	<450	500	550
13	<450	500	600
14	<450	500	550
15	<450	500	400
16	<450	500	450
17	<450	500	500
18	SEE DISCUSSION		
19	<450	500	350
20	<450	500	450
21	<450	500	500
22	<450	500	450
23	<450	500	500
24	<450	500	400
25	<450	500	450
26	<450	500	450
27	<450	500	500
28	<450	500	550
29	<450	500	500
30	<450	500	600
31	<450	500	625
32	<450	500	425
33	<450	500	450
34	<450	500	550
35	<450	500	550
36	<450	500	600
37	<450	500	400
38	<450	500	450
39	<450	500	500
40	<450	500	550
41	<450	500	425
42	<450	500	475
43	<450	500	400

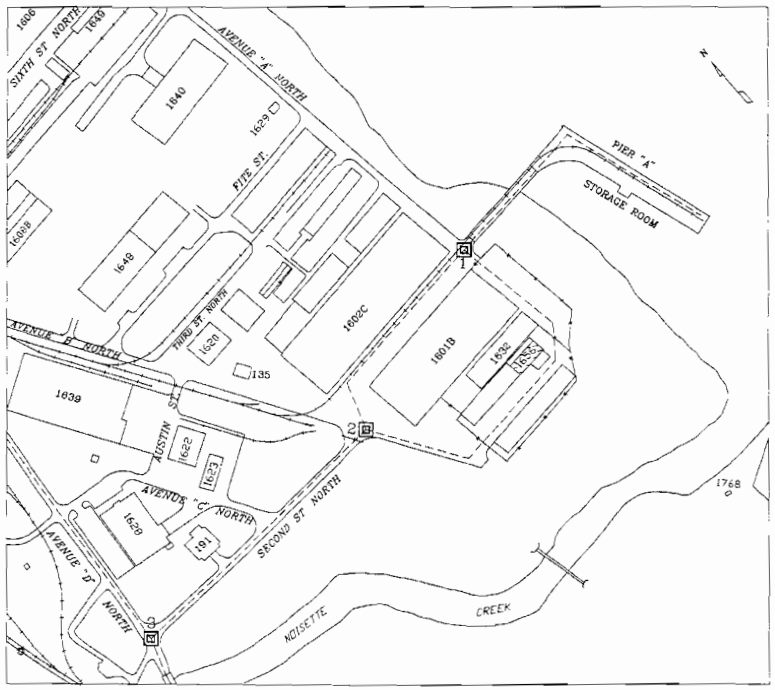
1. Radiological Transfer Routes

INTERSECTION	IM-247 RESULTS (pCi/20 cm^2)	IM-253 PHA MODE BKGD (CPM)	IM-253 PHA MODE SURVEY (CPM)
44	<450	500	475
45	<450	500	550
46	<450	500	550
47	<450	500	400
48	<450	500	475
49	<450	500	450
50	<450	500	500
51	<450	500	500
52	<450	500	400
53	<450	500	400
54	<450	500	450
55	<450	500	375
56	<450	500	575
57	<450	500	550
58	<450	500	375
59	<450	500	450
60	<450	500	325
61	<450	500	350
62	<450	500	900
63	<450	500	450
64	<450	500	475

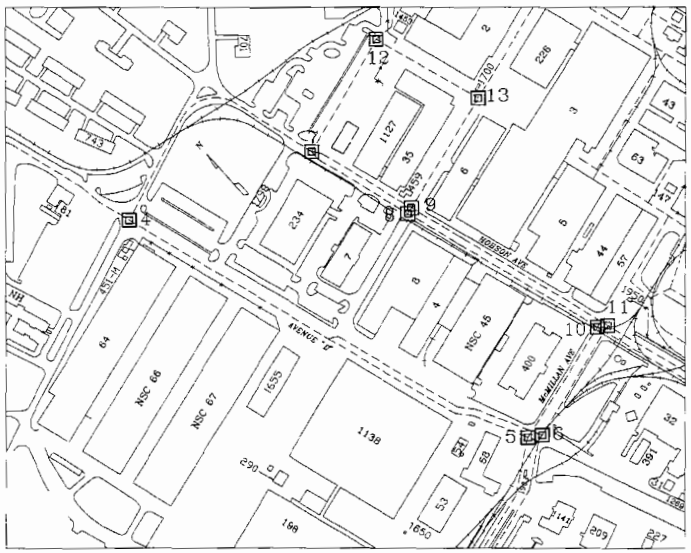
1. **Radiological Transfer Routes**

   e. **Site Map**

BETWEEN PIER "A" AND AVE. "D" NORTH
INTERSECTIONS 1 – 3



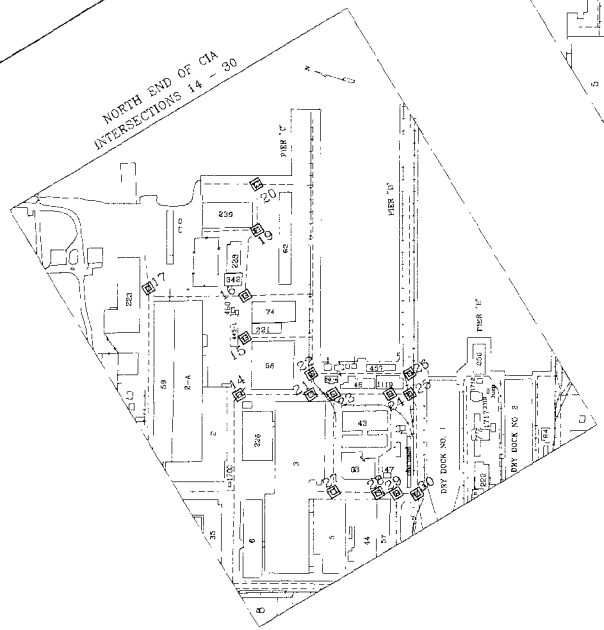
OUTSIDE NORTH END OF CIA
INTERSECTIONS 4 – 13

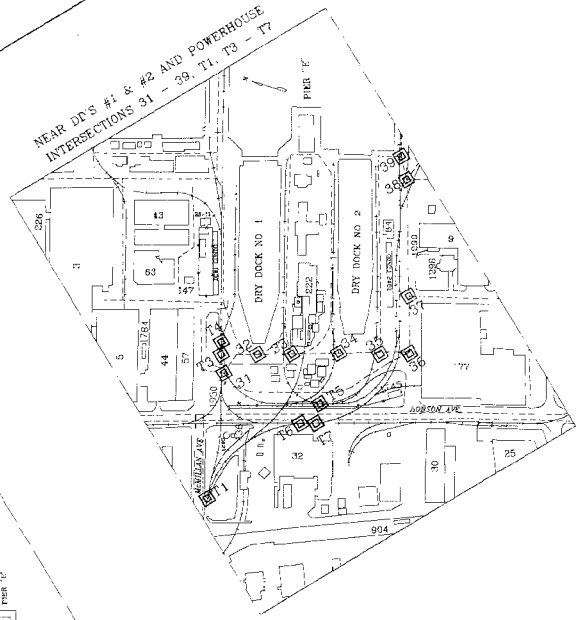


Volume II., Section H

I. Radiological Transfer Routes

e. Site Map

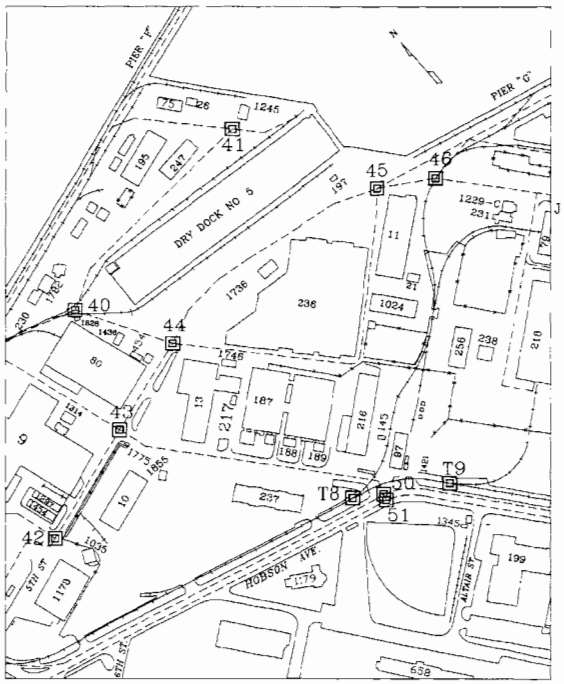




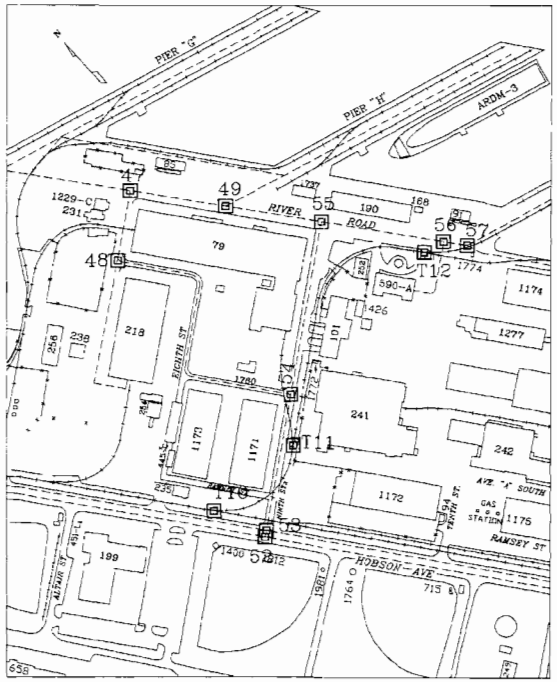
1. Radiological Transfer Routes

e. Site Map

BETWEEN DRYDOCK #5 AND HOBSON AVE.
INTERSECTIONS 40 – 46, 50, 51, T8, T9



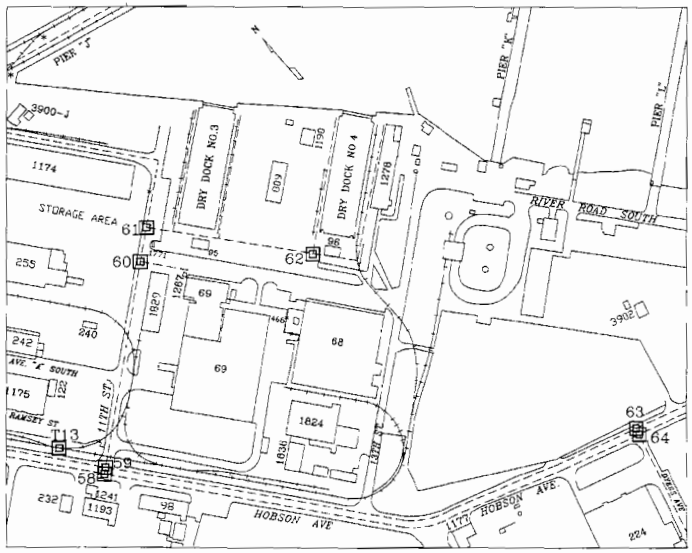
BETWEEN PIER "H" AND HOBSON AVE.
INTERSECTIONS 47 – 49, 52 – 57, T10 – T12



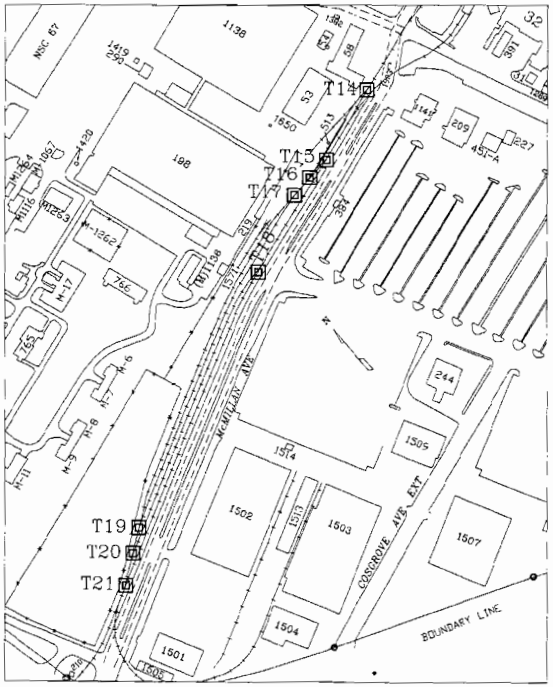
1. Radiological Transfer Routes

e. Site Map

SOUTH END OF SHIPYARD
INTERSECTIONS 58 – 64, T13



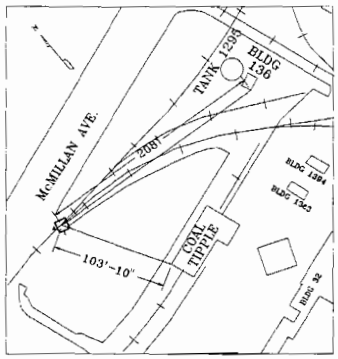
RAIL YARD BESIDE McMILLAN AVENUE
INTERSECTIONS T14 – T21



1. Radiological Transfer Routes

f. Localized Grid Maps

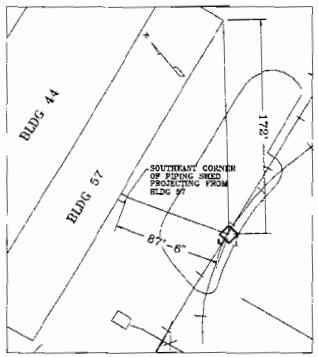
RAM ROUTE INTERSECTION NO. T1



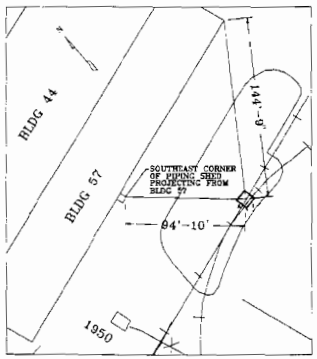
RAM ROUTE INTERSECTION NO. T2

INTERSECTION ALREADY SURVEYED
AS PART OF RAIL LINE RAM STORAGE AREA.

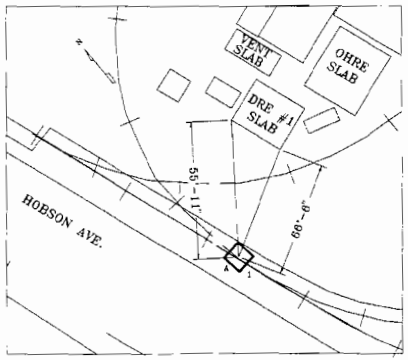
RAM ROUTE INTERSECTION NO. T3



RAM ROUTE INTERSECTION NO. T4



RAM ROUTE INTERSECTION NO. T5



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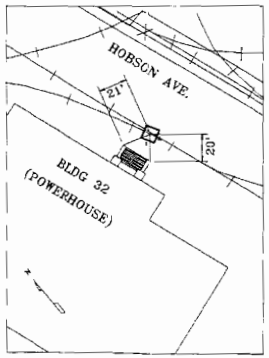
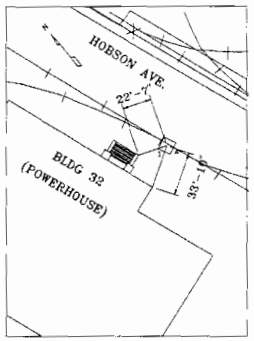


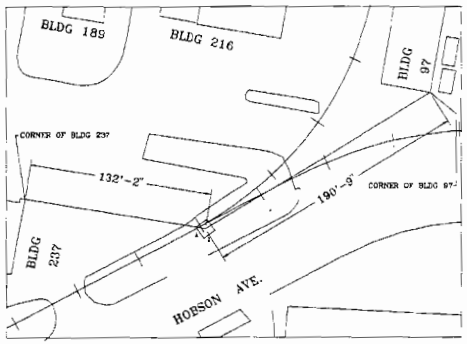
1. Radiological Transfer Routes

f. Localized Grid Maps

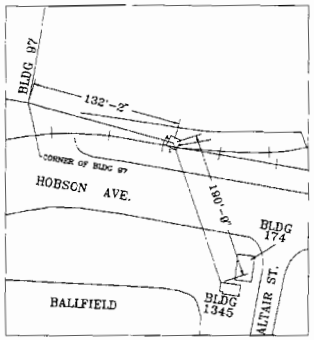
RAM ROUTE INTERSECTION NO. T7



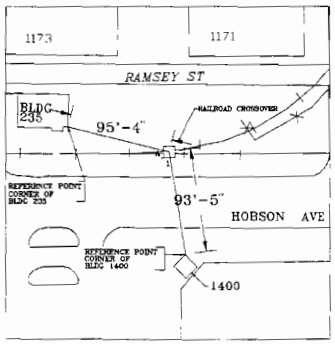
RAM ROUTE INTERSECTION NO. T8



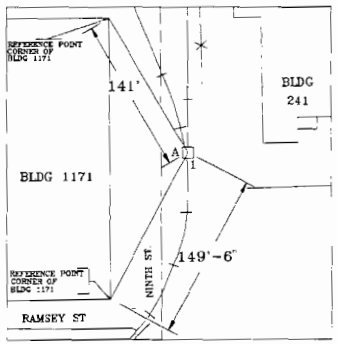
RAM ROUTE INTERSECTION NO. T9



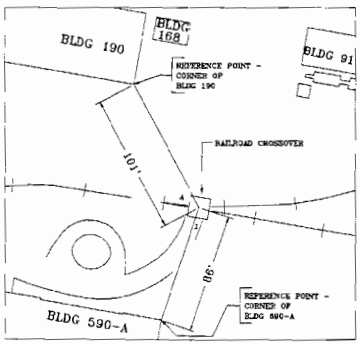
RAM ROUTE INTERSECTION NO. T10



RAM ROUTE INTERSECTION NO. T11



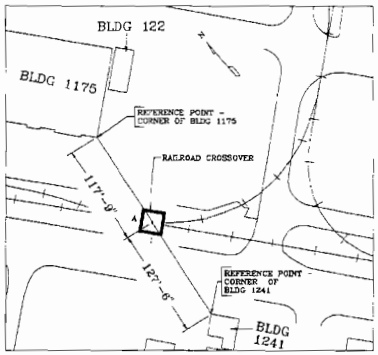
RAM ROUTE INTERSECTION NO. T12



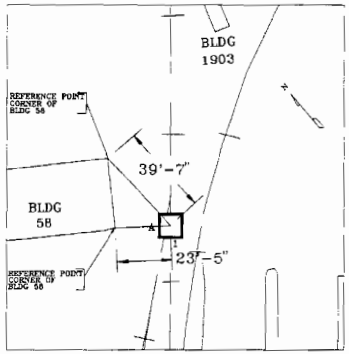
1. Radiological Transfer Routes

f. Localized Grid Maps

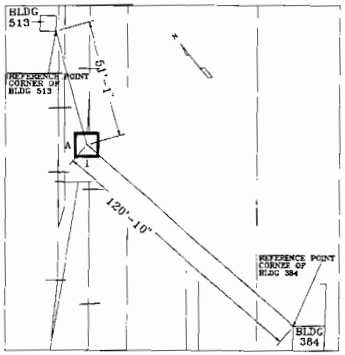
RAM ROUTE INTERSECTION NO. T13



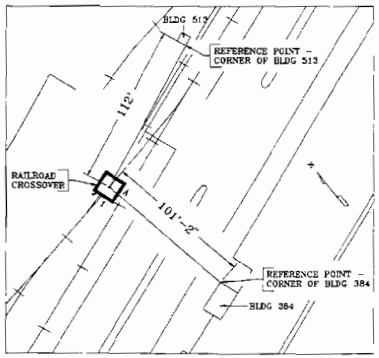
RAM ROUTE INTERSECTION NO. T14



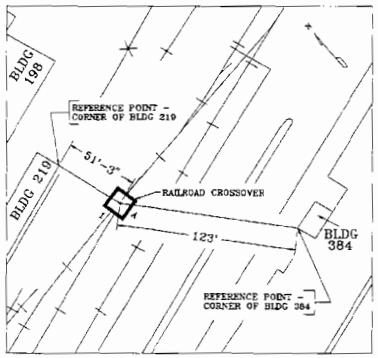
RAM ROUTE INTERSECTION NO. T15



RAM ROUTE INTERSECTION NO. T16



RAM ROUTE INTERSECTION NO. T17



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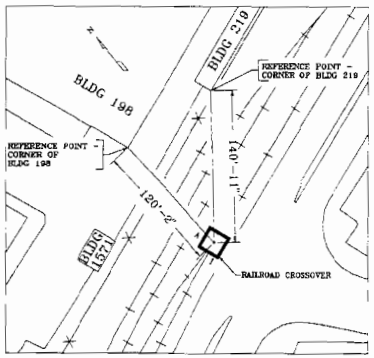
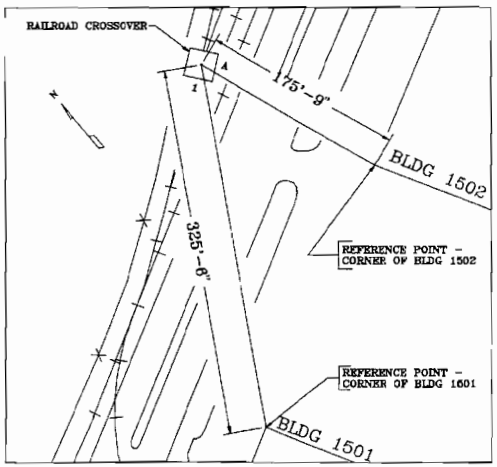
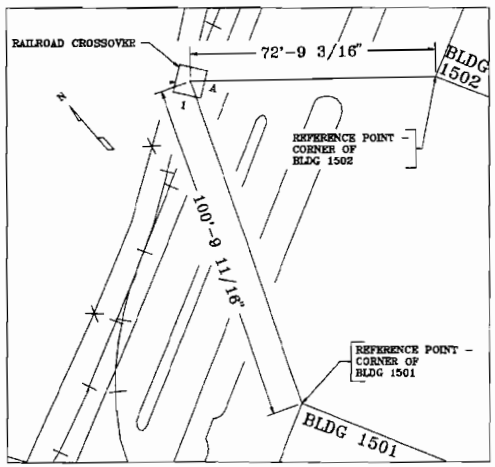


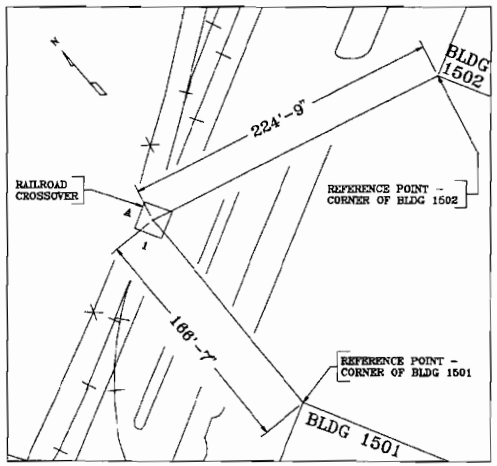
RAM ROUTE INTERSECTION NO. T19



RAM ROUTE INTERSECTION NO. T20



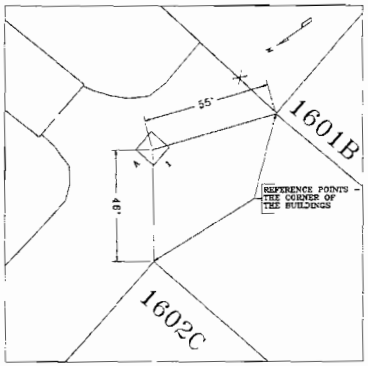
RAM ROUTE INTERSECTION NO. T21



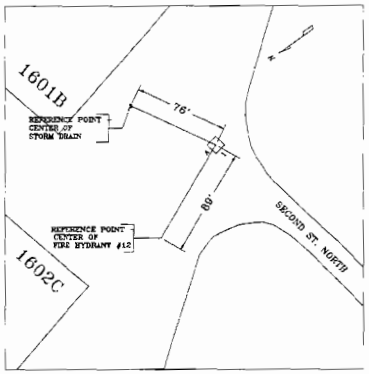
1. Radiological Transfer Routes

f. Localized Grid Maps

RAM ROUTE INTERSECTION NO. 1



RAM ROUTE INTERSECTION NO. 2



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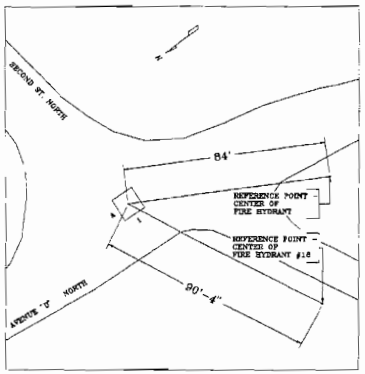

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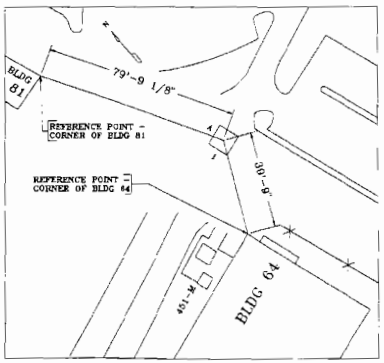
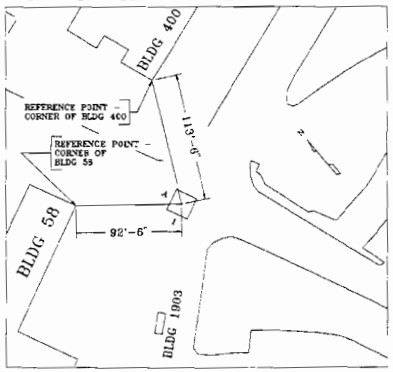
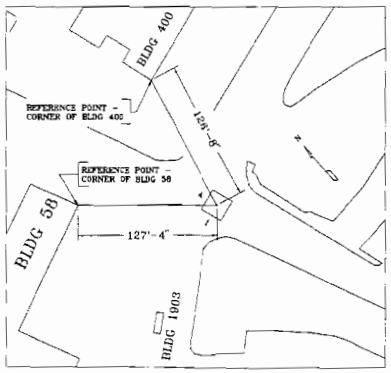


RAM ROUTE INTERSECTION NO. 5



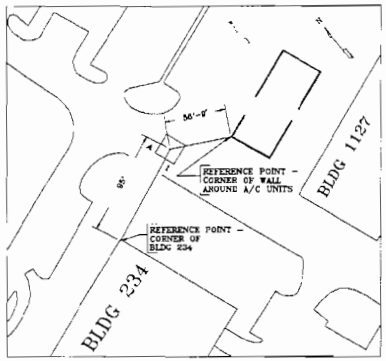
RAM ROUTE INTERSECTION NO. 6



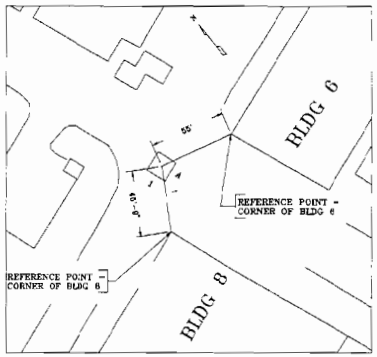
1. Radiological Transfer Routes

f. Localized Grid Maps

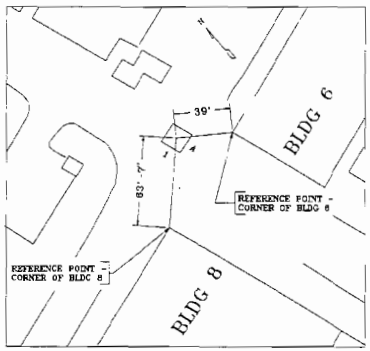
RAM ROUTE INTERSECTION NO. 7



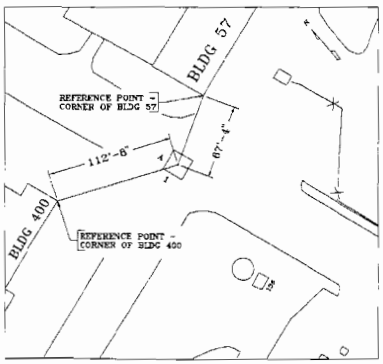
RAM ROUTE INTERSECTION NO. 8



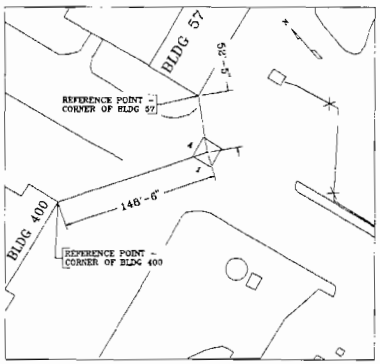
RAM ROUTE INTERSECTION NO. 9



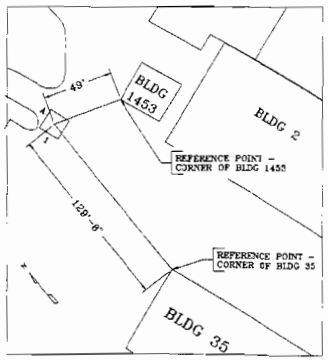
RAM ROUTE INTERSECTION NO. 10



RAM ROUTE INTERSECTION NO. 11



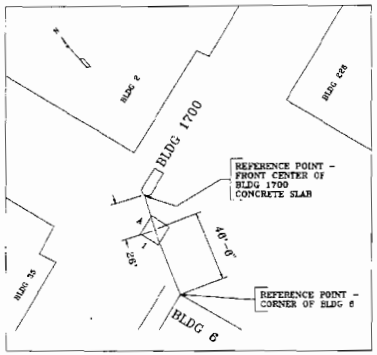
RAM ROUTE INTERSECTION NO. 12



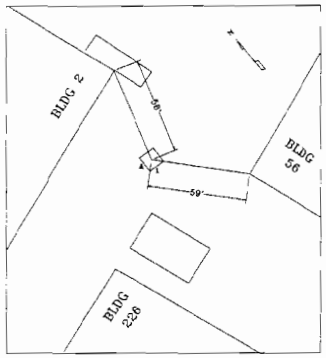
1. Radiological Transfer Routes

f. Localized Grid Maps

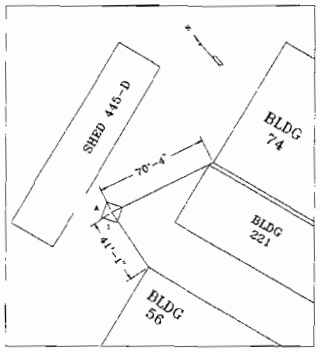
RAM ROUTE INTERSECTION NO. 13



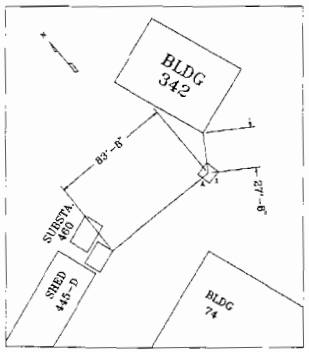
RAM ROUTE INTERSECTION NO. 14



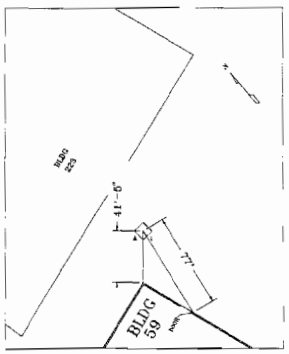
RAM ROUTE INTERSECTION NO. 15



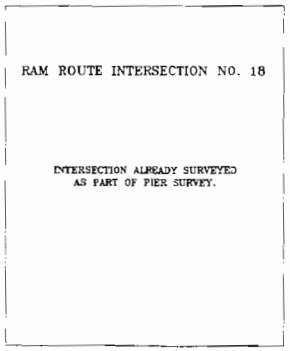
RAM ROUTE INTERSECTION NO. 16



RAM ROUTE INTERSECTION NO. 17



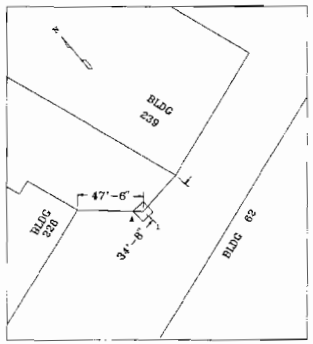
RAM ROUTE INTERSECTION NO. 18



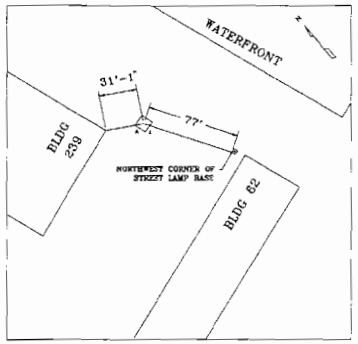
1. Radiological Transfer Routes

f. Localized Grid Maps

RAM ROUTE INTERSECTION NO. 19



RAM ROUTE INTERSECTION NO. 20



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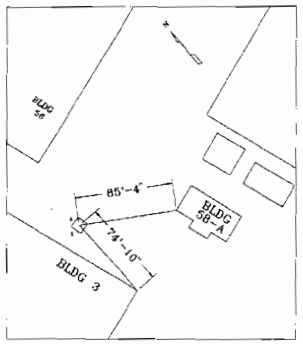
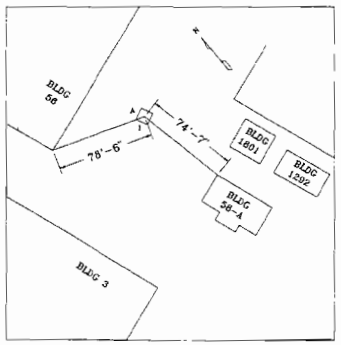


RAM ROUTE INTERSECTION NO. 22



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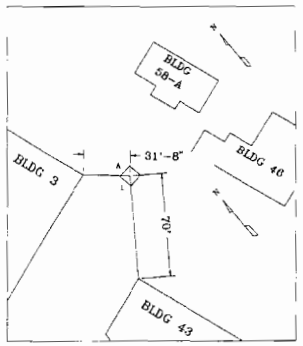
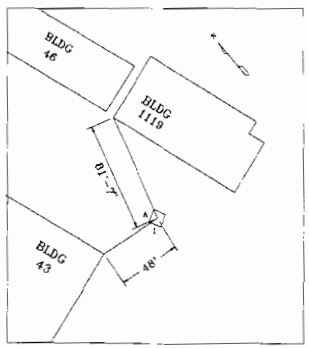
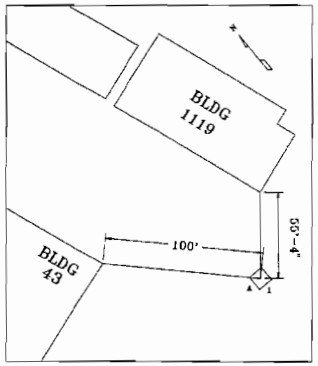


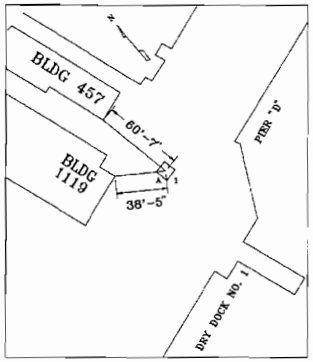
RAM ROUTE INTERSECTION NO. 24



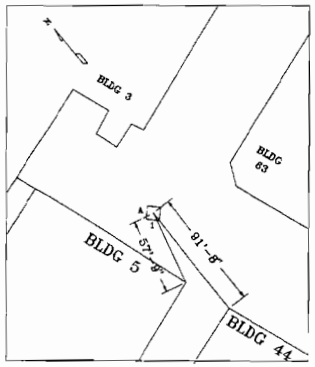
RAM ROUTE INTERSECTION NO. 25



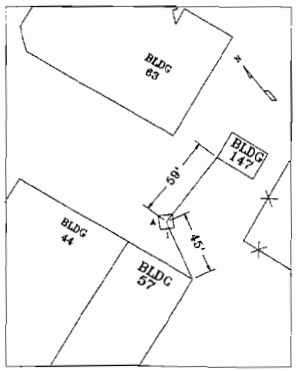
RAM ROUTE INTERSECTION NO. 26



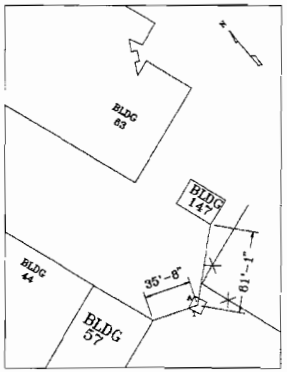
RAM ROUTE INTERSECTION NO. 27



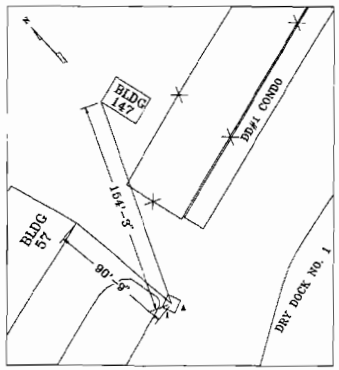
RAM ROUTE INTERSECTION NO. 28



RAM ROUTE INTERSECTION NO. 29



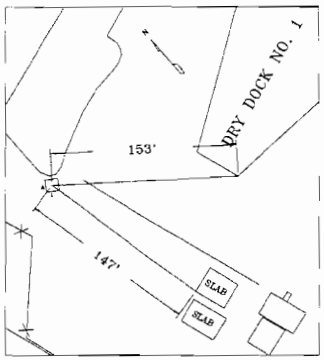
RAM ROUTE INTERSECTION NO. 30



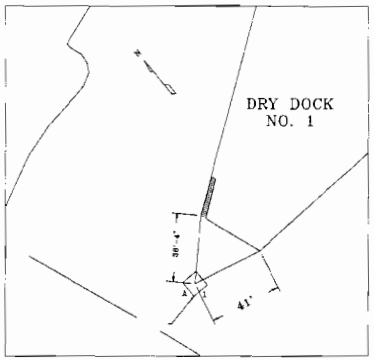
1. Radiological Transfer Routes

f. Localized Grid Maps

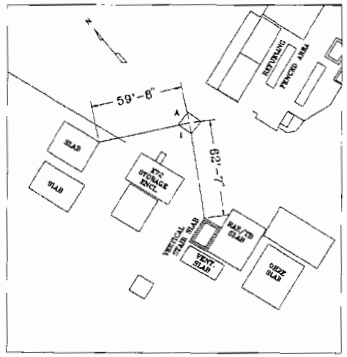
RAM ROUTE INTERSECTION NO. 31



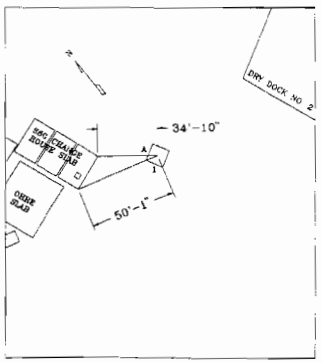
RAM ROUTE INTERSECTION NO. 32



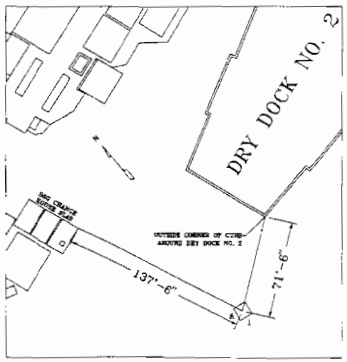
RAM ROUTE INTERSECTION NO. 33



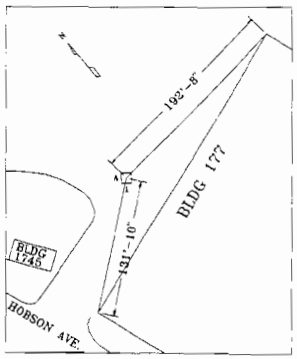
RAM ROUTE INTERSECTION NO. 34



RAM ROUTE INTERSECTION NO. 35



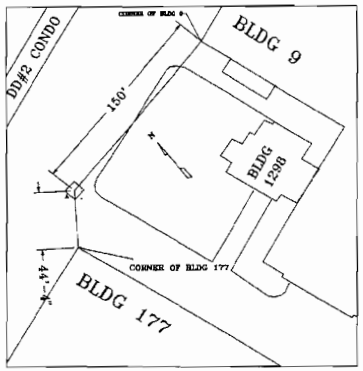
RAM ROUTE INTERSECTION NO. 36



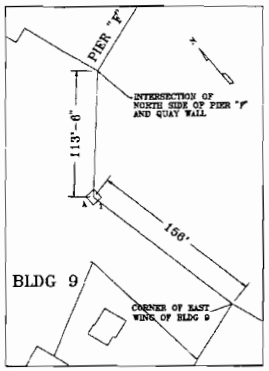
1. Radiological Transfer Routes

f. Localized Grid Maps

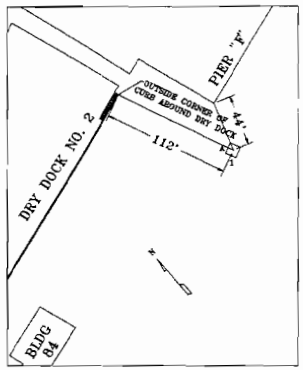
RAM ROUTE INTERSECTION NO. 37



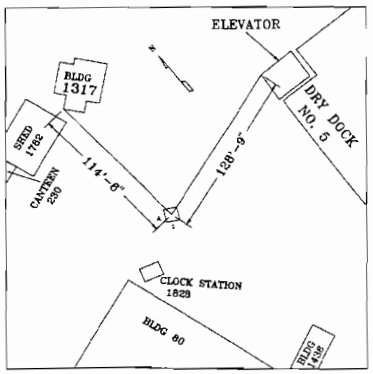
RAM ROUTE INTERSECTION NO. 38



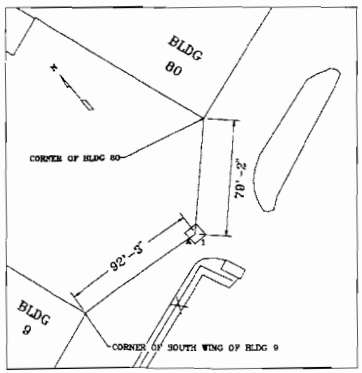
RAM ROUTE INTERSECTION NO. 39



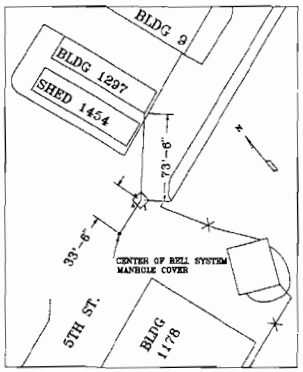
RAM ROUTE INTERSECTION NO. 40



RAM ROUTE INTERSECTION NO. 41



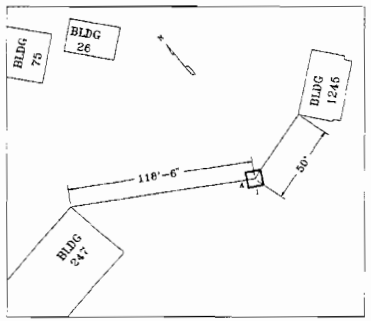
RAM ROUTE INTERSECTION NO. 42



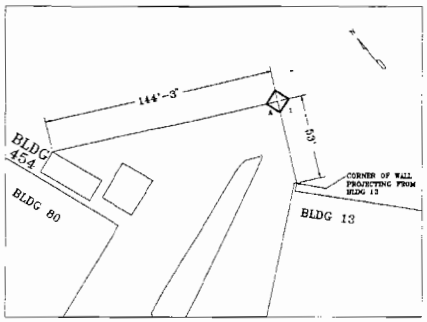
1. Radiological Transfer Routes

f. Localized Grid Maps

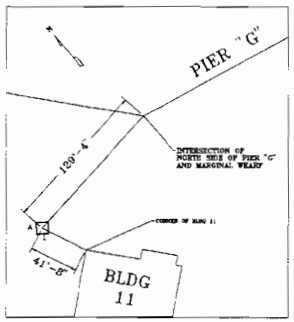
RAM ROUTE INTERSECTION NO. 43



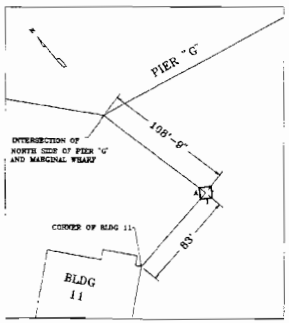
RAM ROUTE INTERSECTION NO. 44



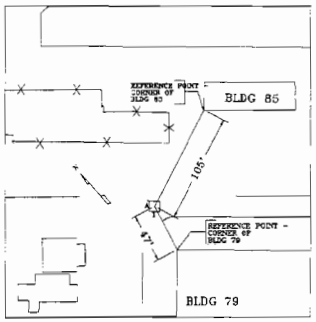
RAM ROUTE INTERSECTION NO. 45



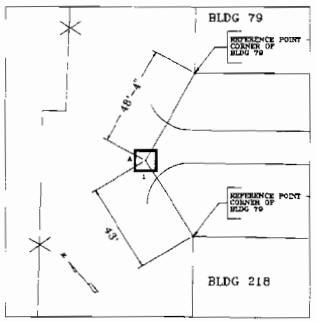
RAM ROUTE INTERSECTION NO. 46



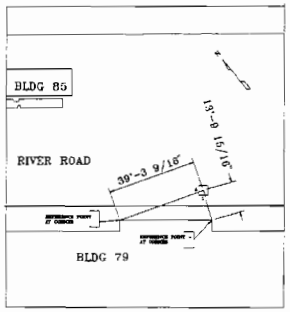
RAM ROUTE INTERSECTION NO. 47



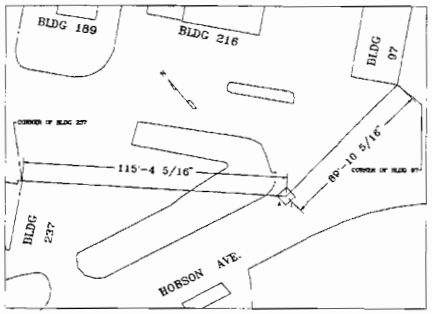
RAM ROUTE INTERSECTION NO. 48



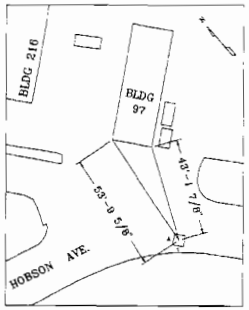
RAM ROUTE INTERSECTION NO. 49



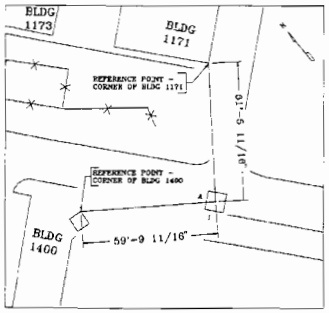
RAM ROUTE INTERSECTION NO. 50



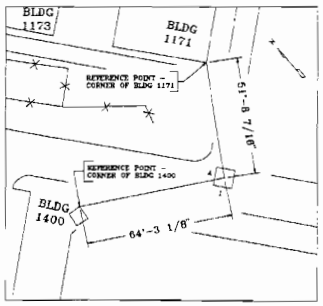
RAM ROUTE INTERSECTION NO. 51



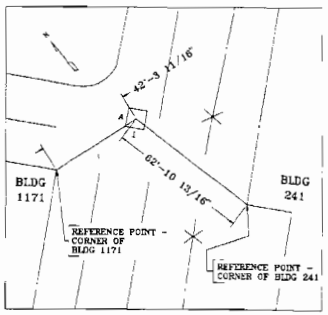
RAM ROUTE INTERSECTION NO. 52



RAM ROUTE INTERSECTION NO. 53



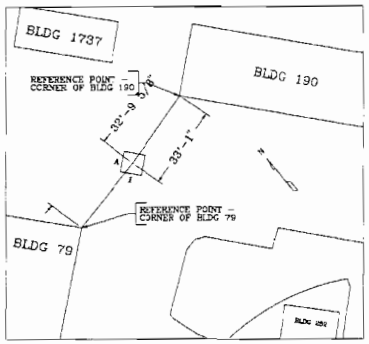
RAM ROUTE INTERSECTION NO. 54



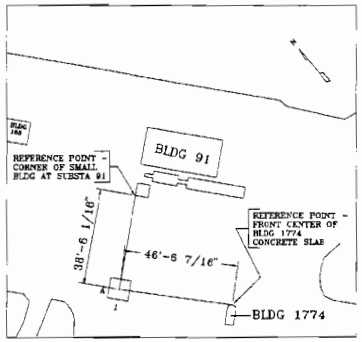
1. Radiological Transfer Routes

f. Localized Grid Maps

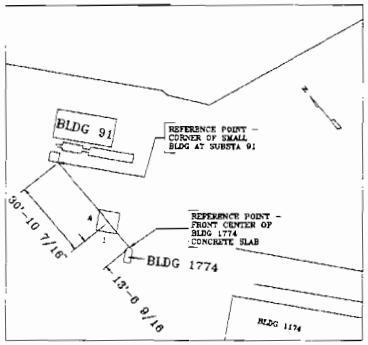
RAM ROUTE INTERSECTION NO. 55



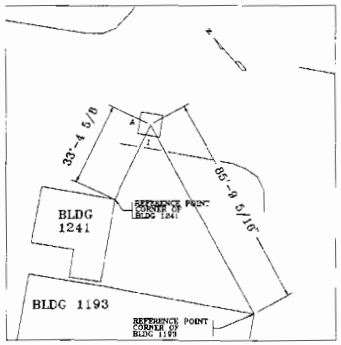
RAM ROUTE INTERSECTION NO. 56



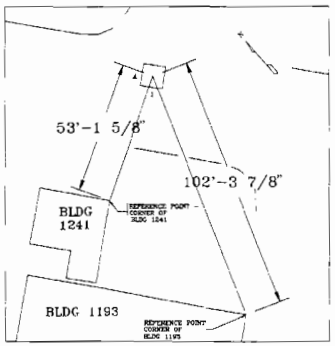
RAM ROUTE INTERSECTION NO. 57



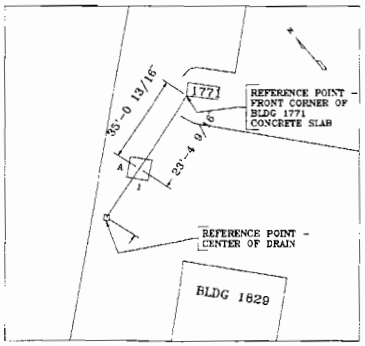
RAM ROUTE INTERSECTION NO. 58



RAM ROUTE INTERSECTION NO. 59



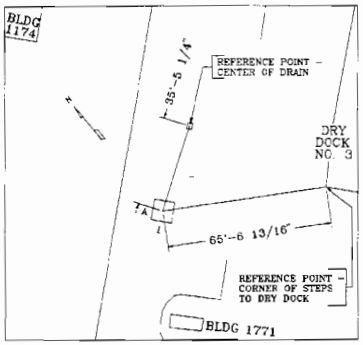
RAM ROUTE INTERSECTION NO. 60



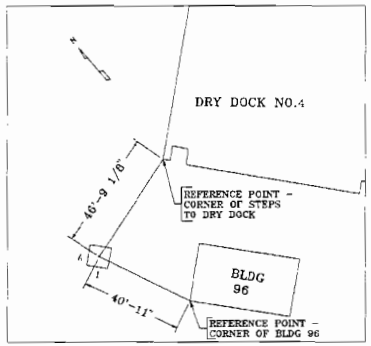
1. Radiological Transfer Routes

f. Localized Grid Maps

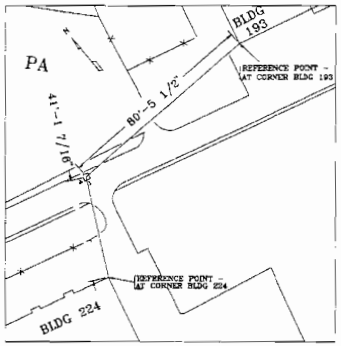
RAM ROUTE INTERSECTION NO. 61



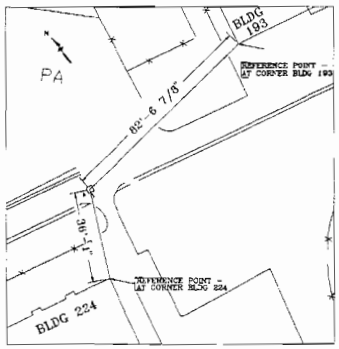
RAM ROUTE INTERSECTION NO. 62



RAM ROUTE INTERSECTION NO. 63



RAM ROUTE INTERSECTION NO. 64



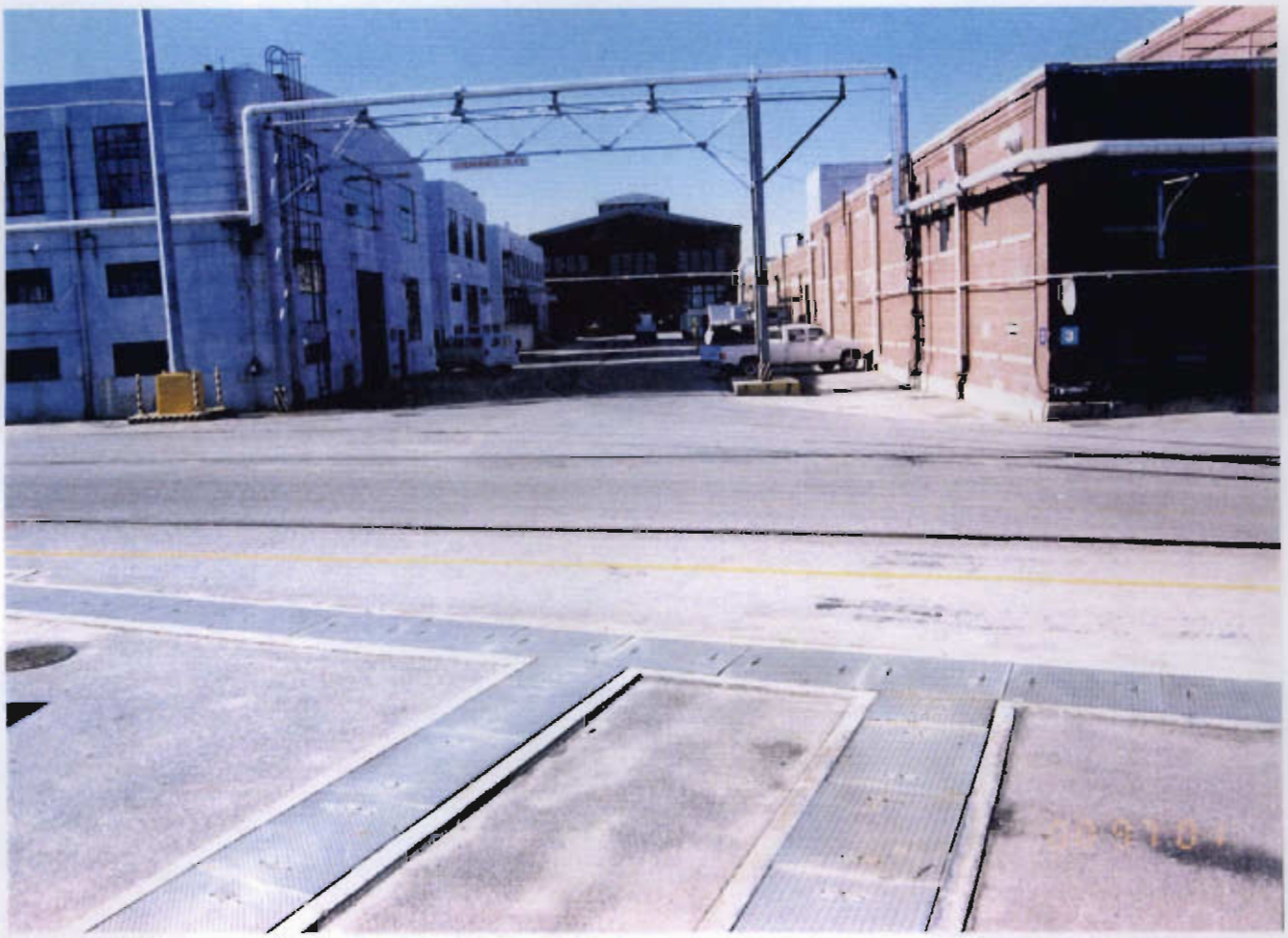
1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs



Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

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g. Photographs

Typical Ram Transfer Route Intersection

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g. Photographs

Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

1. Radiological Transfer Routes

g. Photographs

Typical Ram Transfer Route Intersection

1. Environmental Sampling

a. Introduction:

Radiological environmental surveys and sampling were performed in accordance with the CNSY NNPP Survey Plan.

(1) Description:

Environmental surveys and sampling were divided into five major areas. These areas included: shoreline surveys; environmental samples of river bottom sediment, marine life and river water; river bottom solid material core samples; storm drain sediment samples and ground water samples.

(2) Brief History:

(a) **Radiological History:** Radiological environmental monitoring has been conducted at CNSY since the beginning of its involvement with Naval nuclear-powered ships. This monitoring consisted of (1) analyzing harbor sediment, water and marine life samples for radioactivity associated with Naval nuclear propulsion plants and (2) radiation monitoring around the perimeter of support facilities. The results of environmental monitoring show that operations involving nuclear powered vessels have not caused significant concentrations of radionuclides in the environs of Charleston Naval Shipyard and Naval Base.

(3) Survey Requirements:

(a) Shoreline surveys - CNSY NNPP Survey Plan
(b) Environmental samples - CNSY NNPP Survey Plan
(c) River bottom solid material core samples - CNSY NNPP Survey Plan
(d) Storm drain sediment samples - CNSY NNPP Survey Plan
(e) Ground water samples - CNSY NNPP Survey Plan

2. Shoreline Surveys

a. Introduction:

Environmental shoreline surveys were performed in areas that the shipyard normally performed biannual shoreline surveys.

(1) **Description:**

Environmental shoreline surveys were performed in the four sections shown on the site map. These surveys were performed in areas that had readily accessible shoreline. Most of the Naval Station and Naval Shipyard shoreline is bordered by quaywalls or is located under piers and is difficult to access.

(2) **Brief History:**

(a) **Radiological History:** Environmental shoreline surveys have been performed at CNSY since 1959 when a baseline study of the radiological environment of the shipyard and surrounding waters was conducted. These shoreline surveys have not detected any radioactivity associated with the Naval Nuclear Propulsion Program.

(3) **Survey Requirements:**

(a) Shoreline surveys - CNSY NNPP Survey Plan.

b. Discussion:

Shoreline surveys were performed with the IM-253/PD (HV-2 GROSS) every 75 feet at the midpoint between the high and low tide marks. Since surveys performed with the IM-253/PD (HV-2 GROSS) did not detect areas greater than or equal to twice background, IM-253/PD (HV-1 PHA) surveys were not required to be performed.

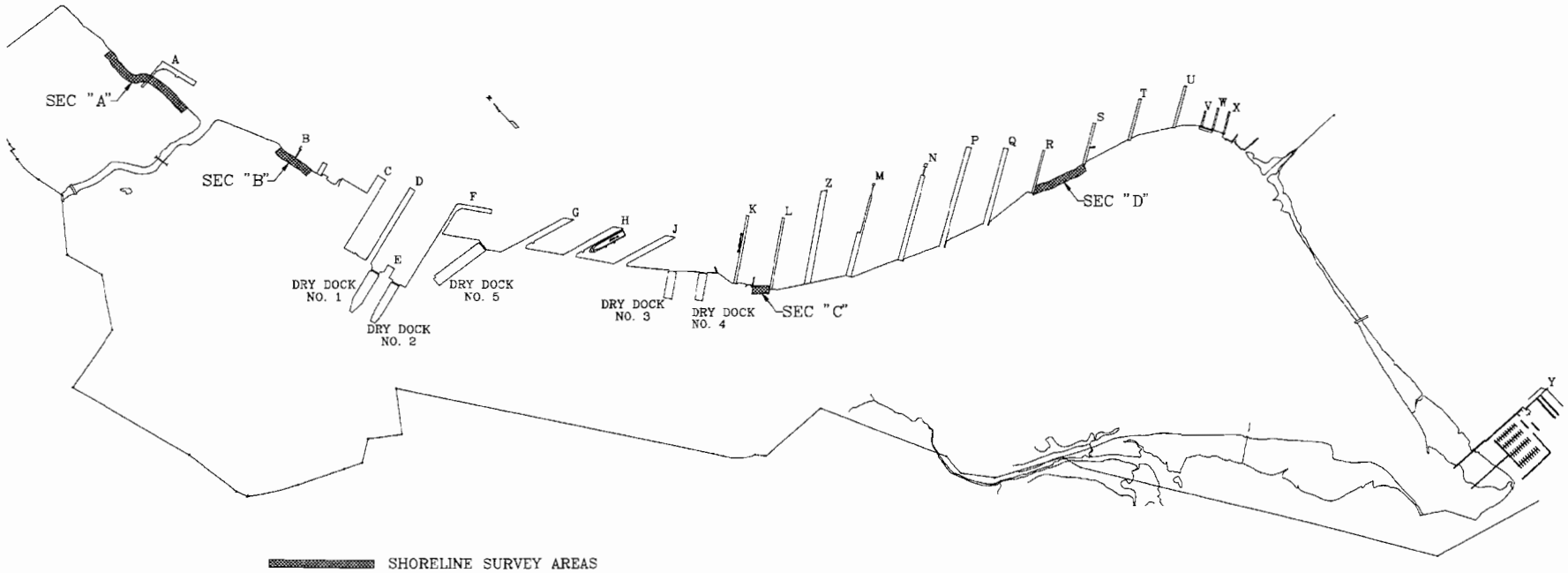
The IM-253/PD (HV-2 GROSS) background levels were based on the average background reading per section. Readings in each section were taken approximately 30 feet inland of the high tide mark every 250 feet along the shoreline.

c. Summary:

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

2. Shoreline Surveys

d. Site Map



2. Shoreline Surveys

1995 FOURTH QUARTER SHORELINE SURVEY

LOCATION	AVG. BACKGROUND HV-2 GROSS (CPM)	AVG. READING HV-2 GROSS (CPM)
SECTION A	5300	4300
SECTION B	6200	4522
SECTION C	4950	7300
SECTION D	5750	5722

Instrument Used: IM-253/PD

3. Environmental Samples

a. Introduction:

Environmental sampling of river water, river bottom sediment and marine life was performed in accordance with the CNSY NNPP Survey Plan.

(1) **Description:**

Environmental water samples and sediment samples were taken from the river at nuclear ship berthing areas and dry dock pump outfalls. Environmental marine life samples were taken in the areas that the shipyard normally performed annual marine life sampling.

(2) **Brief History:**

(a) **Radiological History:** Environmental monitoring of river water and river bottom sediment has been conducted at CNSY since the beginning of its involvement with Naval nuclear-powered ships.

i. Beginning with the pre-operational baseline data obtained in 1959 and continuing through the present, samples of water from the river have been collected and analyzed at least quarterly.

ii. Since 1966, sediment samples have been collected and analyzed quarterly.

iii. As part of the 1975 environmental assessment, marine life samples were collected near shipyard piers and analyzed to determine if marine life may be concentrating the very low levels of radioactivity in the harbor environment. Beginning in 1978, CNSY obtained and analyzed marine life samples during July of each year.

Samples were analyzed for gross gamma radioactivity and radionuclide content with a gamma scintillation spectrometer. No cobalt 60 or other radionuclides associated with the NNPP have been detected in water or marine life samples. Traces of cobalt 60 have been detected in past sediment samples, but traces are not detectable in sediment today. The results of environmental monitoring at CNSY confirm that no significant levels of man made radioactivity have entered the environment as a result of NNPP work performed at CNSY.

(3) **Survey Requirements:**

(a) Environmental samples - CNSY NNPP Survey Plan.

3. *Environmental Samples*

b. Discussion:

As required by the CNSY NNPP Survey Plan, Section VII, environmental sediment and water samples were taken from the river at nuclear ship berthing areas and dry dock pump outfalls. Marine life samples of crustaceans and mollusks were taken at pier G at the shipyard and at pier M on the Naval Base. Four water samples, forty-nine sediment samples and four marine life samples were taken. The following typical naturally occurring radionuclides were identified during isotopic analysis of sediment samples: beryllium 7, bismuth 214, lead 212, lead 214, potassium 40, radium 226; marine life samples: potassium 40; river water samples: bismuth 214.

No cobalt-60 or other non-naturally occurring radionuclides were detected in any of the above samples. These measurements are consistent with measurements obtained during previous surveys.

c. Summary:

Analysis performed on sediment samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of 0.66 pCi/g to a high of 2.50 pCi/g.

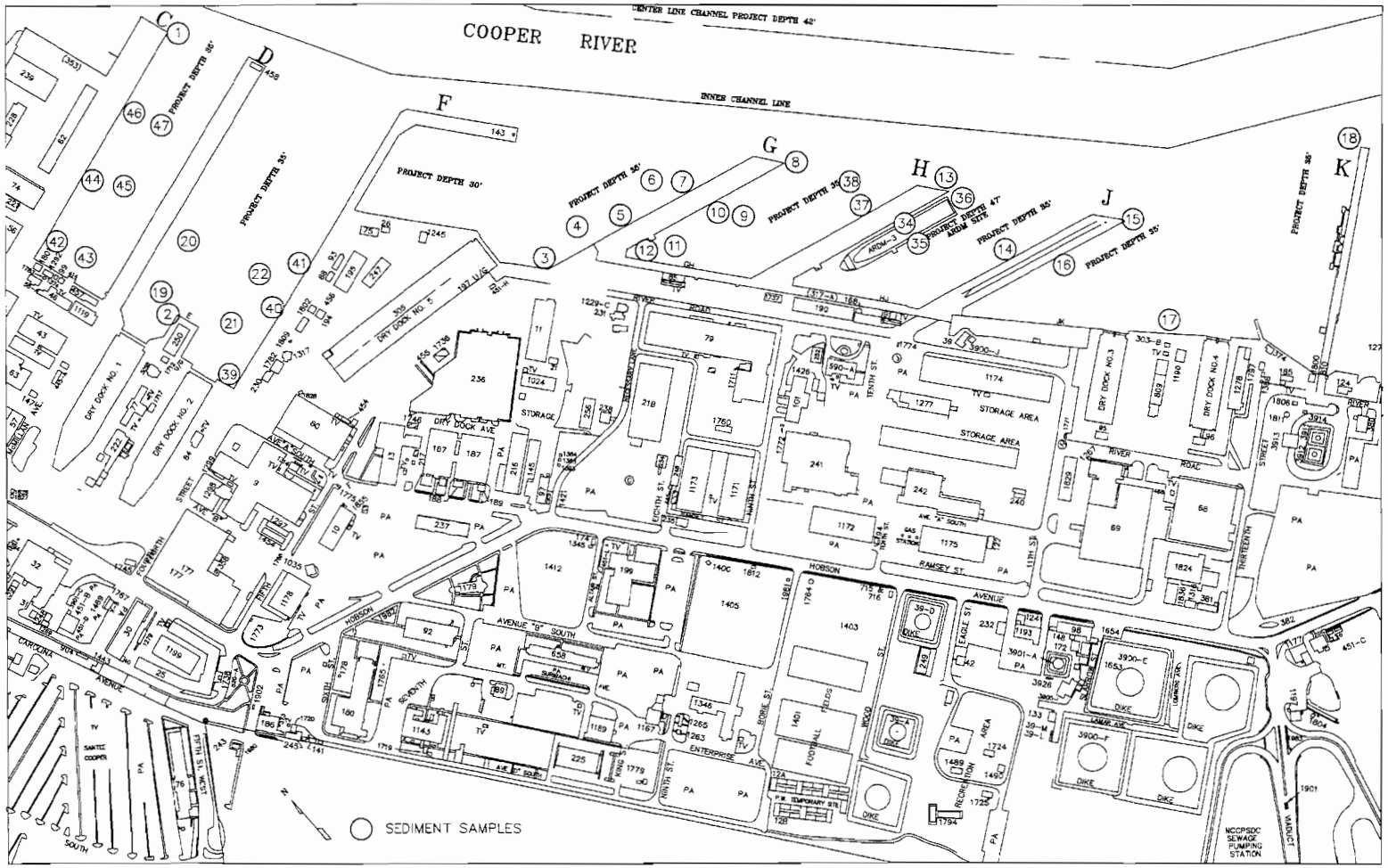
Analysis performed on marine life samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of less than 0.04 pCi/g to a high of 0.26 pCi/g.

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all solid material samples were less than 1 pCi/g.

Analysis performed on river water samples with the multi-channel analyzer (MCA) found gross gamma equivalent cobalt 60 radioactivity levels for all samples to be less than 2.9×10^{-8} µCi/ml.

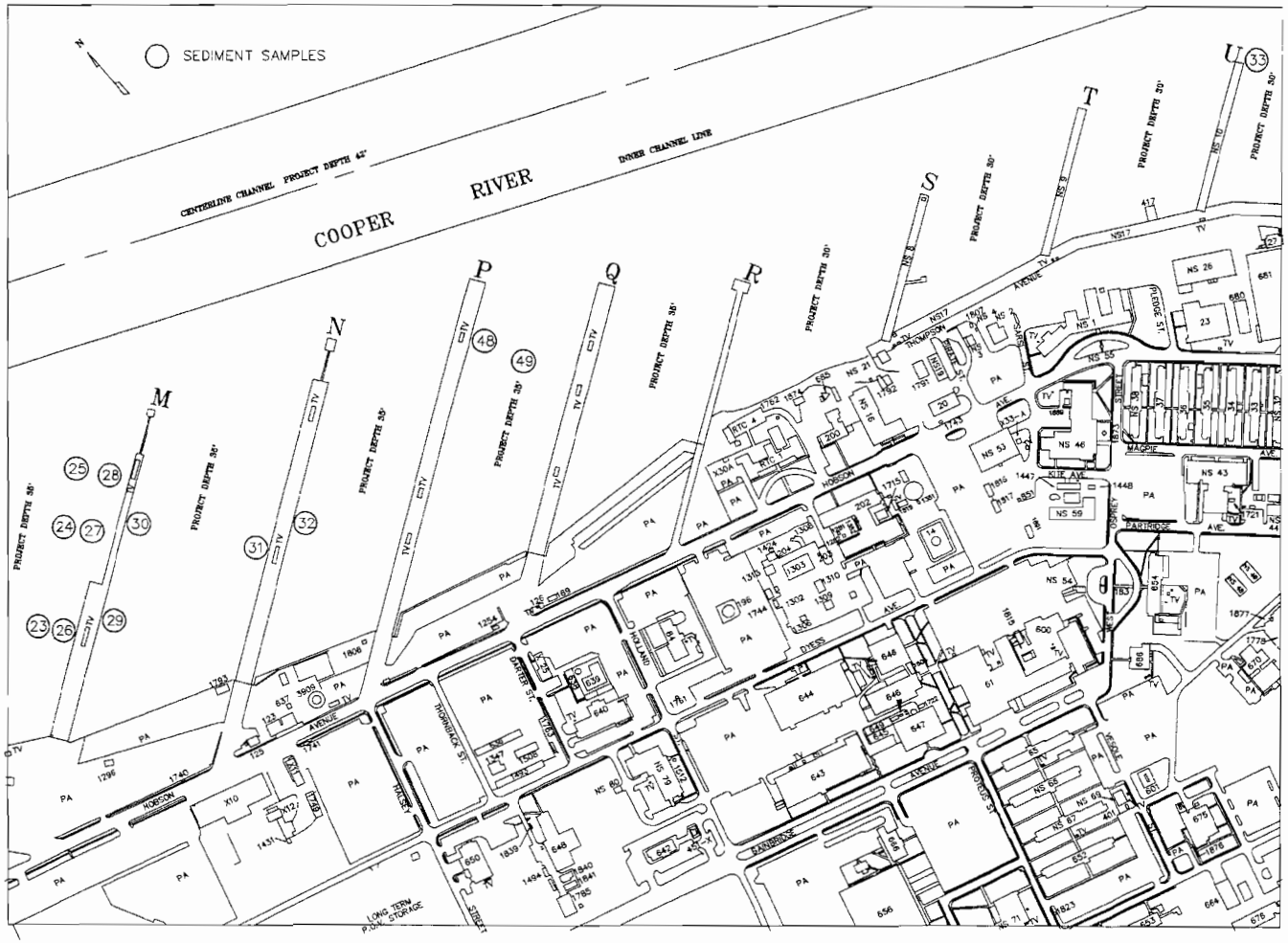
3. Environmental Samples

d. Site Map



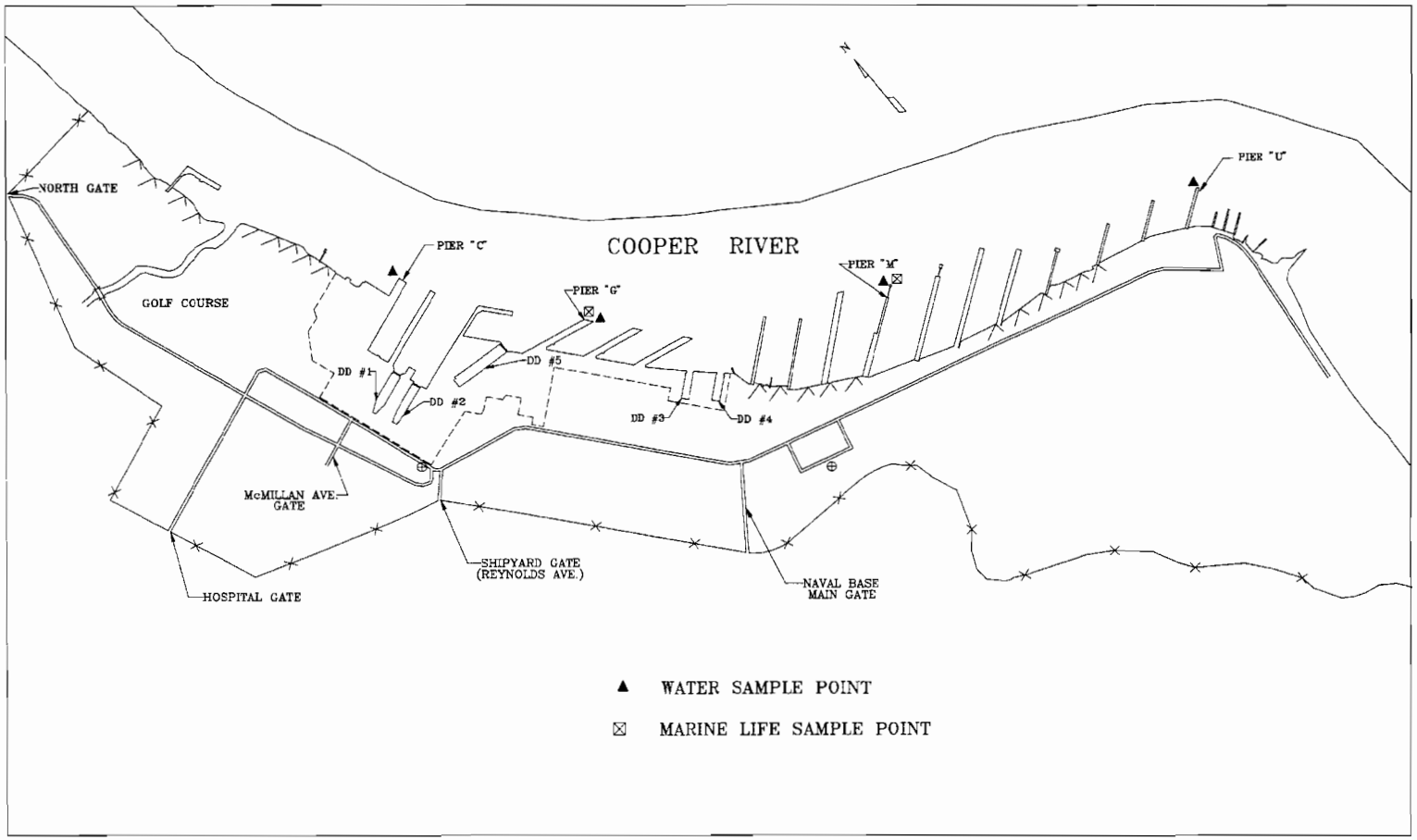
3. **Environmental Samples**

d. **Site Map**



3. Environmental Samples

d. Site Map



3. Environmental Samples

COOPER RIVER BOTTOM SEDIMENT RADIOACTIVITY

FOURTH QUARTER 1995

SAMPLE ID	DATE COLLECTED	SAMPLE WEIGHT (GRAMS)	SAMPLE AREA (cm^2)	GROSS GAMMA (COBALT 60) EQUIVALENT 0.1-2.1 MeV (pCi/g)	COBALT 60 ACTIVITY (pCi/g)	OTHER NON-NATURALLY OCCURRING RADIONUCLIDES SPECIFIC ACTIVITIES ISOTOPE	(pCi/g)
1	10/13/95	587	460	0.98	<0.05	N/A	–
2	10/13/95	516	230	0.83	<0.08	N/A	–
3	10/13/95	581	690	1.09	<0.05	N/A	–
4	10/13/95	579	230	0.75	<0.05	N/A	–
5	10/13/95	634	230	1.71	<0.07	N/A	–
6	10/13/95	529	230	0.74	<0.05	N/A	–
7	10/13/95	500	230	0.74	<0.05	N/A	–
8	10/13/95	501	230	0.84	<0.07	N/A	–
9	10/16/95	556	230	0.75	<0.05	N/A	–
10	10/13/95	576	230	0.84	<0.03	N/A	–
11	10/16/95	555	230	0.77	<0.07	N/A	–
12	10/13/95	588	230	1.36	<0.06	N/A	–
13	10/16/95	584	230	0.85	<0.05	N/A	–
14	10/14/95	568	230	0.75	<0.05	N/A	–
15	10/14/95	588	460	1.26	<0.05	N/A	–
16	10/14/95	614	230	0.70	<0.05	N/A	–
17	10/14/95	643	920	1.41	<0.07	N/A	–
18	10/14/95	620	920	1.65	<0.05	N/A	–
19	10/13/95	525	230	0.76	<0.05	N/A	–
20	10/13/95	573	230	0.82	<0.06	N/A	–
21	10/13/95	536	230	0.73	<0.06	N/A	–
22	10/13/95	514	230	0.75	<0.05	N/A	–
23	10/16/95	529	230	0.74	<0.06	N/A	–
24	10/16/95	573	230	0.76	<0.05	N/A	–
25	10/16/95	806	230	2.50	<0.07	N/A	–
26	10/14/95	500	230	0.66	<0.06	N/A	–
27	10/16/95	527	230	0.77	<0.07	N/A	–
28	10/16/95	509	230	0.96	<0.07	N/A	–
29	10/14/95	590	230	0.69	<0.07	N/A	–
30	10/14/95	570	460	0.92	<0.05	N/A	–

3. Environmental Samples

COOPER RIVER BOTTOM SEDIMENT RADIOACTIVITY

FOURTH QUARTER 1995

SAMPLE ID	DATE COLLECTED	SAMPLE WEIGHT (GRAMS)	SAMPLE AREA (cm^2)	GROSS GAMMA (COBALT 60) EQUIVALENT 0.1-2.1 MeV (pCi/g)	COBALT 60 ACTIVITY (pCi/g)	OTHER NON-NATURALLY OCCURRING RADIONUCLIDES SPECIFIC ACTIVITIES	
						ISOTOPE	(pCi/g)
31	10/14/95	523	230	0.67	<0.05	N/A	–
32	10/14/95	504	230	0.75	<0.03	N/A	–
33	10/14/95	515	230	0.76	<0.03	N/A	–
34	10/14/95	540	230	0.90	<0.04	N/A	–
35	10/16/95	502	230	0.70	<0.07	N/A	–
36	10/16/95	513	230	0.71	<0.06	N/A	–
37	10/14/95	567	230	0.80	<0.04	N/A	–
38	10/16/95	521	230	0.82	<0.06	N/A	–
39	10/13/95	596	230	1.01	<0.07	N/A	–
40	10/13/95	555	230	2.21	<0.05	N/A	–
41	10/13/95	500	230	0.75	<0.04	N/A	–
42	10/13/95	520	230	0.98	<0.05	N/A	–
43	10/13/95	590	230	0.69	<0.06	N/A	–
44	10/13/95	563	230	0.78	<0.05	N/A	–
45	10/13/95	588	230	0.74	<0.05	N/A	–
46	10/13/95	540	230	0.85	<0.07	N/A	–
47	10/13/95	516	230	0.82	<0.04	N/A	–
48	10/14/95	560	230	1.46	<0.06	N/A	–
49	10/16/95	501	230	0.76	<0.05	N/A	–

3. Environmental Samples

MARINE LIFE SAMPLE RADIOACTIVITY

SAMPLE LOCATIONS (1)	SAMPLE WEIGHT (GRAMS)	SAMPLE TYPE (2)	GROSS GAMMA (COBALT 60 EQUIVALENT 0.1-2.1 MeV) (pCi/g)	COBALT 60 ACTIVITY (pCi/g)	OTHER NON-NATURALLY OCCURRING RADIONUCLIDES SPECIFIC ACTIVITIES ISOTOPE	pCi/g
CNSY Pier G	486	C	0.26	<0.05	N/A	-
NB Pier M	488	C	0.12	<0.03	N/A	-
CNSY Pier G	469	M	<0.04	<0.04	N/A	-
NB Pier M	478	M	0.05	<0.02	N/A	-

Notes:
(1) CNSY = Charleston Naval Shipyard; NB = Naval Base
(2) C = Crustaceans; M = Mollusks

3. Environmental Samples

COOPER RIVER WATER RADIOACTIVITY

SAMPLE ID	DATE SAMPLED	SAMPLE VOLUME (ml)	GROSS GAMMA (COBALT 60 EQUIVALENT 0.1-2.1 MeV) (µCi/ml)	COBALT 60 ACTIVITY (µCi/ml)	OTHER NON-NATURALLY OCCURRING RADIONUCLIDES SPECIFIC ACTIVITIES	
					ISOTOPE	(µCi/ml)
PIER C SE CORNER	10/14/95	500	$<2.9 \times 10^{-8}$	$<1.3 \times 10^{-8}$	N/A	-
PIER G SE CORNER	10/14/95	500	$<2.9 \times 10^{-8}$	$<3.5 \times 10^{-8}$	N/A	-
PIER M NE CORNER	10/14/95	500	$<2.9 \times 10^{-8}$	$<2.8 \times 10^{-8}$	N/A	-
PIER U SE CORNER	10/14/95	500	$<2.9 \times 10^{-8}$	$<5.5 \times 10^{-8}$	N/A	-

All samples counted for 1×10^{3} seconds.

4. Solid Material Core Samples

a. Introduction:

Solid material core samples were taken from the river at ships berthing areas and dry dock pump outfalls in accordance with the CNSY NNPP Survey Plan.

(1) **Description:**

Core samples are taken to determine whether radioactivity may have accumulated below the top layer of sediment, which is sampled on a routine basis. Core samples were taken from the locations shown on the site map.

(2) **Brief History:**

(a) **Use:** Past core sampling at the shipyard included core sampling performed by the EPA in their 1985 survey and a single core sample taken in 1974 by the shipyard.

(b) **Radiological History:** None of the core samples taken at CNSY contained other than naturally occurring radionuclides and trace amounts of cesium 137. The presence of cesium 137 is the result of fallout from atmospheric nuclear weapons testing and the Chernobyl nuclear reactor accident.

(3) **Survey Requirements:**

(a) River bottom core samples - CNSY NNPP Survey Plan.

b. Discussion:

As required by the CNSY NNPP Survey Plan, river bottom solid material core samples were taken at ships berthing areas and dry dock pump outfalls.

Fifteen core samples were taken. Each core sample was frozen and cut into approximately 4 inch long subsections for analysis. The subsections are numbered such that the top subsection of each sample is labelled "subsection #1". The next subsection going deeper into the river bottom is labelled "subsection #2" and so on. A total of 107 core sample subsections were analyzed. The following typical naturally occurring radionuclides were identified during isotopic analysis of sediment samples: actinium 228, beryllium 7, bismuth 212, bismuth 214, lead 212, lead 214, potassium 40, radium 226, thallium 208.

c. Summary:

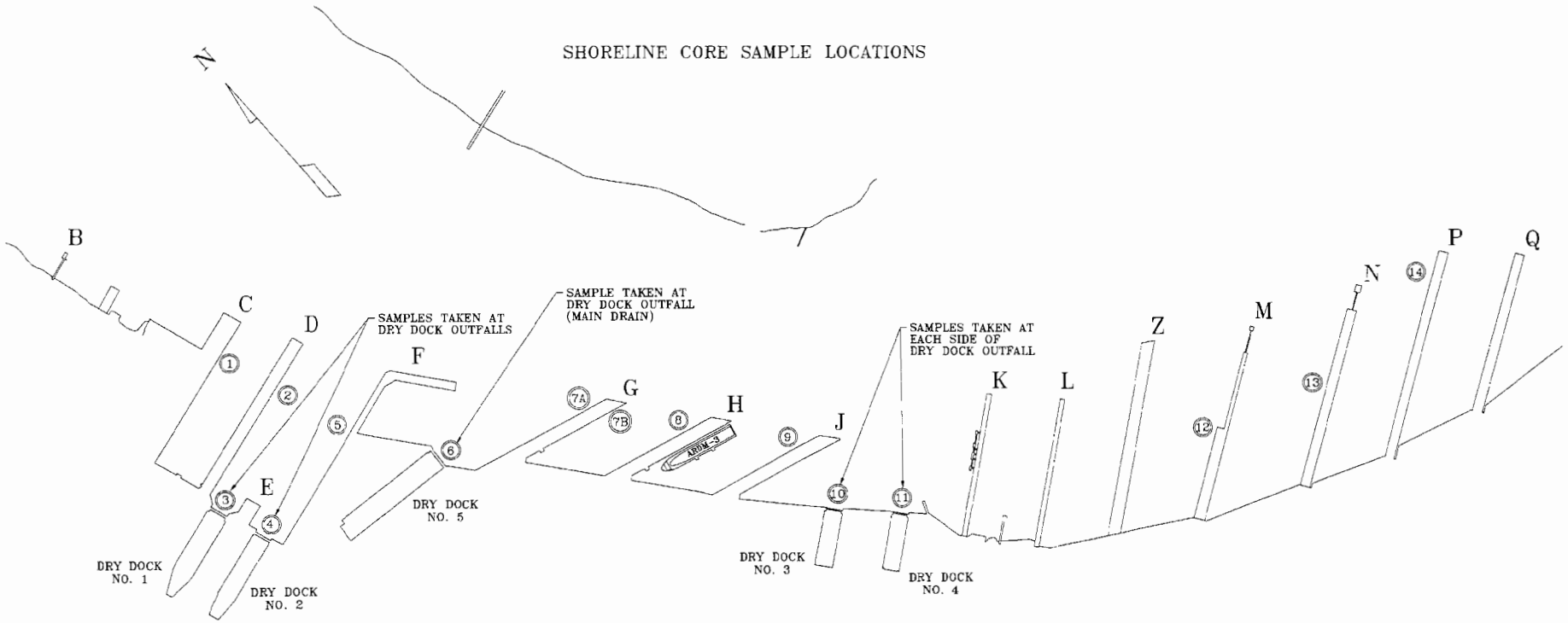
Analysis performed on river bottom core samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of 0.43 pCi/g to a high of 4.01 pCi/g.

4. Solid Material Core Samples

Analysis performed on solid material samples with the MCA for specific cobalt 60 indicated that all river bottom core samples were less than 0.1 pCi/g.

4. Solid Material Core Samples

d. Site Map



4. Solid Material Core Samples

ENVIRON	CORE SAMPLES	GROSS ACTIVITY (pCi/g)	SPECIFIC COBALT 60 RESULTS
SAMPLE NO. 1	SUBSECTION #1	0.98	<0.02
	SUBSECTION #2	1.02	<0.02
	SUBSECTION #3	1.15	<0.02
	SUBSECTION #4	1.00	<0.02
	SUBSECTION #5	0.92	<0.02
	SUBSECTION #6	0.75	<0.02
SAMPLE NO. 2	SUBSECTION #1	1.61	<0.02
	SUBSECTION #2	1.35	<0.03
	SUBSECTION #3	1.12	<0.02
	SUBSECTION #4	1.11	<0.02
	SUBSECTION #5	0.94	<0.02
	SUBSECTION #6	0.90	<0.02
	SUBSECTION #7	0.87	<0.02
	SUBSECTION #8	0.57	<0.04
SAMPLE NO. 3	SUBSECTION #1	0.86	<0.02
	SUBSECTION #2	0.87	<0.03
	SUBSECTION #3	0.79	<0.03
	SUBSECTION #4	0.87	<0.03
	SUBSECTION #5	0.98	<0.03
	SUBSECTION #6	0.78	<0.03
	SUBSECTION #7	0.77	<0.03
	SUBSECTION #8	0.69	<0.02
SAMPLE NO. 4	SUBSECTION #1	0.94	<0.02
	SUBSECTION #2	1.00	<0.02
	SUBSECTION #3	1.80	<0.03
	SUBSECTION #4	0.92	<0.03
	SUBSECTION #5	1.12	<0.03
	SUBSECTION #6	0.85	<0.02
	SUBSECTION #7	0.83	<0.02
	SUBSECTION #8	0.82	<0.02
	SUBSECTION #9	0.64	<0.02

4. Solid Material Core Samples

ENVIRON	CORE SAMPLES	GROSS ACTIVITY (pCi/g)	SPECIFIC COBALT 60 RESULTS
SAMPLE NO. 5	SUBSECTION #1	1.09	<0.02
	SUBSECTION #2	0.95	<0.02
	SUBSECTION #3	2.61	<0.04
	SUBSECTION #4	0.88	<0.02
	SUBSECTION #5	1.66	<0.03
	SUBSECTION #6	1.08	<0.02
SAMPLE NO. 6	SUBSECTION #1	0.98	<0.03
	SUBSECTION #2	0.96	<0.02
	SUBSECTION #3	1.09	<0.03
	SUBSECTION #4	0.90	<0.03
	SUBSECTION #5	0.86	<0.03
	SUBSECTION #6	0.81	<0.03
	SUBSECTION #7	0.78	<0.02
	SUBSECTION #8	0.46	<0.04
SAMPLE NO. 7A	SUBSECTION #1	0.82	<0.02
	SUBSECTION #2	1.38	<0.02
	SUBSECTION #3	1.62	<0.03
	SUBSECTION #4	4.01	<0.05
SAMPLE NO. 7B	SUBSECTION #1	0.95	<0.02
	SUBSECTION #2	1.01	<0.03
	SUBSECTION #3	0.89	<0.01
	SUBSECTION #4	0.87	<0.02
	SUBSECTION #5	0.90	<0.03
	SUBSECTION #6	0.82	<0.02
	SUBSECTION #7	0.43	<0.03

4. Solid Material Core Samples

ENVIRON	CORE SAMPLES	GROSS ACTIVITY (pCi/g)	SPECIFIC COBALT 60 RESULTS
SAMPLE NO. 8	SUBSECTION #1	0.99	<0.02
	SUBSECTION #2	1.15	<0.02
	SUBSECTION #3	1.13	<0.02
	SUBSECTION #4	1.14	<0.03
	SUBSECTION #5	1.00	<0.03
	SUBSECTION #6	1.08	<0.03
	SUBSECTION #7	1.01	<0.02
	SUBSECTION #8	1.00	<0.02
	SUBSECTION #9	0.83	<0.02
SAMPLE NO. 9	SUBSECTION #1	0.87	<0.02
	SUBSECTION #2	0.88	<0.02
	SUBSECTION #3	1.02	<0.03
	SUBSECTION #4	0.78	<0.02
	SUBSECTION #5	0.85	<0.02
	SUBSECTION #6	0.87	<0.02
	SUBSECTION #7	0.88	<0.03
	SUBSECTION #8	0.82	<0.04
	SUBSECTION #9	0.69	<0.02
SAMPLE NO. 10	SUBSECTION #1	1.19	<0.03
	SUBSECTION #2	0.93	<0.02
	SUBSECTION #3	1.16	<0.02
	SUBSECTION #4	0.86	<0.02
	SUBSECTION #5	2.81	<0.03
	SUBSECTION #6	0.97	<0.04
	SUBSECTION #7	0.90	<0.04
	SUBSECTION #8	0.91	<0.02
	SUBSECTION #9	0.61	<0.04

4. Solid Material Core Samples

ENVIRON	CORE SAMPLES	GROSS ACTIVITY (pCi/g)	SPECIFIC COBALT 60 RESULTS
SAMPLE NO. 11	SUBSECTION #1	0.75	<0.02
	SUBSECTION #2	0.83	<0.03
	SUBSECTION #3	0.73	<0.02
	SUBSECTION #4	0.75	<0.02
	SUBSECTION #5	0.63	<0.02
SAMPLE NO. 12	SUBSECTION #1	0.75	<0.02
	SUBSECTION #2	0.81	<0.02
	SUBSECTION #3	0.86	<0.02
	SUBSECTION #4	0.80	<0.02
	SUBSECTION #5	0.79	<0.02
	SUBSECTION #6	0.71	<0.03
	SUBSECTION #7	0.63	<0.04
SAMPLE NO. 13	SUBSECTION #1	1.52	<0.02
	SUBSECTION #2	1.35	<0.02
	SUBSECTION #3	1.51	<0.02
	SUBSECTION #4	1.48	<0.03
	SUBSECTION #5	1.56	<0.04
	SUBSECTION #6	1.04	<0.02
	SUBSECTION #7	0.64	<0.02
	SUBSECTION #8	0.57	<0.02
SAMPLE NO. 14	SUBSECTION #1	1.40	<0.03
	SUBSECTION #2	1.53	<0.03
	SUBSECTION #3	1.72	<0.03
	SUBSECTION #4	0.99	<0.04

5. Storm Drain Samples

a. Introduction:

Environmental sampling of storm drain sediment was performed in accordance with the CNSY NNPP Survey Plan.

(1) **Description:**

Sediment samples were taken from the storm drains in the vicinity of Group 3, 4 and 5 areas, in the vicinity of dry docks and nuclear ship berthing areas, and from 20% of the storm drains along radioactive material transfer routes.

(2) **Brief History:**

(a) **Use:** Storm drains are likely to accumulate radioactivity in the event of an inadvertent radioactive discharge. Storm drains can also accumulate radioactivity from the run-off of precipitation, if inadvertent releases of radioactivity were not cleaned up properly. In 1973 special sediment samples were taken in the Cooper River near storm drain outfalls. Starting in 1974 storm drain sediment samples were taken from accessible storm drain catch basins around areas where nuclear work was performed and reported in an annual sampling routine.

(b) **Radiological History:** Several instances have occurred where low levels of cobalt 60 were detected in the storm drains. In 1978 extremely low levels of cobalt 60 were detected at one of the sample points adjacent to Building 101. Results of additional sampling showed comparable concentrations of all background radionuclides, but cobalt 60 was not detected. During the second quarter of 1983, low levels of cobalt 60 were found in drains outside of Buildings 79A and 101. Only trace levels were observed. In 1988, a sample taken in the vicinity of Building 79 showed low levels of cobalt 60. Additional samples were taken with no cobalt 60 detectable. The presence of cesium 137 has been noted on numerous occasions during storm drain sampling. This is the result of fallout from atmospheric nuclear weapons testing and the Chernobyl nuclear reactor accident.

(3) **Survey Requirements:**

(a) Storm drain sediment samples - CNSY NNPP Survey Plan.

b. Discussion:

As required by the CNSY Survey Plan, sediment samples were taken from the storm drains in the vicinity of Group 3, 4 and 5 areas, in the vicinity of dry docks and nuclear ship berthing areas, and from 20% of the storm drains along radioactive material transfer routes.

5. Storm Drain Samples

One hundred and twenty three samples were taken from the storm drains. The following typical naturally occurring radionuclides were identified during isotopic analysis of solid material samples: actinium 228, beryllium 7, bismuth 214, lead 212, lead 214, potassium 40, radium 226, thallium 208.

Analysis performed on storm drain sediment samples taken during the Building 79A fenced area remediation identified 5 samples containing cobalt 60. The extent of the area containing cobalt 60 was identified by taking additional solid material samples from the storm drain area. The storm drain system behind 79A was remediated by removing the piping from the intersection at ninth street up to but not including the storm drain at sample point #97. Following remediation, additional solid material samples taken from the remediated area were less than 1 pCi/g for specific cobalt 60.

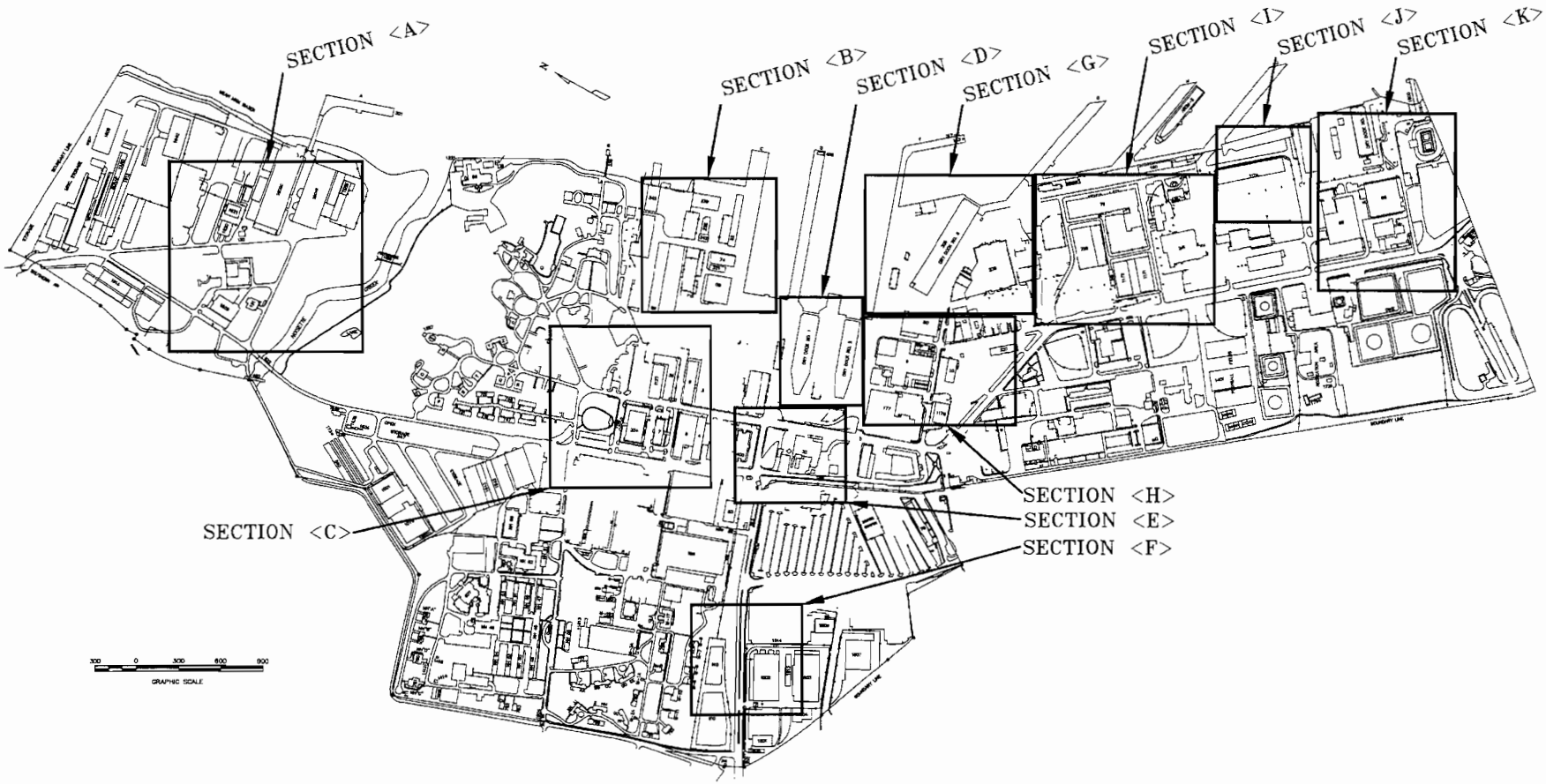
c. Summary:

Analysis performed on storm drain sediment samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of 0.60 pCi/g to a high of 7.18 pCi/g.

Analysis performed on storm drain sediment samples with the MCA for specific cobalt 60, upon completion of remediation, indicated that all solid material samples were less than 1 pCi/g.

5. Storm Drain Samples

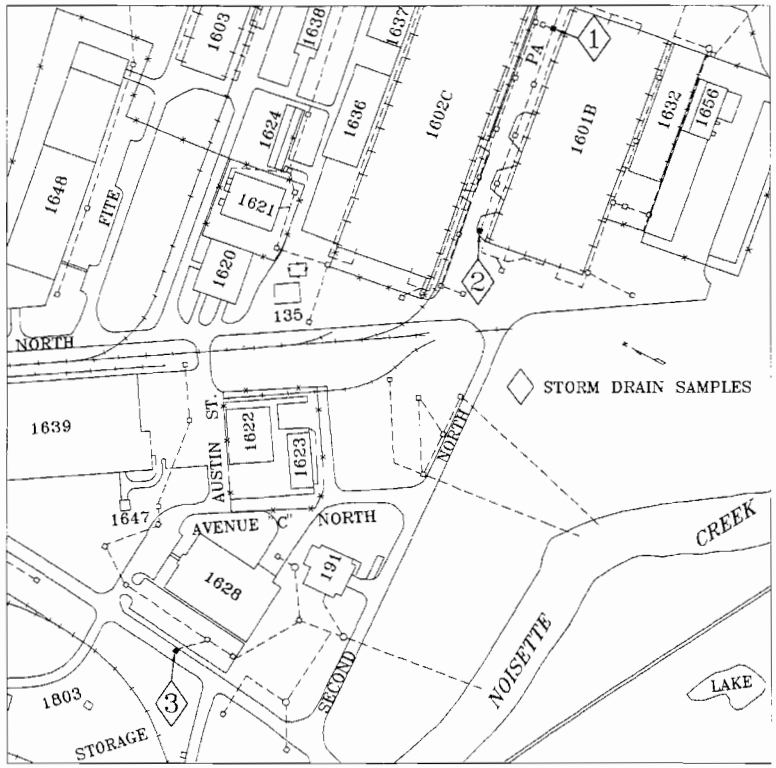
d. Site Map



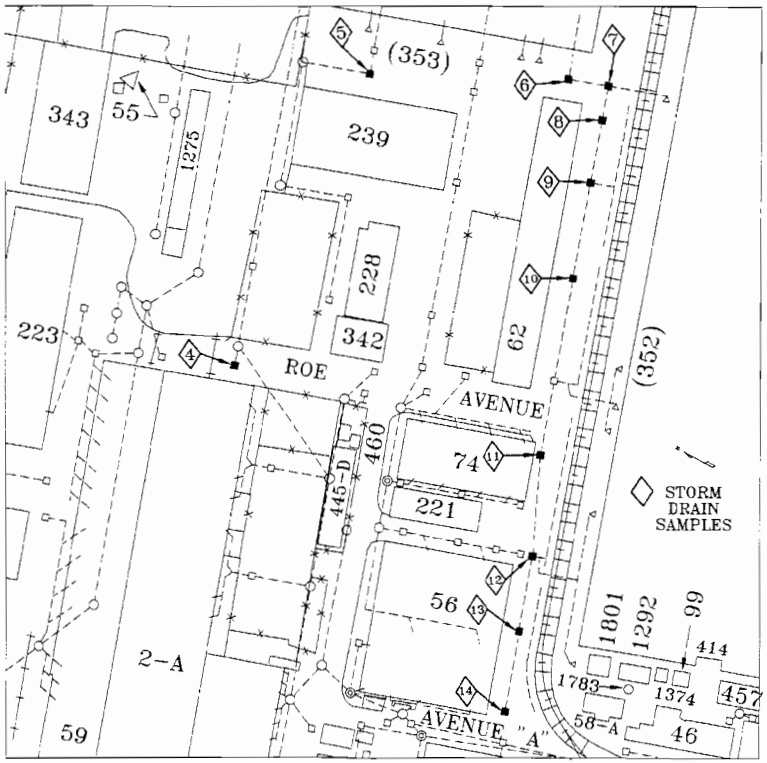
5. **Storm Drain Samples**

d. **Site Map**

SECTION <A>
LOCATIONS 1 THRU 3



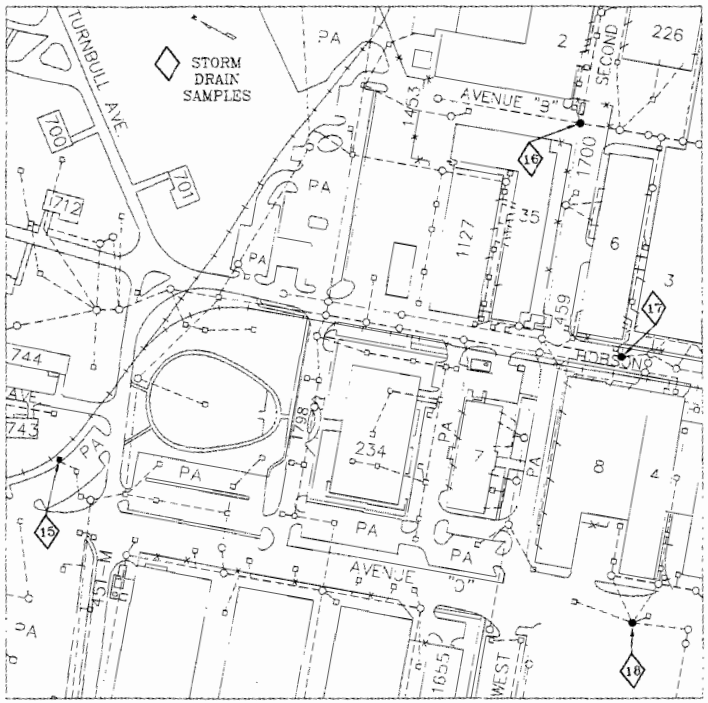
SECTION <B>
LOCATIONS 4 THRU 14



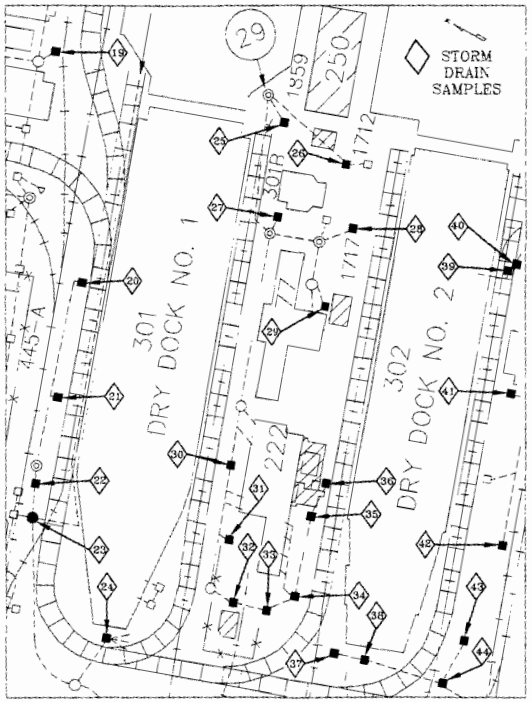
5. Storm Drain Samples

d. Site Map

SECTION <C>
LOCATIONS 15 THRU 18



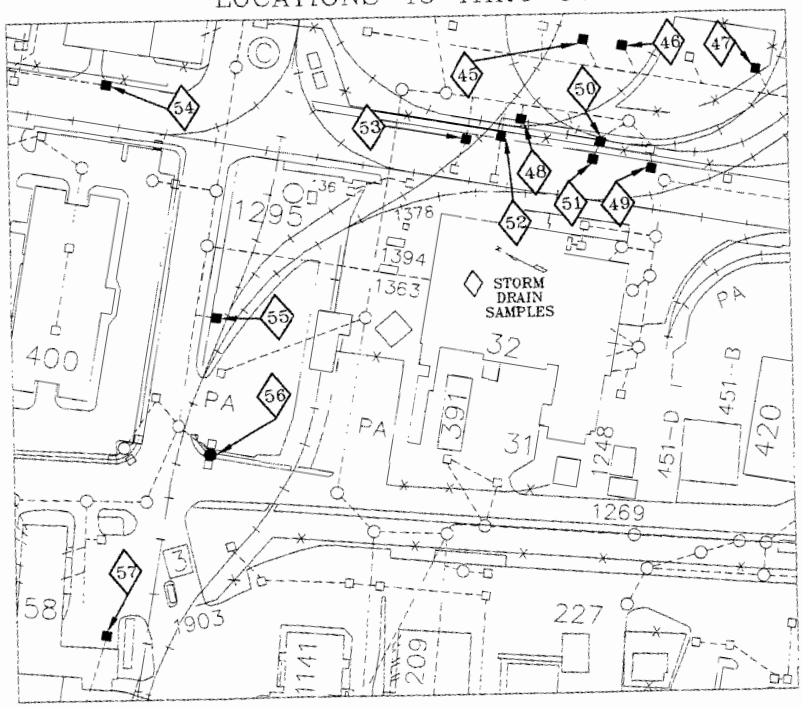
SECTION <D>
LOCATIONS 19 THRU 44



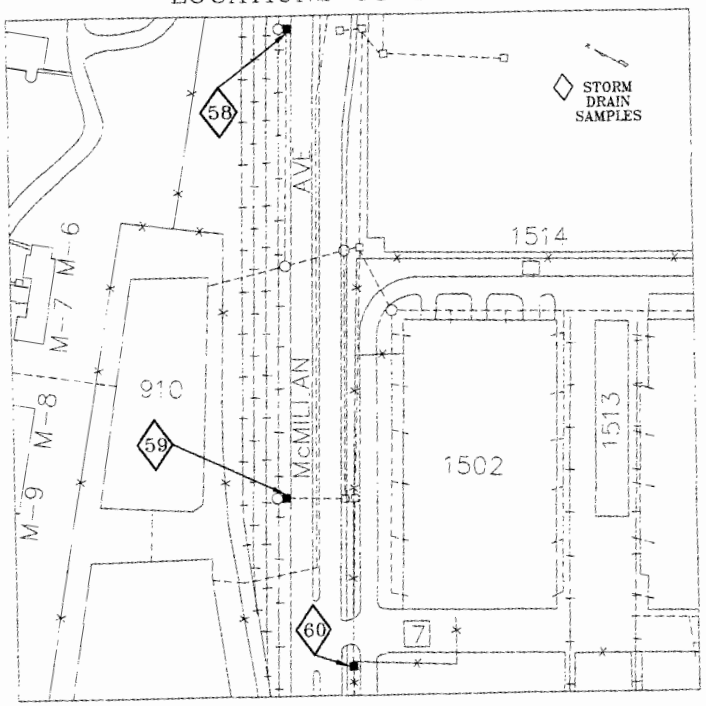
5. Storm Drain Samples

d. Site Map

SECTION <E>
LOCATIONS 45 THRU 57



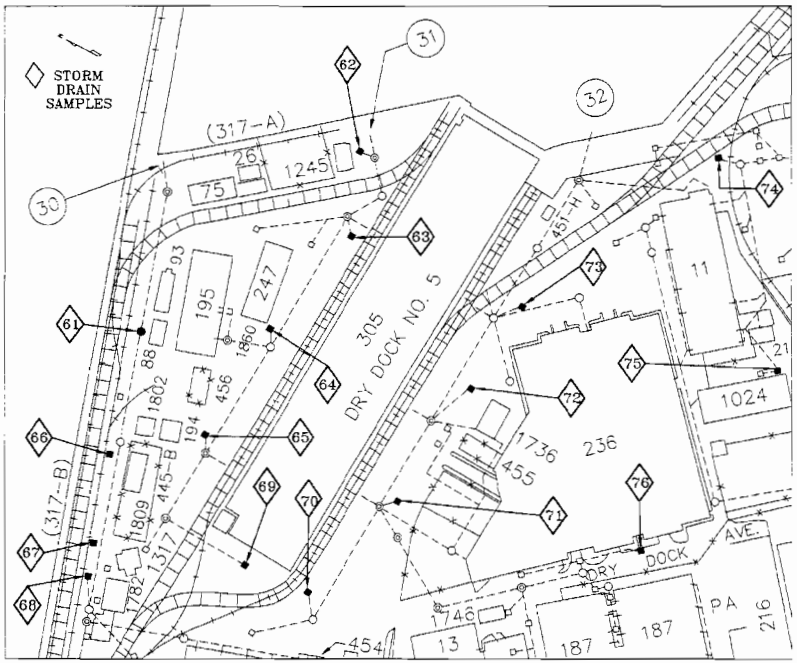
SECTION <F>
LOCATIONS 58 THRU 60



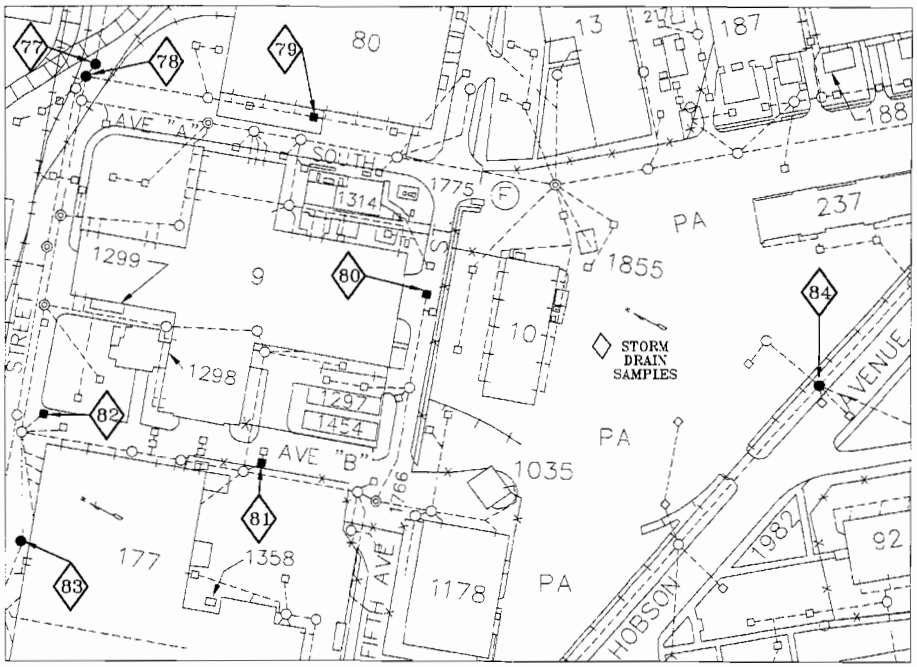
5. Storm Drain Samples

d. Site Map

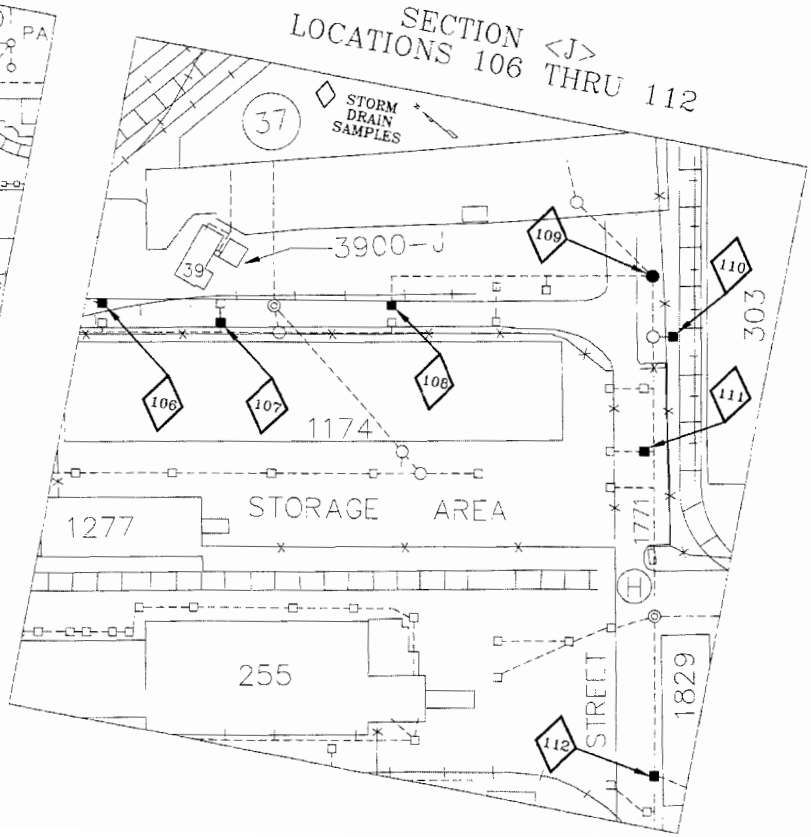
SECTION <G>
LOCATIONS 61 THRU 76



SECTION <H>
LOCATIONS 77 THRU 84



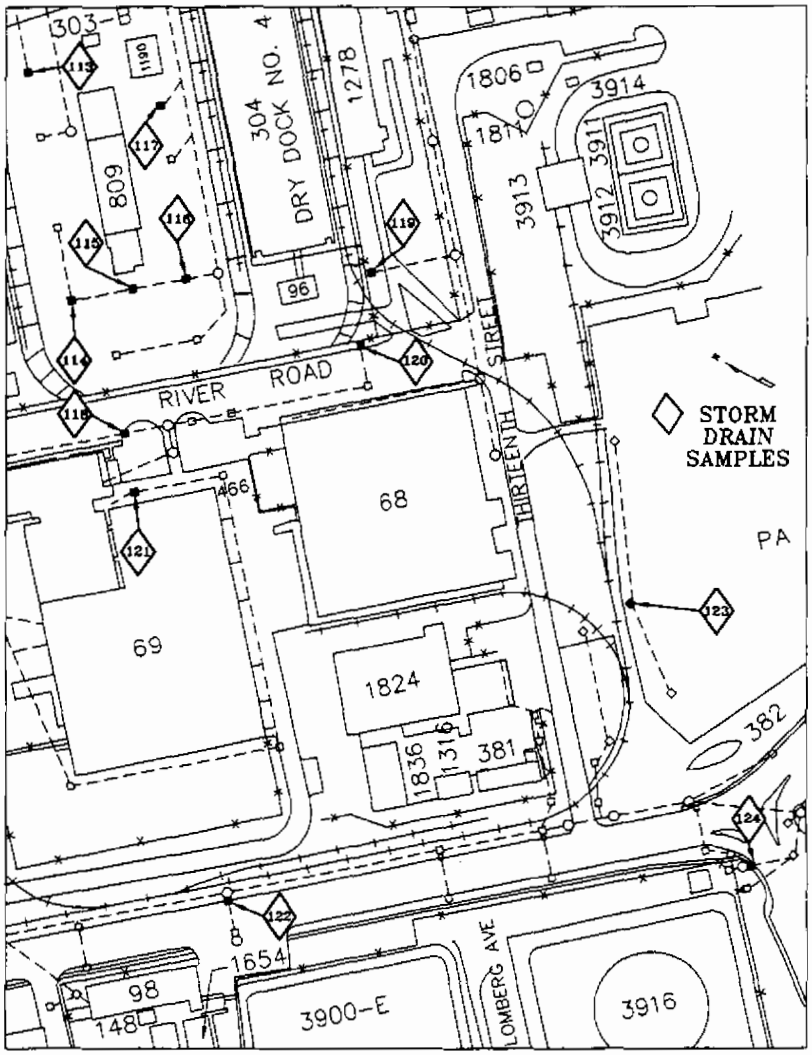
SECTION <I>
LOCATIONS 85 THRU 105
RIVER ROAD
79
231
NECESSARY LANE
218
256
238
590-A
426
252
TENTH ST.
PA
101
1711
1772
STORM DRAIN SAMPLES
241
1173
1171
1172
254
248
445
EIGHTH ST.
RAMSEY ST.
235
NINTH STREET
HOBSON
1400
1812
1981
1764
145
97
1421
1364
1365
1392
85
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105


SECTION <J>
LOCATIONS 106 THRU 112
STORM DRAIN SAMPLES
37
39
3900-J
1174
STORAGE AREA
1277
255
303
1771
1829
STREET
106
107
108
109
110
111
112

5. Storm Drain Samples

d. Site Map

SECTION <K>
LOCATIONS 113 THRU 124



5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
1	SOIL	1.33	<0.11
2	SOIL	1.42	<0.12
3	SOIL	1.24	<0.11
4	SOIL	3.89	<0.38
5	SOIL	3.15	<0.39
6	SOIL	2.82	<0.14
7	SOIL	2.37	<0.43
8	SOIL	3.12	<0.49
9	SOIL	2.75	<0.42
10	SOIL	2.49	<0.15
11	SOIL	2.59	<0.33
12	SOIL	2.40	<0.31
13	SOIL	2.47	<0.35
14	SOIL	2.97	<0.51
15	SOIL	4.72	<0.29
16	SOIL	2.10	<0.34
17	SOIL	2.62	<0.62
18	SOIL	2.56	<0.23
19	MUD/ CONCRETE	3.08	<0.71
20	MUD/ CONCRETE	3.21	<0.25

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
21	MUD/ CONCRETE	3.62	<0.28
22	MUD/ CONCRETE	3.46	<0.08
23	MUD/ CONCRETE	4.31	<0.09
24	MUD/ CONCRETE	3.96	<0.16
25	MUD/ CONCRETE	1.32	<0.03
26	MUD/ CONCRETE	1.11	<0.05
27	MUD/ CONCRETE	2.02	<0.07
28	MUD/ CONCRETE	1.38	<0.04
29	MUD/ CONCRETE	1.80	<0.07
30	MUD/ CONCRETE	2.10	<0.06
31	MUD/ CONCRETE	1.69	0.04
32	SOIL	1.53	<0.13
33	SOIL/ GRAVEL	1.90	<0.06
34	MUD/ SEDIMENT	2.60	<0.05

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
35	MUD/ SEDIMENT	2.16	<0.06
36	MUD/ SEDIMENT	1.79	<0.05
37	MUD/ SEDIMENT	1.98	<0.04
38	MUD/ CONCRETE	1.89	<0.04
39	MUD/ CONCRETE	1.70	0.05
40	MUD/ CONCRETE	2.12	0.01
41	MUD	1.96	<0.08
42	SOIL/ GRAVEL	1.57	<0.05
43	MUD	1.94	<0.06
44	MASONRY	4.00	<0.31
45	ASPHALT	2.26	<0.25
46	ASPHALT	7.18	<0.17
47	ASPHALT	5.20	<0.63
48	SOIL	3.36	<0.37
49	ASPHALT	3.26	<0.61
50	ASPHALT	2.98	<0.47
51	ASPHALT	1.93	<0.68
52	ASPHALT	1.72	<0.43

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
53	ASPHALT	4.26	<0.23
54	ASPHALT	1.48	<0.28
55	ASPHALT	1.68	<0.19
56	ASPHALT	2.30	<0.34
57	ASPHALT	1.57	<0.29
58	MASONRY	2.10	<0.21
59	MASONRY	3.54	<0.31
60	SOIL	2.44	<0.58
61	SOIL/ GRAVEL	2.30	<0.09
62	CONCRETE/ ASPHALT	4.52	<0.57
63	SOIL	3.16	<0.34
64	CONCRETE/ ASPHALT	3.72	<0.45
65	CONCRETE/ ASPHALT	3.49	<0.38
66	SOIL/ GRAVEL	2.72	<0.09
67	SOIL/ GRAVEL	2.03	<0.06
68	SOIL/ GRAVEL	2.58	<0.10
69	CONCRETE/ ASPHALT	1.88	<0.40

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
70	CONCRETE/ ASPHALT	3.91	<0.25
71	CONCRETE/ ASPHALT	3.06	<0.42
72	CONCRETE/ ASPHALT	3.18	<0.44
73	CONCRETE/ ASPHALT	2.81	<0.21
74	CONCRETE/ ASPHALT	3.70	<0.30
75	CONCRETE/ ASPHALT	1.12	<0.37
76	CONCRETE/ ASPHALT	3.03	<0.55
77	CONCRETE/ ASPHALT	2.54	<0.22
78	CONCRETE/ ASPHALT	4.34	<0.40
79	CONCRETE/ ASPHALT	2.60	<0.60
80	CONCRETE/ ASPHALT	2.50	<0.25
81	CONCRETE/ ASPHALT	3.21	<0.59
82	CONCRETE/ ASPHALT	3.10	<0.64
83	CONCRETE/ ASPHALT	3.52	<0.40

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
84	SOIL	2.78	<0.26
85	SOIL	5.74	<0.40
86	SOIL	1.87	<0.37
87	SOIL	2.88	<0.32
88	SOIL	5.08	<0.40
89	SOIL	4.40	<0.35
90	SOIL/ ASPHALT	2.76	<0.08
91	MASONRY	2.77	<0.32
92	SOIL	2.10	<0.07
93	SOIL	2.43	<0.06
94	SOIL	4.42	<0.41
95	SOIL	2.26	<0.28
96	SOIL	2.12	<0.06
97	CONCRETE	0.60	0.05
98	(1)	–	–
99	SOIL	1.67	<0.46
100	SOIL	2.57	<0.33
101	SOIL	3.26	<0.33
102	SOIL	3.16	<0.45
103	SOIL	3.48	<0.51
104	SOIL	2.68	<0.49

5. Storm Drain Samples

DRAIN NUMBER	MEDIA	GROSS pCi/g	SPECIFIC COBALT 60 RESULTS
105	SOIL	2.36	<0.21
106	SOIL	2.95	<0.23
107	SOIL	2.86	<0.42
108	SOIL	2.82	<0.51
109	SOIL	4.68	<0.68
110	SOIL	3.38	<0.49
111	SOIL	3.59	<0.43
112	SOIL	2.39	<0.36
113	SOIL	3.75	<0.46
114	SOIL	4.46	<0.32
115	SOIL	2.49	<0.21
116	SOIL	4.54	<0.39
117	SOIL	3.64	<0.25
118	SOIL	3.27	<0.57
119	SOIL	1.32	<0.46
120	SOIL	2.40	<0.56
121	SOIL	3.22	<0.22
122	SOIL	2.16	<0.36
123	SOIL	2.10	<0.41
124	SOIL	1.54	<0.22

(1) THE STORM DRAINS AND ASSOCIATED PIPING WERE REMOVED DURING REMEDIATION OF THE BUILDING 79A FENCED AREA. SEE DISCUSSION.

6. Ground Water Samples

a. Introduction:

In accordance with the CNSY NNPP Survey Plan, ground water samples were taken from the areas surrounding facilities where radioactive liquid was processed or stored

(1) **Description:**

Ground water monitoring wells were installed outside of Building 101, Building 79A and Building 222 to obtain the required samples.

(2) **Brief History:**

(a) **Radiological History:** In the past, ground water samples were not taken at CNSY for the purpose of radiological environmental monitoring.

(3) **Survey Requirements:**

(a) Ground water samples - CNSY NNPP Survey Plan.

b. Discussion:

As required by the CNSY NNPP Survey Plan, environmental sampling of ground water was performed in the areas surrounding facilities where radioactive liquid was processed or stored.

Eleven ground water samples were taken from the areas surrounding Building 79A, 101 and 222. The following typical naturally occurring radionuclides were identified during isotopic analysis of ground water: bismuth 214, lead 214.

c. Summary:

Analysis performed on water samples with the multi-channel analyzer (MCA) detected gross gamma equivalent cobalt 60 levels ranging from a low of 5.39×10^{-8} μCi/ml to a high of 3.70×10^{-6} μCi/ml.

Analysis performed on water samples with the MCA for specific cobalt 60 indicated that all samples were less than 1×10^{-7} μCi/ml.

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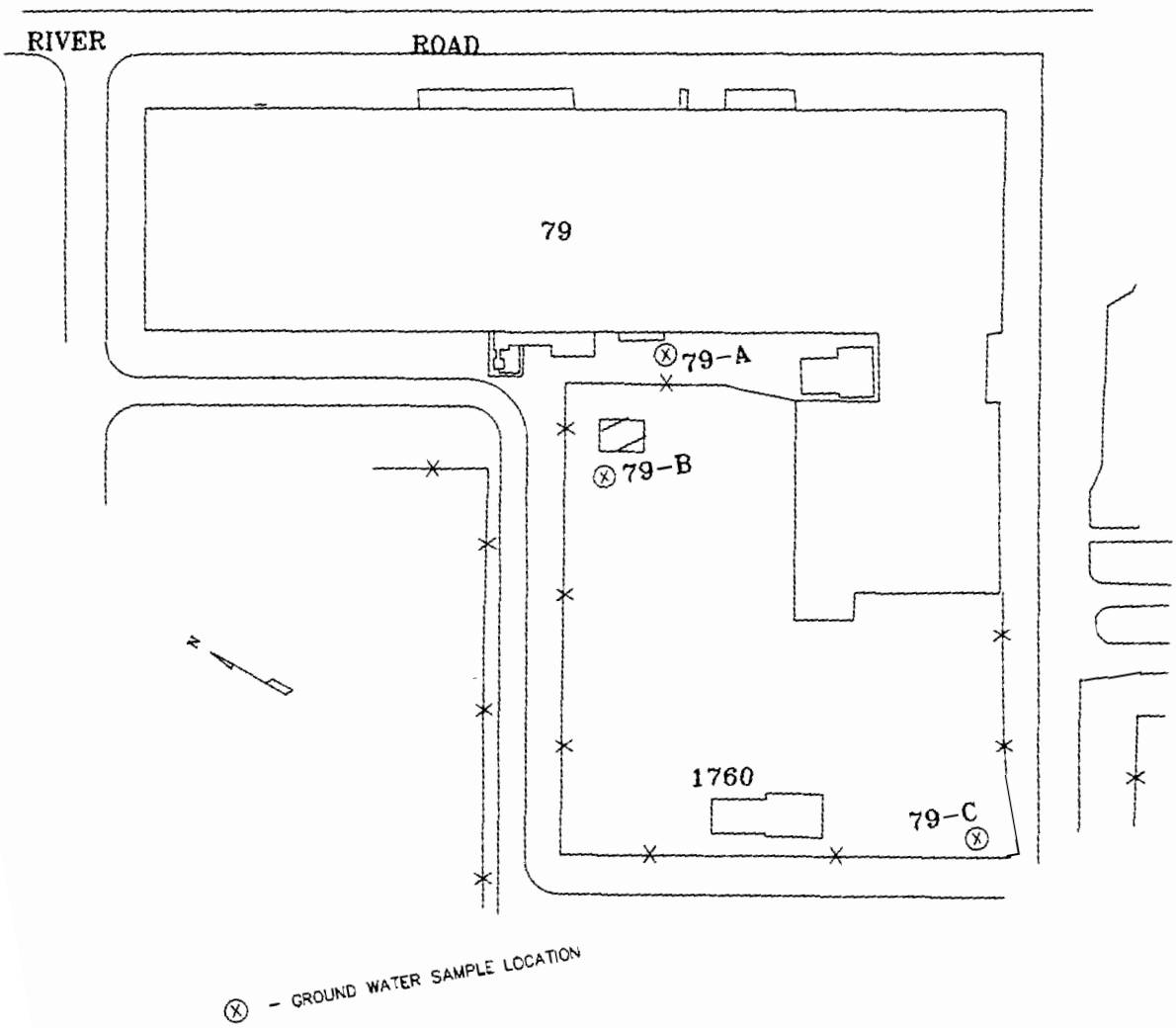
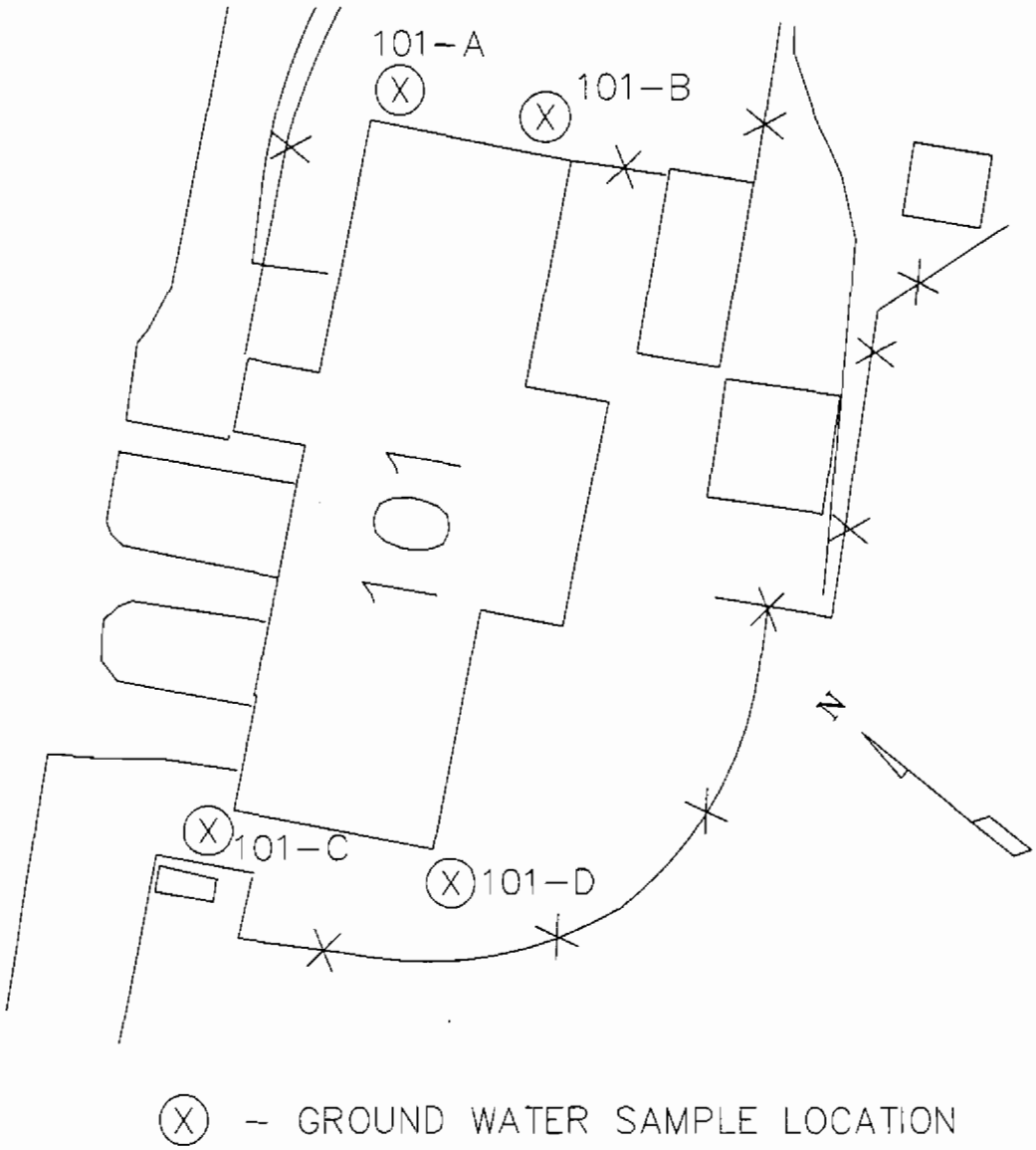
6. Ground Water Samples

d. Site Map



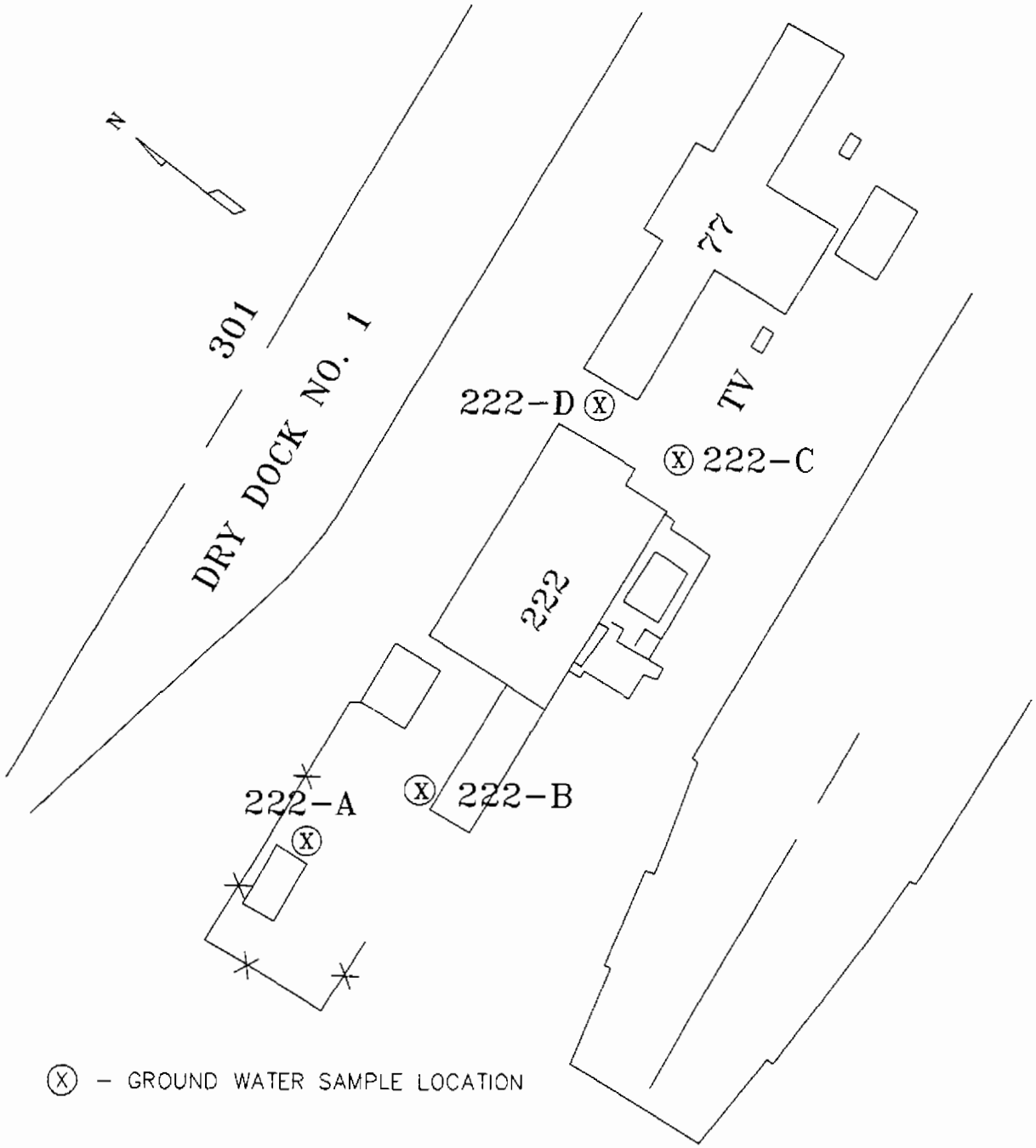
6. Ground Water Samples

d. Site Map



6. Ground Water Samples

d. Site Map



6. Ground Water Samples

WELL NUMBER	MEDIA	GROSS (μCi/ml)	SPECIFIC COBALT 60 RESULTS (μCi/ml)
B79-A	WATER	1.08×10^{-7}	$<3.00 \times 10^{-8}$
B79-B	WATER	1.48×10^{-7}	$<3.00 \times 10^{-8}$
B79-C	WATER	1.38×10^{-7}	$<3.00 \times 10^{-8}$
B101-A	WATER	8.51×10^{-7}	$<2.70 \times 10^{-8}$
B101-B	WATER	2.75×10^{-7}	$<2.70 \times 10^{-8}$
B101-C	WATER	5.39×10^{-8}	$<2.70 \times 10^{-8}$
B101-D	WATER	2.85×10^{-7}	$<2.70 \times 10^{-8}$
B222-A	WATER	1.57×10^{-6}	$<3.18 \times 10^{-8}$
B222-B	WATER	1.68×10^{-6}	$<3.18 \times 10^{-8}$
B222-C	WATER	7.46×10^{-7}	$<3.18 \times 10^{-8}$
B222-D	WATER	3.70×10^{-6}	$<3.18 \times 10^{-8}$