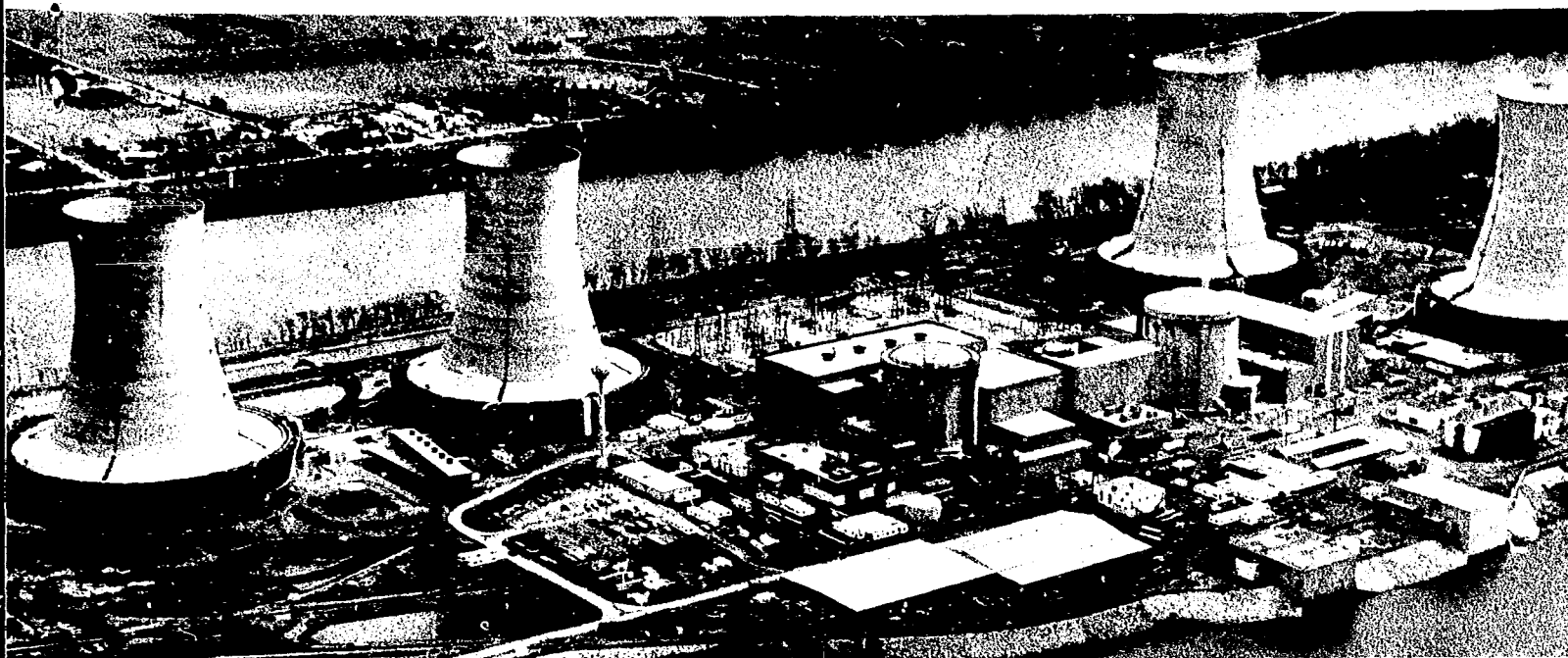


June 1981 ✓



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General Public Utilities • Electric Power Research Institute • U.S. Nuclear Regulatory Commission • U.S. Department of Energy

Quick Look Report

Entry 4

Three Mile Island Unit 2

November 13, 1980

**MASTER**

G.E. Eidam

Prepared for the  
U. S. Department of Energy  
Three Mile Island Operations Office  
Under Contract No. DE-AC07-76ID01570

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QUICK LOOK REPORT  
ENTRY 4  
THREE MILE ISLAND UNIT 2.  
NOVEMBER 13, 1980

G. E. Eidam

Published June 1981

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Idaho Falls, Idaho 83415

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## ABSTRACT

This report summarizes tasks performed during entry 4 at Three Mile Island Unit 2. During the entry into containment, which was made on November 13, 1980, additional beta and gamma surveys were conducted to supplement data acquired on previous entries. A decontamination test was completed on Elevation 305. Power receptacles tested on Elevation 305 were deenergized, but receptacles on Elevation 347 were energized.

Still photography was acquired of Elevations 305 and 347. During the entry, 86 still photographs were taken. Videotaping (color and black and white) was done on Elevations 305 and 347, but lighting on both elevations was insufficient for high-quality video.

## FOREWORD

The frequency of entries into containment at Three Mile Island Unit 2 is increasing, as are the complexity and number of tasks undertaken during each entry. For these reasons a brief summary of tasks and analytical results organized by entry is needed. This series of entry Quick Look Reports (QLRs) meets the need.

At the time of publication of this report, additional QLRs covering Entries 1 through 7 have been published. A QLR will be published following each subsequent entry.

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## ENTRY OVERVIEW

Entry 4 into the reactor building at Three Mile Island Unit 2 occurred on November 13, 1980. Twelve technicians working in three teams entered containment at 20-minute intervals, taking with them both video and still cameras and radiation survey equipment.

Entry 4 yielded additional beta and gamma survey data at both Elevation 305 and Elevation 347. Locations for these measurements were selected based on observations of personnel involved in previous entries as well as on a study of still photographs acquired during those entries.

On Elevation 305 a preliminary decontamination test was conducted. The test involved smear and scrape samples taken before, during, and after a demineralizing water wash, a Radiac wash, and a Radiac scrub.

Power receptacles were tested on Elevation 305 as well as on Elevation 347. Receptacles on the lower level are powered from Elevation 282 (the basement level); these receptacles were all found to be deenergized. Receptacles on Elevation 347, on the other hand, were found to be carrying full power.

Data collected during entry 4 are presented in subsequent sections of this report.

## TASK SUMMARY

A variety of tasks was performed during entry 4. These tasks are summarized in Table 1.



TABLE 1. TASK SUMMARY FOR TMI 2 ENTRY 4, NOVEMBER 13, 1980

Containment Temperature 69° (approximately 20.5°C)  
 Containment Pressure - 0.2 in. Hg  
 Relative Humidity <100%  
 Airborne Activity <MPC

<u>Data Acquisition Task Number</u>	<u>Task Description</u>	<u>Task Accomplished</u>	<u>Problems Encountered</u>	<u>Comments Significant Findings</u>
10A	Videotaped Elevation 305	Videotaped Elevation 305	Insufficient light for high-quality video	Four low-light-level cameras to be installed on Elevation 305 in January-February 1981.
31A, 31B	Videotaped Elevation 347	Videotaped Elevation 347	Insufficient light for high-quality video	Better flood lights to be installed on future entries; four low-light-level cameras to be installed on Elevation 347 in January-February 1981
N/A	Replace source range preamp	Not performed	Insufficient confidence in system and replacement part warranted further testing prior to installation	Installation to be made in January 1981
N/A	Still photographs of Elevation 347	Still photographs of Elevation 347	None	None

TABLE 1. (continued)

<u>Data Acquisition Task Number</u>	<u>Task Description</u>	<u>Task Accomplished</u>	<u>Problems Encountered</u>	<u>Comments Significant Findings</u>
N/A	Investigate area around Personnel Airlock (PAL) #2 for possible intermediate containment	Investigation completed	None	None
4, 6, 1 22A, 22H	Conduct radiation surveys	Surveys completed	None	Improved survey of the in-core instrument table
N/A	Move fuel crane and assess access to core flood tanks from Elevation 347	Fuel crane moved and access to A-core flood tank found possible, B-core flood tank very difficult	None	None
42	Decontamination experiment on Elevation 305 floor	Experiment completed	None	None
38	Paint chip samples	Obtained paint chip sample from reactor building dome	None	None

## RADIATION SURVEY

Radiation was measured at many locations inside containment. Measurement locations, instruments used, and beta and gamma dose rates are presented in Table 2 through 7; survey points are indicated on Figures 1 through 6, which are associated with the tables.

Following these tables is a description of the decontamination test conducted during the entry; test location is shown in Figure 7, and readings are given in Table 8. Finally, Table 9 characterizes airborne activity.

TABLE 2. RADIATION SURVEY, ELEVATION 305, NOVEMBER 13, 1980

<u>Data Acquisition Task Number</u>	<u>Location Figure 1<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
1	1	RO-2A	450* <sup>b</sup>	-- <sup>c</sup>	South of PAL #2
1	2	RO-2A	1200	--	Elevator door
1	3	RO-2A	600*	--	In front of elevator
1	4	RO-2A	600*	--	In front of air coolers
1	5	RO-2A	800	9.2	Floor in front of air coolers
1	6	RO-2A	620	--	South side of D-ring wall
4	7	RO-2A	3800	--	B-core flood tank piping
6	8	RO-2A	2000	9.9	Floor drain
1	9	RO-2A	600	--	Near PAL #1
1	10	RO-2A	500	3.3	Floor in front of PAL #1
1	11	RO-2A	600*	--	North side of A-core flood tank
1	12	RO-2A	400	--	D-ring near open stairwell
1	13	RO-2A	3000	16.5	Chains on floor near open stairwell
1	14	RO-2A	1000	--	Near open stairwell
1	15	RO-2A	300*	--	Northwest section of reactor building
1	16	RO-2A	200-390	--	Access fence to in-core chase

TABLE 2. (continued)

<u>Data Acquisition Task Number</u>	<u>Location Figure 1<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
6	17	RO-2A	2000	26.4	Floor drain
1	18	RO-2A	1400	-- <sup>c</sup>	Floor penetration on west side of D-ring
1	19	RO-2A	1200	--	Floor penetration on west side of D-ring
1	20	RO-2A	800*	--	Seismic gap on east side of reactor building
1	21	RO-2A	200*	--	Northeast section of reactor building
5	22	RO-2A	600	4.6	Floor drain

a. Figure 1 follows the table.

b. The asterisk (\*) denotes general area readings--all others are contact readings.

c. The dash (--) indicates no reading taken.

TABLE 3. RADIATION SURVEY, HPR-211 ON ELEVATION 305, NOVEMBER 13, 1980

<u>Data Acquisition Task Number</u>	<u>Location Figure 2<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
1	1	RO-2A	250	0.165	Just above HPR-211 mounting bar (contact)
1	2	RO-2A	250	0.033	Just below HPR-211 mounting bar (contact)
1	3	RO-2A	400	-- <sup>b</sup>	Area around HPR-211 at 1-ft (approx- imately 30.5 cm) radius and 1 ft from wall
1	4	RO-2A	280	--	Area around HPR-211 at 1-ft (approx- imately 30.5 cm) radius and 1 ft from wall
1	5	RO-2A	350	--	Area around HPR-211 at 1-ft (approx- imately 30.5 cm) radius and 1 ft from wall
1	6	RO-2A	480	--	Area around HPR-211 at 1-ft (approx- imately 30.5 cm) radius and 1 ft from wall
1	7	RO-2A	400	--	Area around HPR-211 at 1-ft (approx- imately 30.5 cm) radius and 1 ft from wall

a. Figure 2 follows the table.

b. The dash (--) indicates no reading taken.

TABLE 4. RADIATION SURVEY EQUIPMENT HATCH ON ELEVATION 305,  
NOVEMBER 13, 1980

<u>Data Acquisition Task Number</u>	<u>Location Figure 3<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)<sup>b</sup></u>	<u>Beta Dose Rate (rad/hr)<sup>b</sup></u>
42	1	R0-2A	200	No $\beta$
42	2	R0-2A	200	0.76
42	3	R0-2A	400	No $\beta$
42	4	R0-2A	200	No $\beta$
42	5	R0-2A	150	1.1
42	6	R0-2A	200	1.1
42	7	R0-2A	500	No $\beta$
42	8	R0-2A	500	7.2
42	9	R0-2A	1200	14.4

a. Figure 3 follows the table.

b. All readings are floor contact readings.

TABLE 5. RADIATION SURVEY, ELEVATION 305, NOVEMBER 13, 1980

Data Acquisition Task Number	Location Figure 4 <sup>a</sup>	Instrument	Gamma Dose Rate (mrem/hr) <sup>b</sup>	Beta Dose Rate (rad/hr)	Location
42	1	R0-2A	200	3.8	See Figure 4
42	2	R0-2A	200	3.8	See Figure 4
42	3	R0-2A	500	3.8	See Figure 4
42	4	R0-2A	500	4.5	See Figure 4
42	5	R0-2A	500	4.9	See Figure 4
42	6	R0-2A	400	4.2	See Figure 4
42	7	R0-2A	300	3.4	See Figure 4
42	8	R0-2A	200	1.1	See Figure 4
42	9	R0-2A	500	3.9	See Figure 4
42	10	R0-2A	200	5.3	See Figure 4
42	11	R0-2A	300	4.6	See Figure 4
42	12	R0-2A	500	5.7	See Figure 4
42	13	R0-2A	400	3.8	See Figure 4
42	14	R0-2A	500	3.8	Prior to decontamination test operations
42	14	R0-2A	400	2.3	After water wash
42	14	R0-2A	400	2.3	After Radiac wash



TABLE 5. (continued)

<u>Data Acquisition Task Number</u>	<u>Location Figure 4<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)<sup>b</sup></u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
42	14	RO-2A	400	1.1	After Radiac scrub
42	15	RO-2A	-- <sup>c</sup>	2.3	See Figure 4: Contact reading taken before placing rubber mat--open window only
42	15	RO-2A	--	0.5	See Figure 4: Contact reading taken after placing rubber mat (thickness approximately 3/8 in., or just less than 1 cm)--open window only

- 
- a. Figure 4 follows the table.
  - b. All readings are floor contact readings.
  - c. The dash (--) indicates no reading taken.
- 

==

TABLE 6. RADIATION SURVEY, ELEVATION 347, NOVEMBER 13, 1980

Data Acquisition Task Number	Location Figure 5 <sup>a</sup>	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (rad/hr)	Location
22A	1	Teletector	200* <sup>b</sup>	-- <sup>c</sup>	Inside of elevator shaft
22A	2	R0-2A	500*	--	Southside of enclosed stairwell
22A	3	R0-2A	500*	--	Northeast corner of equipment hatch deck plate
22A	4	R0-2A	500*	--	West side of equipment hatch deck plate
22A	5	R0-2A	500*	--	Southwest corner of equipment hatch deck plate
22A	6	R0-2A	500*	--	B-core flood tank grating
22A	7	R0-2A	350*		First landing of open stairwell
22A	8	R0-2A	300	5.6*	Gap between stairs of open stairwell
22H	9	R0-2A	1000	9.9	Floor drain
22A	10	R0-2A	100*	--	Near deck plate for A-core flood tank
22A	11	R0-2A	150*	--	Deck plate over A-core flood tank
22A	12	R0-2A	200*	--	East of A-core flood tank
22H	13	R0-2A	350*	2.2	Floor drain
22A	14	R0-2A	150*	--	Second landing of open stairwell

TABLE 6. (continued)

<u>Data Acquisition Task Number</u>	<u>Location Figure 5<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
22A	15	RO-2A	100*	--	Top landing of open stairwell (Elevation 367)
22A	16	RO-2A	100*	0.594*	Top of east D-ring (Elevation 367)
22A	17	RO-2A	100*	0.594*	Top of east D-ring (Elevation 367)
22A	18	RO-2A	200*	0.825*	Arm's reach into east D-ring (Elevation 367)
22A	19	RO-2A	300	8.9	Top of steel support beam (Elevation 367)
22A	20	RO-2A	100*	0.594*	Top of D-ring on south side (Elevation 367)
22A	21	RO-2A	600*	1.650*	Arm's reach into east D-ring (Elevation 367)
22A	22	RO-2A	150*	0.165*	South walkway between D-rings (Elevation 367)
22A	23	RO-2A	700*	0.330*	Arm's reach into west D-ring (Elevation 367)
22A	24	RO-2A	250	9	Top of steel support ring (Elevation 367)
22A	25	RO-2A	500*	No $\beta^*$	Arm's reach into west D-ring (Elevation 367)

TABLE 6. (continued)

<u>Data Acquisition Task Number</u>	<u>Location Figure 5<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>	<u>Location</u>
22A	26	R0-2A	300	8.9	Top of steel support ring (Elevation 367)
22A	27	R0-2A	1500*	No β*	Arm's reach into west D-ring (Elevation 367)
22A	28	R0-2A	200*	660	North walkway between D-rings (Elevation 367)

a. Figure 5 follows the table.

b. The asterisk (\*) denotes general area readings--all others are contact readings.

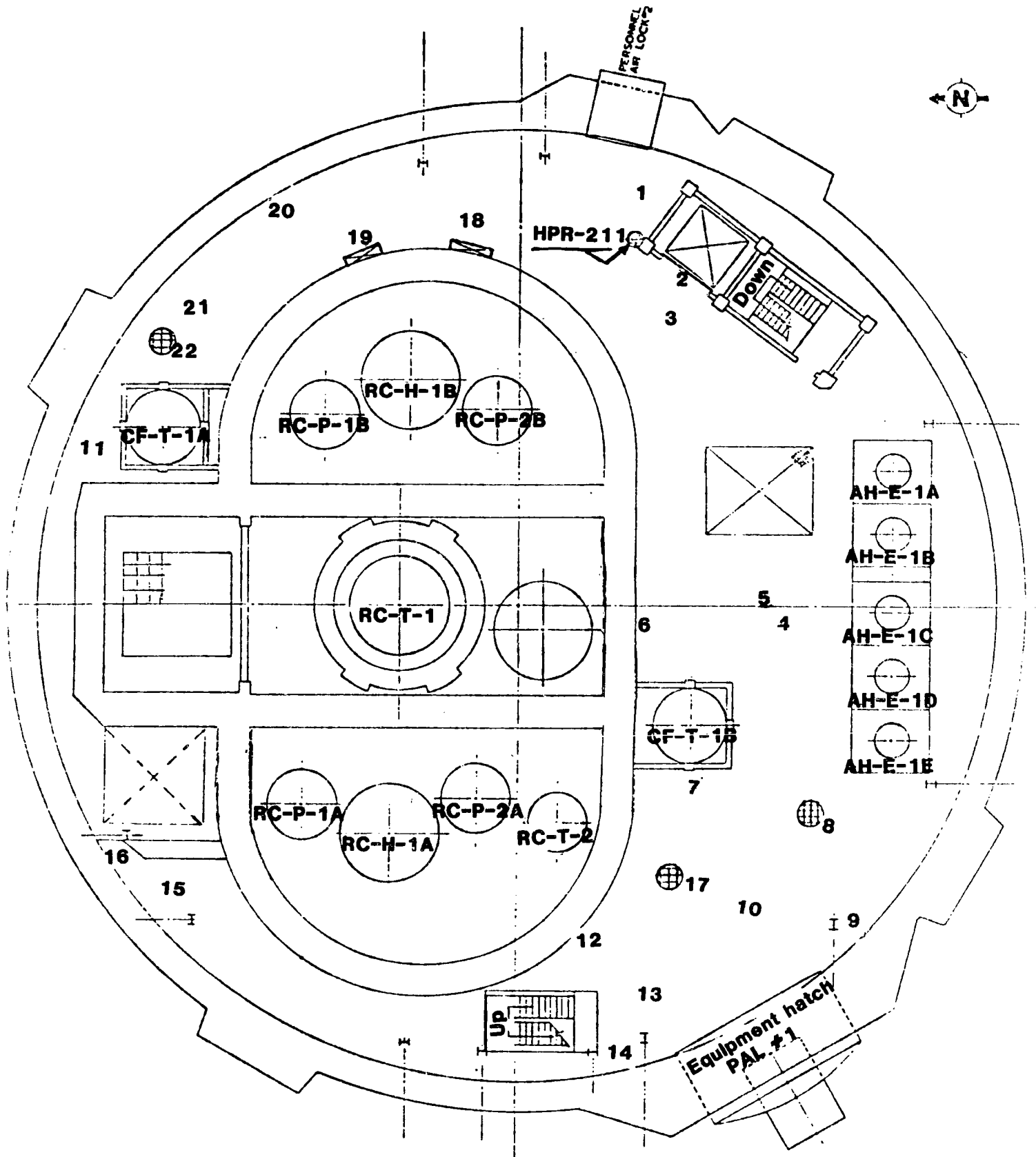
c. The dash (--) indicates no reading taken.

TABLE 7. RADIATION SURVEY, ELEVATION 347, NOVEMBER 13, 1980

<u>Data Acquisition Task Number</u>	<u>Location Figure 6<sup>a</sup></u>	<u>Instrument</u>	<u>Gamma Dose Rate (mrem/hr)</u>	<u>Beta Dose Rate (rad/hr)</u>
22H	1	RO-2A	5,000* <sup>b</sup>	4.95*
22H		RO-2A	5,000	>149
22H	2	RO-2A	1,500*	11.95*
22H		RO-2A	10,000	>132
22H	3	RO-2A	10,000*	16.5*
22H		RO-2A	15,000	>115.5
22H	4	RO-2A	1,800*	10.5*
22H		RO-2A	2,000	9.9
22H	5	RO-2A	10,000*	13.5*
22H		RO-2A	3,500	>153.4

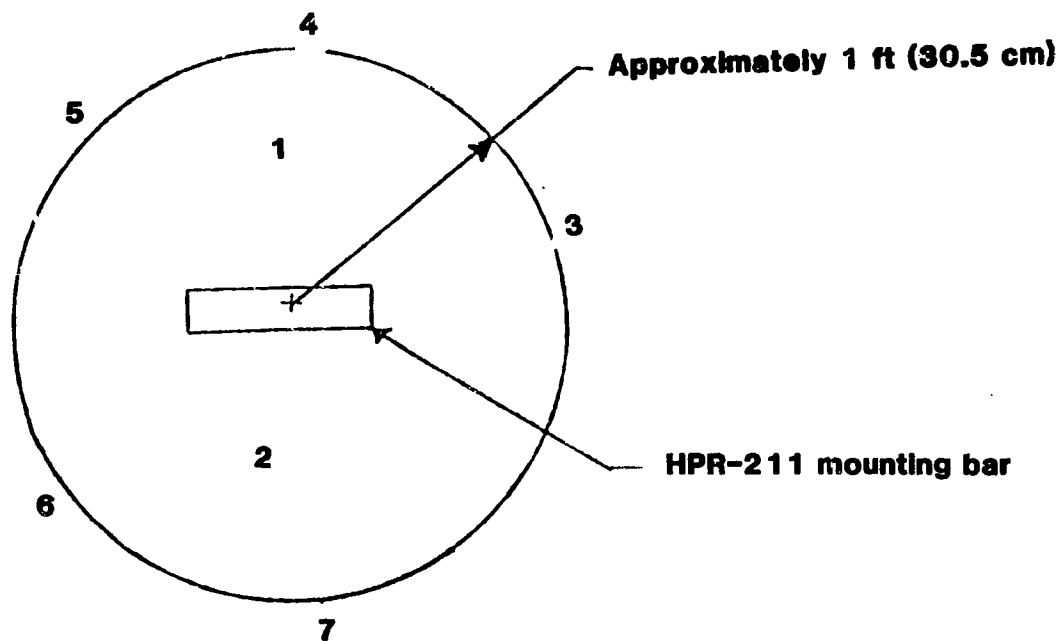
a. Figure 6 follows the table.

b. The asterisk (\*) denotes waist level readings--all others are contact readings.



**PLAN VIEW, ELEVATION 305**

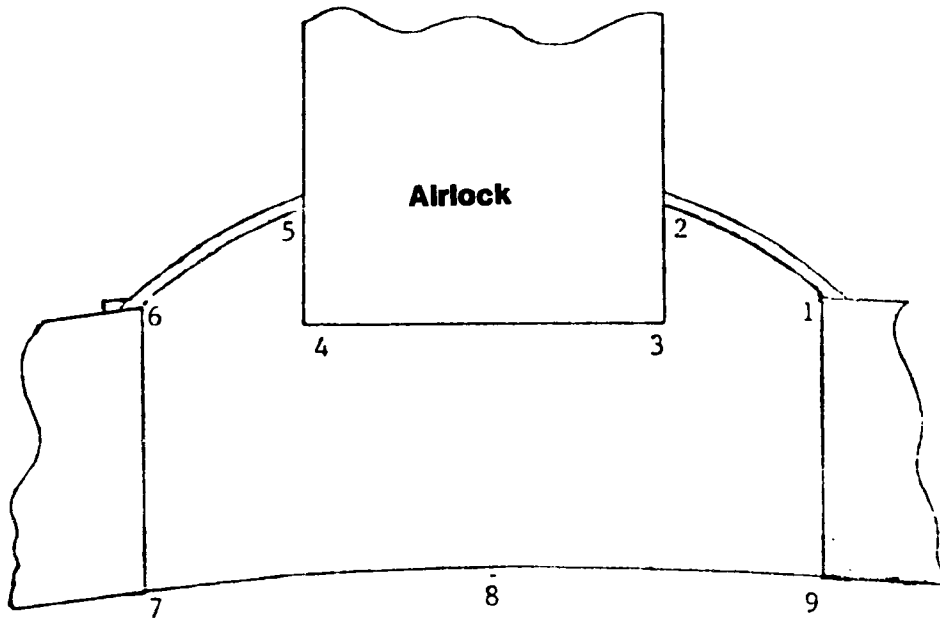
Figure 1. Radiation survey locations on Elevation 305 for Entry 4, November 13, 1980. (Refer to Table 2.)



HPR-211 Area Survey

Located on Closed Stairwell wall (See Figure i)  
 Radiation Survey Points  
 November 13, 1980 Entry

Figure 2. Radiation survey location on Elevation 305 for Entry 4, November 13, 1980. This is the HPR-211 area survey, located on the enclosed stairwell wall, as indicated in Figure 1. (Refer to Table 3.)

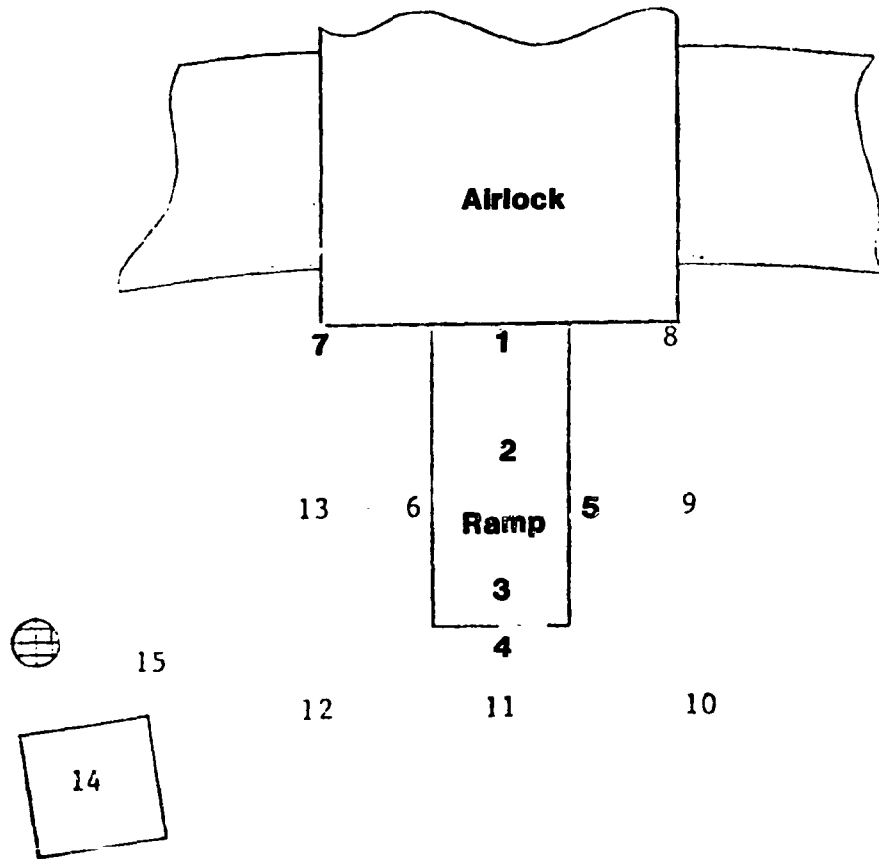


Reactor Building Equipment Hatch

Plan View  
Radiation Survey Points  
November 13, 1980 Entry

Figure 3. Radiation survey locations on Elevation 305 for Entry 4, November 13, 1980. These survey locations are indicated on the plan view of the reactor building equipment hatch. (Refer to Table 4.)

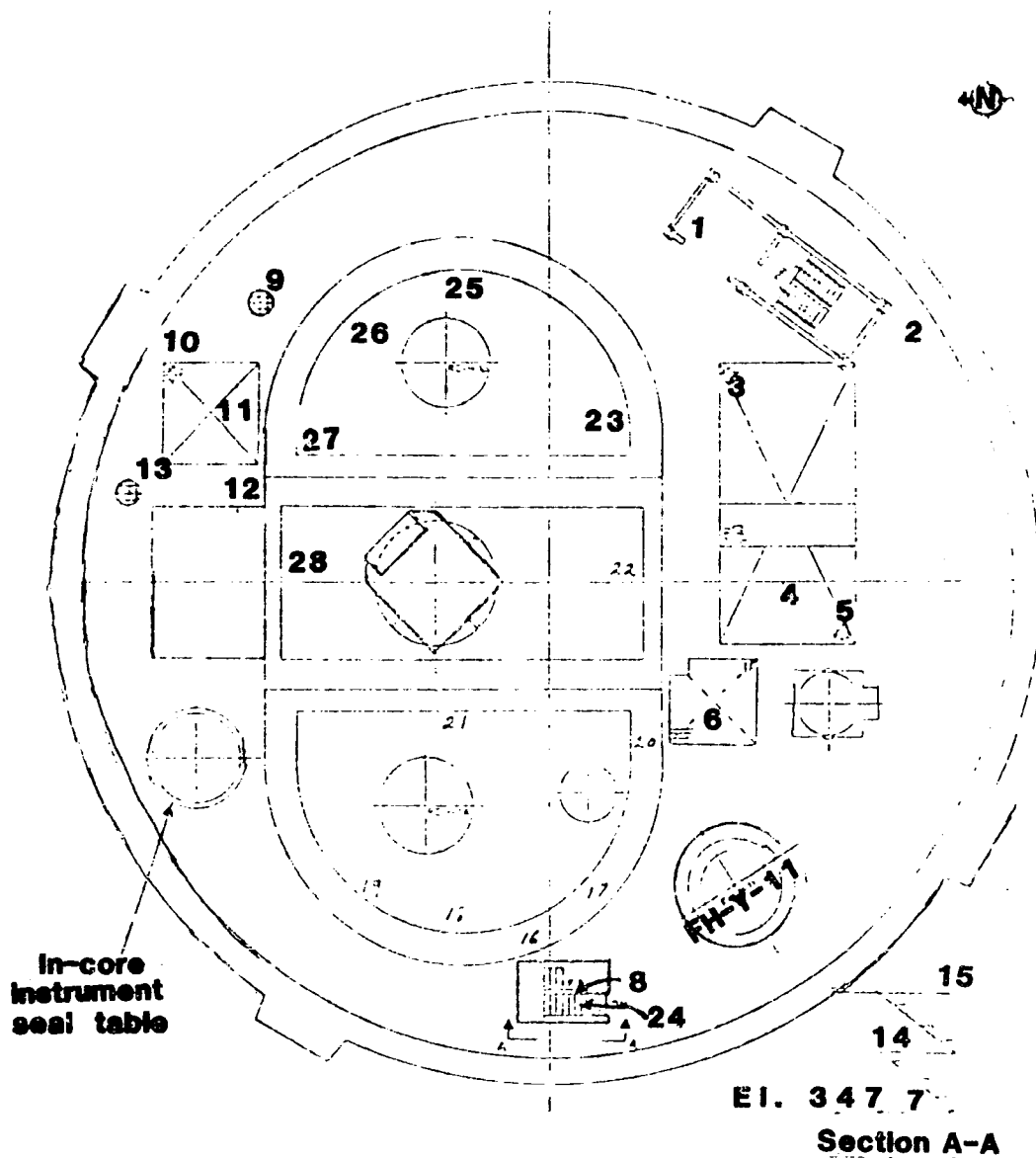




Reactor Building Personnel Airlock #2

Plan View  
 Radiation Survey Points  
 November 13, 1980 Entry

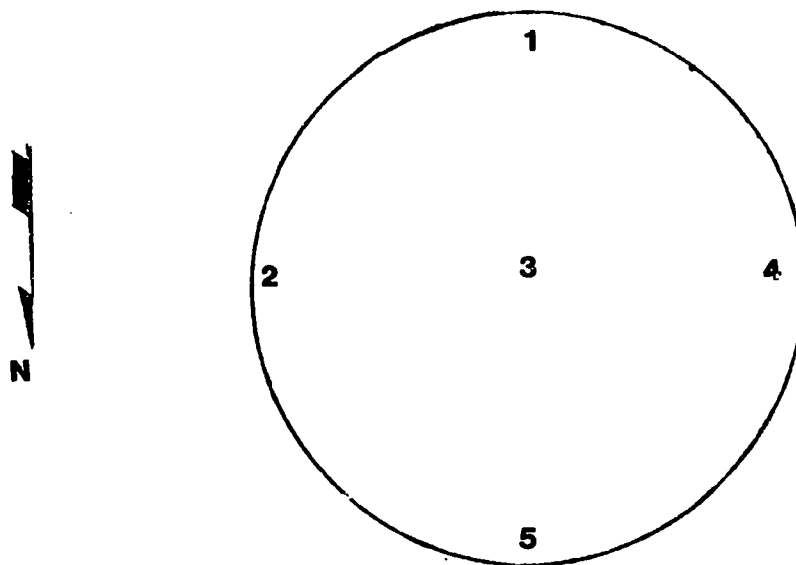
Figure 4. Radiation survey locations on Elevation 305 for Entry 4, November 13, 1980. These survey points are indicated on the plan view of the reactor building Personnel Airlock (PAL) #2. (Refer to Table 5.)



PLAN EL 347'-6"

Radiation Survey Points  
November 13, 1980 Entry  
(Data points 16 through 28 @ El. 367')

Figure 5. Radiation survey location on Elevation 305 (data points 16-28 are at Elevation 367) for Entry 4, November 13, 1980. (Refer to Table 6.)



Incore Instrumentation Seal Table

Plan View (See Figure 5)  
Radiation Survey Points  
November 13, 1980 Entry

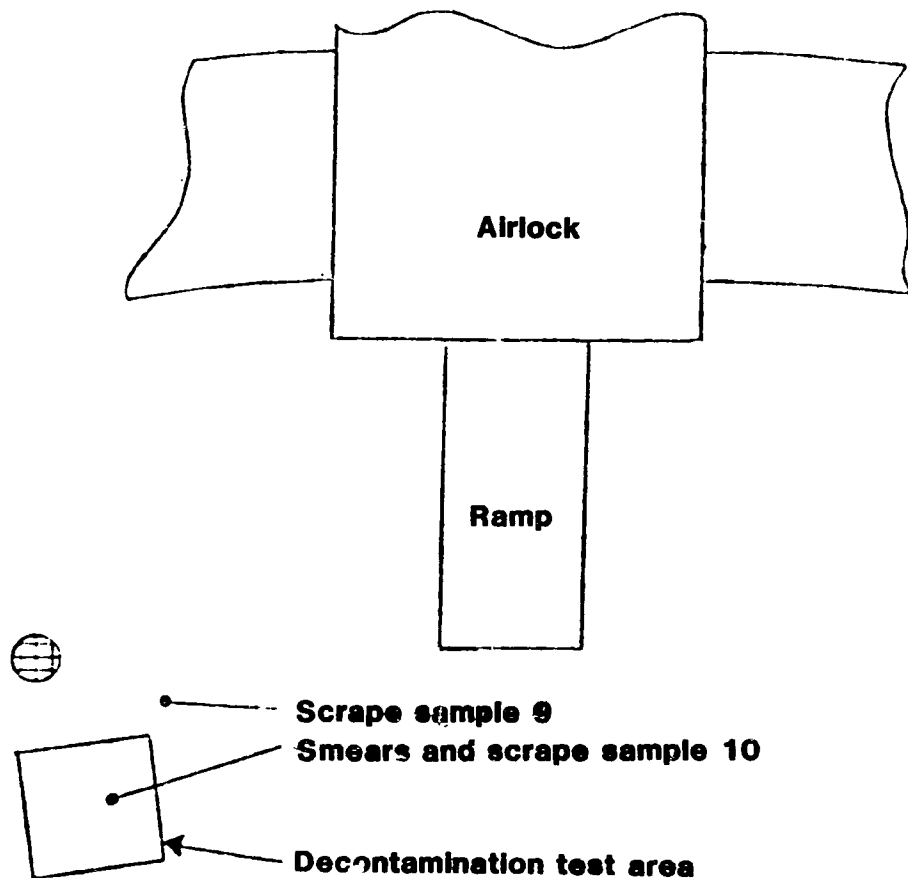
Figure 6. Radiation survey locations at Elevation 347 for Entry 4, November 13, 1980. These survey points are on the in-core instrumentation seal tabel. (Refer to Table 7.)

Smear samples 1 through 8 were taken in the center of a two foot by two foot area. This area is located on Elevation 305' between the #2 PAL entry ramp and the D-ring as shown below. Sequence of the smears was as follows:

- Smears 1 and 2 - prior to any decon operations
- Smears 3 and 4 - after demineralized water wash
- Smears 5 and 6 - after Radiac wash
- Smears 7 and 8 - after Radiac scrub

Scrape Sample 9 was taken outside the decon area. Scrape Sample 10 was taken in the decon area after the final smears.

Speciman 11 is a paint chip found on the floor at the 347' Elevation. It came from the dome of the reactor building (approximately 300 cm<sup>2</sup>).



Reactor Building Personnel Airlock #2

Figure 7. Location of decontamination test area on Elevation 305 made during Entry 4, November 13, 1980. The airlock in the figure is #2 PAL.

TABLE 8. SURFACE CONTAMINATION FROM DECONTAMINATION TEST ON ELEVATION 305

Data Acquisition Task Number	Specimen <sup>a,b,c</sup>	Gross Sample Number	Gross alpha (μCi)(B&W) <sup>d,e</sup>	Gross beta & gamma (μCi)(B&W) <sup>d,e</sup>	Sr <sup>90</sup> /Y <sup>90</sup> (μCi)(SAI) <sup>d,f</sup>	Cs <sup>134</sup> (μCi)(B&W/SAI) <sup>e,f</sup>	Cs <sup>137</sup> (μCi)(B&W/SAI) <sup>e,f</sup>
42	1	52503	--	--	2.3E-1	1.7E+0/ 1.0E+0	1.2E+1/ 6.4E+0
42	2	52504	--	--	5.7E-1	1.3E+0 7.0E-1	8.9E+0/ 4.2E+0
42	3	52505	--	--	5.2E-3	1.8E-2/ 1.4E-2	1.4E-1/ 1.1E-1
42	4	52506	--	--	1.4E-2	2.6E-2/ 2.1E-2	1.9E-1/ 1.6E-1
42	5	52507	<2.7E-79	3.2E-2	5.6E-3	7.8E-3/ 7.6E-3	5.8E-2/ 5.3E-2
42	6	52508	<2.7E-79	3.4E-2	7.7E-4	3.8E-3/ 1.8E-3	2.6E-2/ 1.3E-2
42	7	52509	<2.7E-79	8.7E-3	3.3E-3	8.5E-3/ 5.8E-3	6.3E-2/ 4.1E-2
42	8	52510	<2.7E-79	1.0E-2	1.2E-3	5.1E-3/ 2.2E-3	3.6E-2/ 1.5E-2
42	9	52511	--	--	--	3.4E-1/ 	2.4E+0/ 

TABLE 8. (continued)

Data Acquisition Task Number	Specimen <sup>a,b,c</sup>	Gross Sample Number	Gross alpha ( $\mu\text{Ci}$ )(B&W) <sup>d,e</sup>	Gross beta & gamma ( $\mu\text{Ci}$ )(B&W) <sup>d,e</sup>	Sr <sup>90</sup> /Y <sup>90</sup> ( $\mu\text{Ci}$ )(SAI) <sup>d,f</sup>	Cs <sup>134</sup> ( $\mu\text{Ci}$ )(B&W/SAI) <sup>e,f</sup>	Cs <sup>137</sup> ( $\mu\text{Ci}$ )(B&W/SAI) <sup>e,f</sup>
42	10	52512	--	--	--	5.0E-2/	3.6E-1/
38	11 <sup>h</sup>	52513	--	--	4.8E-3	1.6E-2/ 1.6E-2	1.1E-1/ 1.1E-1

a. See Figure 7 for locations at which samples were taken.

b. For specimens 1 through 8 readings are per swipe of approximately 100 cm<sup>2</sup> (15.5 in.<sup>2</sup>).

c. For specimens 9 and 10 readings are for scrape samples of approximately 100 cm<sup>2</sup>.

d. No analysis performed.

e. B&W is Babcock and Wilcox.

f. SAI is Science Applications Incorporated.

g. The less than symbol (<) implies result below Lower Limit Detectable (LLD).

h. Specimen 11 is a paint chip from the reactor building dome.

TABLE 9. AIRBORNE ACTIVITY, NOVEMBER 13, 1980

Data Acquisition Task Number	Specimen <sup>a</sup>	Sample Number	I-31 ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b,c</sup>	Cs-134 ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b</sup>	Cs-137 ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b</sup>	Co-58 ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b,c</sup>	Co-60 ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b,c</sup>	Sr-90 ( $\mu\text{Ci/ml}$ ) (SAI) <sup>d</sup>	Gross alpha ( $\mu\text{Ci/ml}$ ) (B&W) <sup>b,c,d</sup>	Gross alpha & gamma ( $\mu\text{Ci/ml}$ ) (B&W) <sup>c</sup>	Comments
N/A	BZA	52320	<9.3E-10	2.0E-8	1.4E-7	<3.7E-10	<3.9E-10	4.6E-9	--e	1.17E-7	
N/A	BZA	52321	<7.1E-10	1.4E-8	1.0E-7	<2.2E-10	<2.8E-10	3.4E-9	--	7.69E-8	
N/A	BZA	52322	<5.4E-10	1.7E-8	1.3E-7	<2.6E-10	<1.4E-10	4.1E-9	--	8.28E-8	
N/A	BZA	52348	<4.0E-10	7.7E-9	6.4E-8	<1.7E-10	<1.5E-10	2.5E-9	--	6.08E-8	
N/A	BZA	52349	<8.4E-10	1.68E-10	1.1E-8	<2.5E-10	<4.2E-10	4.3E-9	2.33E-12	9.03E-8	
N/A	BZA	52350	<7.9E-10	1.8E-8	1.4E-7	<3.8E-10	<2.6E-10	4.9E-9	2.33E-12	1.14E-7	
N/A	BZA	52351	<3.5E-10	1.2E-8	9.4E-8	<1.5E-10	<7.7E-11	6.4E-9	1.22E-12	6.96E-8	
N/A	BZA	52352	<4.0E-10	7.1E-9	4.7E-8	<1.5E-10	<2.2E-10	2.5E-9	1.22E-12	4.57E-8	
N/A	BZA	52353	<3.8E-10	7.2E-9	5.7E-8	<1.4E-10	<1.4E-10	4.4E-9	1.22E-12	5.39E-8	
N/A	BZA	52354	<2.6E-10	6.5E-9	5.0E-8	<1.2E-10	<7.7E-11	3.1E-9	1.22E-12	5.02E-8	
N/A	BZA	52355	<3.7E-10	5.5E-9	3.6E-8	<1.3E-10	<2.2E-10	2.1E-9	1.22E-12	3.26E-8	
N/A	BZA	52326	<3.5E-10	5.5E-9	4.3E-8	<1.3E-10	<1.4E-10	3.1E-9	1.22E-12	4.35E-8	
N/A	High-volume air sample	52319	<6.2E-11	4.6E-9	3.3E-8	<2.1E-11	<1.0E-11	1.9E-9	4.52E-12	--	Sample was taken 18 in. (approximately 47 cm) from the south D-ring wall and approximately 18 in. above the floor.

a. Label air sample.

b. B&W is Babcock and Wilcox.

c. The less than symbol (<) implies result below Lower Limit Detectable (LLD).

d. SAI is Science Applications Incorporated.

e. The dash (--) indicates no analysis performed.

## Decontamination Test

Smear samples 1 through 8 were taken in the center of a test area of approximately 3700 cm<sup>2</sup> (4 ft<sup>2</sup>). This area is located on Elevation 305 between the #2 PAL entry ramp and the D-ring as shown in Figure 7. Sequence of the smears was as follows:

- Smears 1 and 2: prior to any decontamination operations
- Smears 3 and 4: after demineralized water wash
- Smears 5 and 6: after Radiac wash
- Smears 7 and 8: after Radiac scrub.

Scrape sample 9 was taken outside the decontamination area. Scrape sample 10 was taken in the decontamination area after the final smears. Sample 11 is a paint chip found on the floor at Elevation 347. The chip came from the reactor building dome and is approximately 300 cm<sup>2</sup> (approximately 46.5 in.<sup>2</sup>).

Data from the test are presented in Table 8.

## Airborne Activity

Air samples were taken during entry 4. Airborne activity data are presented in Table 9.



## SUMMARY OF ENTRY 4 DEBRIEFINGS

Twelve men participated in entry 4. Most noted apparent superficial damage (e.g., bowed elevator door, mud and rust stains at various locations, missing power rail for the polar crane).

Among other comments made during debriefing are the following:

- After measurement, it appears very feasible to build a new airlock inside the equipment airlock. Demineralized water connections with Hanson fittings exist at both corners of the D-ring.
- The grating by the B-core flood tank is so heavy that even two men may not be able to lift it.
- Pressure on the A steam generator registered approximately 2.5 lb on the local gauge, the same reading as is indicated in the M20 area.
- Radiation levels were higher on the B steam generator side than on the A steam generator side.
- Gamma radiation appears to be coming through the floor of Elevation 305. During the decontamination test, the gamma radiation dropped significantly after the initial wash, but the Radiac wash and scrub brought no further reduction.
- Lighting levels inside the reactor building are inadequate for high-quality video. The portable flood lights used were difficult to maneuver and caused reflections. Some locations could not be illuminated at all, and the cameras could not gain access to some areas.