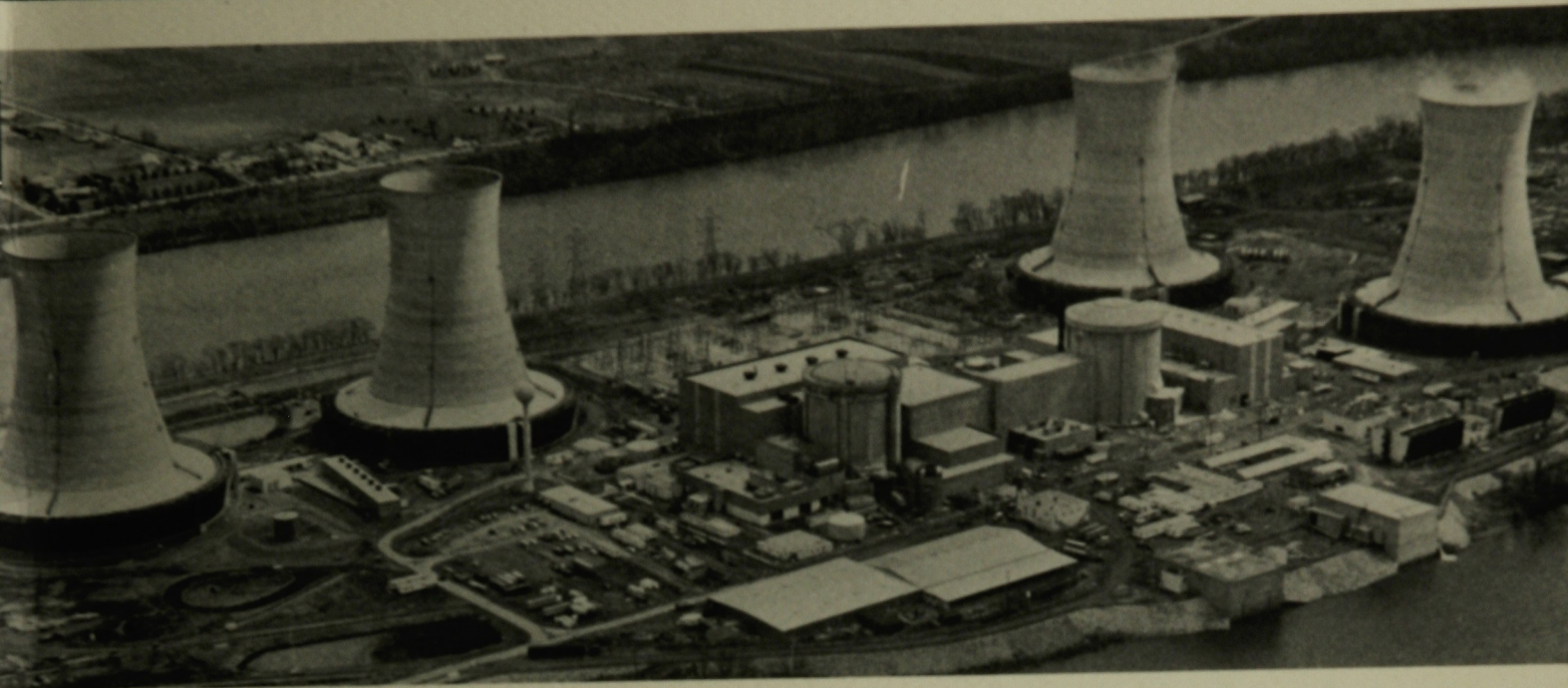


July 1981



This is an informal report intended for use as a preliminary or working document

GEND

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

QUICK LOOK REPORT
ENTRY 2
THREE MILE ISLAND UNIT 2
AUGUST 15, 1980

Bechtel Northern Corporation/
General Public Utilities Nuclear Corporation

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

LOAN COPY
THIS REPORT MAY BE RECALLED
AFTER TWO WEEKS. PLEASE
RETURN PROMPTLY TO:
INEL TECHNICAL LIBRARY

DISCLAIMER

This book was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product or process disclosed, or represents that its use would not infringe privately owned rights. References herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

GEND-INF-002
TIO-QLR
July 1981

QUICK LOOK REPORT
ENTRY 2
THREE MILE ISLAND UNIT 2
AUGUST 15, 1980

Bechtel Northern Corporation/
General Public Utilities Nuclear Corporation

Edited and Published July 1981
by
EG&G Idaho, Inc.
Idaho Falls, Idaho 83415

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

ABSTRACT

This report summarizes tasks performed during Entry 2 at Three Mile Island Unit 2. During the entry into containment, which was made on August 15, 1980, the lights on Elevations 305 and 347 were turned on, general area surveys were obtained, 67 pictures were taken, 12 swipe samples and 2 scrape samples were obtained, several items were removed from containment, a protective covering experiment and a directional dose experiment was accomplished, and a decon test using smear and masslinn swipes was performed.

CONTENTS

ABSTRACT	ii
ENTRY SUMMARY	1
TRANSCRIPT OF SECOND ENTRY-BENSON/GRIFFITH	16
TRANSCRIPT OF SECOND ENTRY-BEHRLE/COOPER	33
DEBRIEFING	41

FIGURES

1. Elevation 305 reactor building radiation survey summary, July 23, and August 15, 1980	8
2. Elevation 347 reactor building radiation survey summary, August 15, 1980	9
3. Elevation 347 swipe/specimen locations	14
4. Elevation 305 swipe/specimen locations	15

TABLES

1. Entry team whole body exposures and maximum extremity doses	3
2. Elevation 305 radiation survey summary description--Entry 2	4
3. Preliminary analysis results of swipes taken during initial building entry, July 23, 1980	10
4. Reactor building preliminary beta gamma swipe/specimens, August 15, 1980	11

QUICK LOOK REPORT
ENTRY 2
THREE MILE ISLAND UNIT 2
AUGUST 15, 1980

ENTRY SUMMARY

During the second entry into the Unit 2 Reactor Building, the following tasks were accomplished:

1. Turned on the lights on Elevation 305 and Elevation 347
2. Obtained general area surveys on Elevation 305 and Elevation 347 and in the enclosed stairwell
3. Took a total of 67 pictures on both elevations
4. Obtained 12 swipes and 2 scrape samples
5. Recovered HP-R-211, a piece of glass, a steel plate, 2 metal covers, a funnel, and 4 plastic ties from containment
6. Took a protective covering experiment and a directional dose experiment, both using TLD's, into containment and brought them out again
7. Performed a decon test using a smear and masslinn wipe.

Survey results from Elevation 305 in areas not surveyed during the first entry were 3 rem/hr behind (north) of the open stairwell, 40 to 45 rem/hr at 5 to 7 feet from the water (using teletector), and a floor drain near the A Core Flood Tank was 3 rem/hr (window open), 500 mrem/hr (window closed), using an RO-2A.

Surveys taken while proceeding up the enclosed stairwell showed readings of 3 to 5 rem/hr at Elevation 305 with a fairly linear decrease to a reading of 180 mrem/hr at Elevation 347.

Surveys done on Elevation 347 showed general area readings of 200 to 300 mrem/hr on the diamond plate decking outside the enclosed stairwell and 100 to 200 mrem/hr along the south wall of containment. The general area readings increased to 200 to 400 mrem/hr to the southeast of the head storage stand and then decreased to approximately 150 mrem/hr south of the open stairwell. A measurement taken over the open stairwell was 550 mrem/hr, while a contact reading on the D-ring wall was 100 mrem/hr. Readings taken in the fuel pool area were 100 to 400 mrem/hr under the fuel handling bridge and 125 to 150 mrem/hr towards the reactor head and stud bolts at a distance of about 12 to 15 feet. Other readings were 2.5 rem/hr on contact with the pressurizer spray line, 1.5 rem/hr without (R0-2A) contact on the fuel handling bridge, 250 to 300 mrem/hr over both core flood tanks, 400 to 500 mrem/hr contact with base of the head storage stand, and 50 mrem/hr behind the enclosed stairwell.

The pictorial survey on Elevation 305 in general showed more details of items identified from the first entry; while the pictures from Elevation 347 showed the general areas and structures of the operating deck, the fuel handling bridges, the D-rings, seal table, and the vessel head.

No significant structural damage was seen, although there was evidence of localized high temperatures from a partially melted telephone and some melted rad rope. Also several barrels had been crushed, presumably by a pressure differential created due to temperature changes in containment. Some unpainted or zinc coated metal surfaces were rusted, probably due to the NaOH spray, and the concrete floor areas had rust deposits on them. Painted metal surfaces and diamond plate decking conditions were similar to those found on Elevation 305. One subject of interest is sections of cable and what appears to be cable insulation lying on the floor from the enclosed stairwell to the west D-ring, which may have fallen off the polar crane.

The whole body exposure to the entry team varied due to the tasks each was performing and the early exit of 2 members of the team. The whole body exposure and maximum extremity dose are listed in Table 1.

TABLE 1. ENTRY TEAM WHOLE BODY EXPOSURES AND MAXIMUM EXTREMITY DOSES

Team Entry Member	Whole Body (mrem)	Maximum Extremity (mrem)
Behrle ^{a,b}	260	320
Benson ^b	300	420
Cooper ^a	140	210
Griffith	165	270

a. Early exit.

b. Worked near open stairwell--higher dose area. No beta skin dose was measured.

The two floor swipes taken from Elevation 305 indicated concentrations of Cs-134 and Cs-137 ranging from 6.6^{-2} and 40.7^{-2} $\mu\text{Ci}/\text{cm}^2$ under HP-R-211 to 2.8^{-4} and 2.3^{-3} $\mu\text{Ci}/\text{cm}^2$ in front of the air coolers, respectively. The two scrap samples showed concentration of Cs-134 and Cs-137 ranging from 8.8^{-3} and 5.25^{-2} $\mu\text{Ci}/\text{cm}^2$ for the scrape near the open stairwell to 2.6^{-2} and 16.1^{-2} $\mu\text{Ci}/\text{cm}^2$ for the scrape near the air coolers, respectively.

The floor swipes taken on Elevation 347 for Cs-134 and Cs-137 averaged around 9.0^{-3} and 5.6^{-2} $\mu\text{Ci}/\text{cm}^2$, while the wall swipes averaged around 2.5^{-5} and 1.5^{-4} $\mu\text{Ci}/\text{cm}^2$, respectively.

Sr-90 was also found on both walls and floors in concentrations of approximately 3.1^{-5} $\mu\text{Ci}/\text{cm}^2$ and 2.0^{-3} $\mu\text{Ci}/\text{cm}^2$ or less, respectively.

The gross gamma scan and gross beta analysis from the swipes and samples are shown in Table 2. Maps of the Elevations 305 and 347 surveys performed during the first two reactor building entries are shown in Figures 1 and 2, respectively. The swipes and material removed were sent to the Department of Energy, Idaho for a more detailed analysis. (See Tables 3 and 4.) Transcripts of the second entry and debriefing are also included in this report.

TABLE 2. ELEVATION 305 RADIATION SURVEY SUMMARY DESCRIPTION--ENTRY 2

Location ^a Number	Instrument ^b	Gamma Dose rate (rem/hr)	Beta Dose Rate (Rad/hr)	Location
1	T	0.4	--	6 ft inside airlock door, head high
2	T/R-7	0.2	1.6	Linear, adjacent to airlock No. 2, contact
3	T/R-7	2	~0	Northeast wall of elevator shaft, contact
4	R-7	(0.5) ^c	2	Floor at base of ramp, contact
5	R-7	(0.5) ^c	2	D-ring wall opposite airlock No. 2, contact
6	T	5	--	Floor drain near ramp, contact
7	T	3	--	High pressure injection line on D-ring wall, contact
8	T	0.3	--	D-ring wall opposite elevator shaft, contact
9	R-7	(0.5) ^c	7	Floor ~8 ft north of ramp, contact
10	T/R-7	0.5	1	Column R-14, general area
11	R-2	3	10	Floor drain near column R-12, contact
12	R-2	3	10	Floor drain near column R-13, contact
13	T	3	--	Elevator door, contact
14	T	2	--	Floor drain near floor equipment hatch, contact

TABLE 2. (continued)

Location ^a Number	Instrument ^b	Gamma Dose rate (rem/hr)	Beta Dose Rate (Rad/hr)	Location
15	T	0.4	--	Stairwell door
16	T/R-7	3	2	Landing inside stairwell Elevation 305
17	T	10	--	Center of floor equipment hatch
18	T	4	--	Edge of floor equipment hatch
19	T	3	--	Core flood line, contact
20	R-2	3.5	--	Floor penetration R-251, CRD cable chase (assume: all gamma)
21	T	1.4	--	Air coolers
22	T	0.7	--	Area above pressurizer drain tank, general area
23	T	0.4	--	O-ring opposite equipment hatch, contact
24	T	8	--	Floor drain near open stairwell, contact
25	T	2	--	Behind open stairwell
26	T	45	--	Water in basement, 5 to 7 ft from surface in stairwell
27	T/R-2	2	4	Closed stairwell, 1st landing Elevation 312
28	T	1	--	Closed stairwell, 2nd landing Elevation 319

TABLE 2. (continued)

Location Number	Instrument ^b	Gamma Dose rate (rem/hr)	Beta Dose Rate (Rad/hr)	Location
29	T/R-2	0.8	--	Closed stairwell, 3rd landing Elevation 326
30	T/R-2	0.5	--	Closed stairwell, 4th landing Elevation 333
31	T/R-2	0.3	--	Closed stairwell, 5th landing Elevation 340
32	T/R-2	0.18	--	Closed stairwell, 6th landing Elevation 347
33	T	0.25	--	Stairwell doorway
34	R-2	0.1	--	Elevator wall, waist level
35	R-2	0.6	--	Diamond plate decking, outside stairwell door
36	T/R-2	0.05	--	Behind closed stairwell
37	T	0.15	--	Between indexing fixture and liner
38	R-2	0.03	--	Indexing fixture, contact
39	T	0.1	--	South containment wall area
40	T	0.4	--	Between coolant motor stand and head storage stand, general area
41	R-2	0.3	--	Underneath head storage stand

TABLE 2. (continued)

Location ^a Number	Instrument ^b	Gamma Dose rate (rem/hr)	Beta Dose Rate (Rad/hr)	Location
42	R-2	0.45	6.2	Steel base of head storage stand, contact
43	T	0.15	--	Between head storage stand and open stairwell
44	T	0.55	--	Over open stairwell
45	T/R-2	0.1	--	D-ring wall opposite head storage stand
46	R-2	2.5	--	Pressurizer spray line at elbow, contact
47	T	0.25	--	Grating over core flood tank A
48	T/R-2	0.17	0.9	Over reactor cavity, under bridge
49	T	0.15	--	12 ft from reactor head studs
50	R-2	(0.2) ^b	5.2	Fuel handling bridge, contact
51	T/R-2	0.125	--	Over reactor cavity
52	R-2	0.125	10.8	Grating over core flood tank B

a. Location numbers correspond to numbers on Figures 1 and 2.

b. Instruments: T is teletector, R-2 is R0-2A, and R-7 is R0-7.

c. Numbers in parentheses are estimated of gamma portion of beta/gamma reading based on adjacent area gamma readings. All radiation dose rates are corrected for instrument.

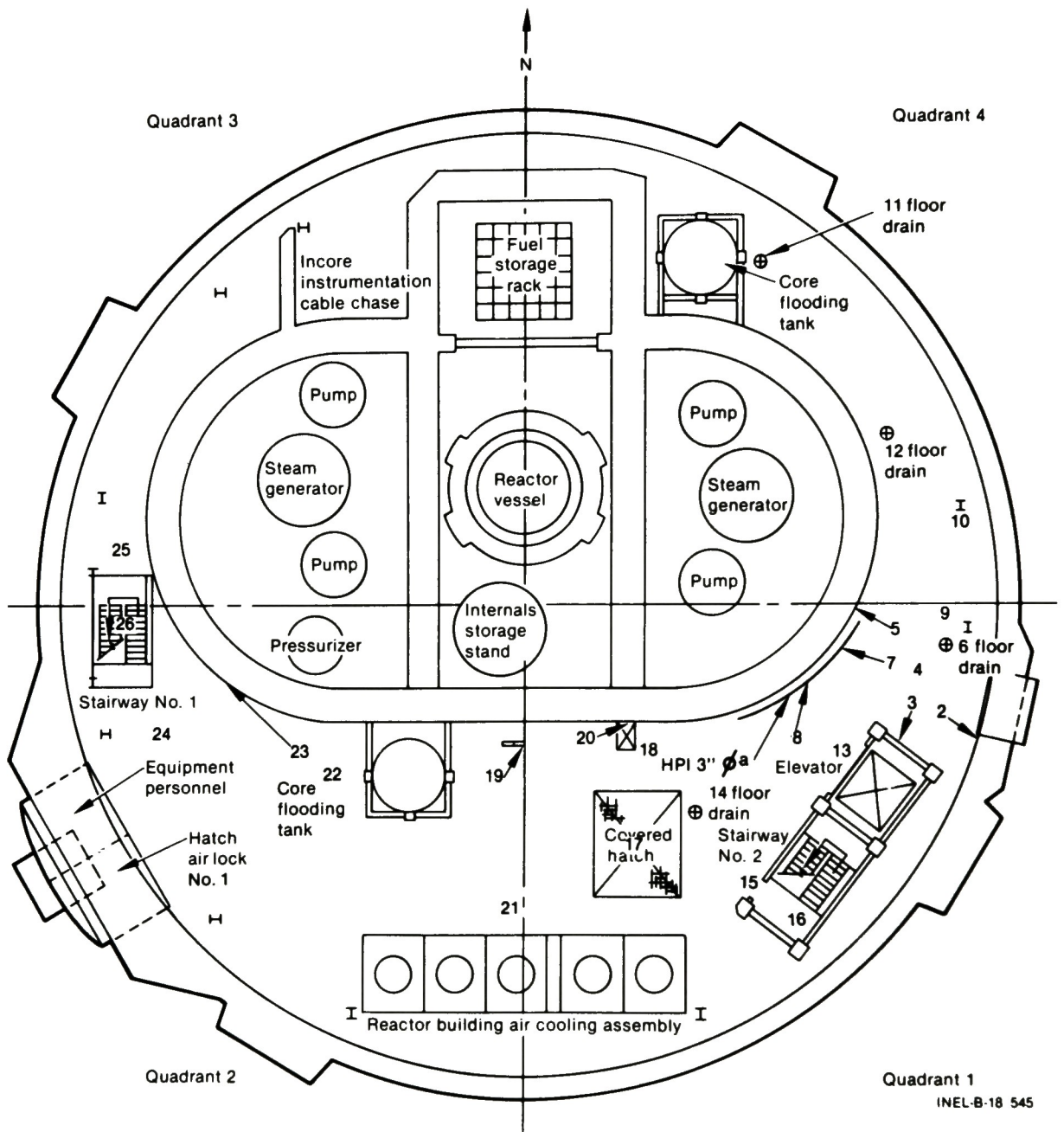


Figure 1. Elevation 350 reactor building radiation survey summary July 23, and August 15, 1980.

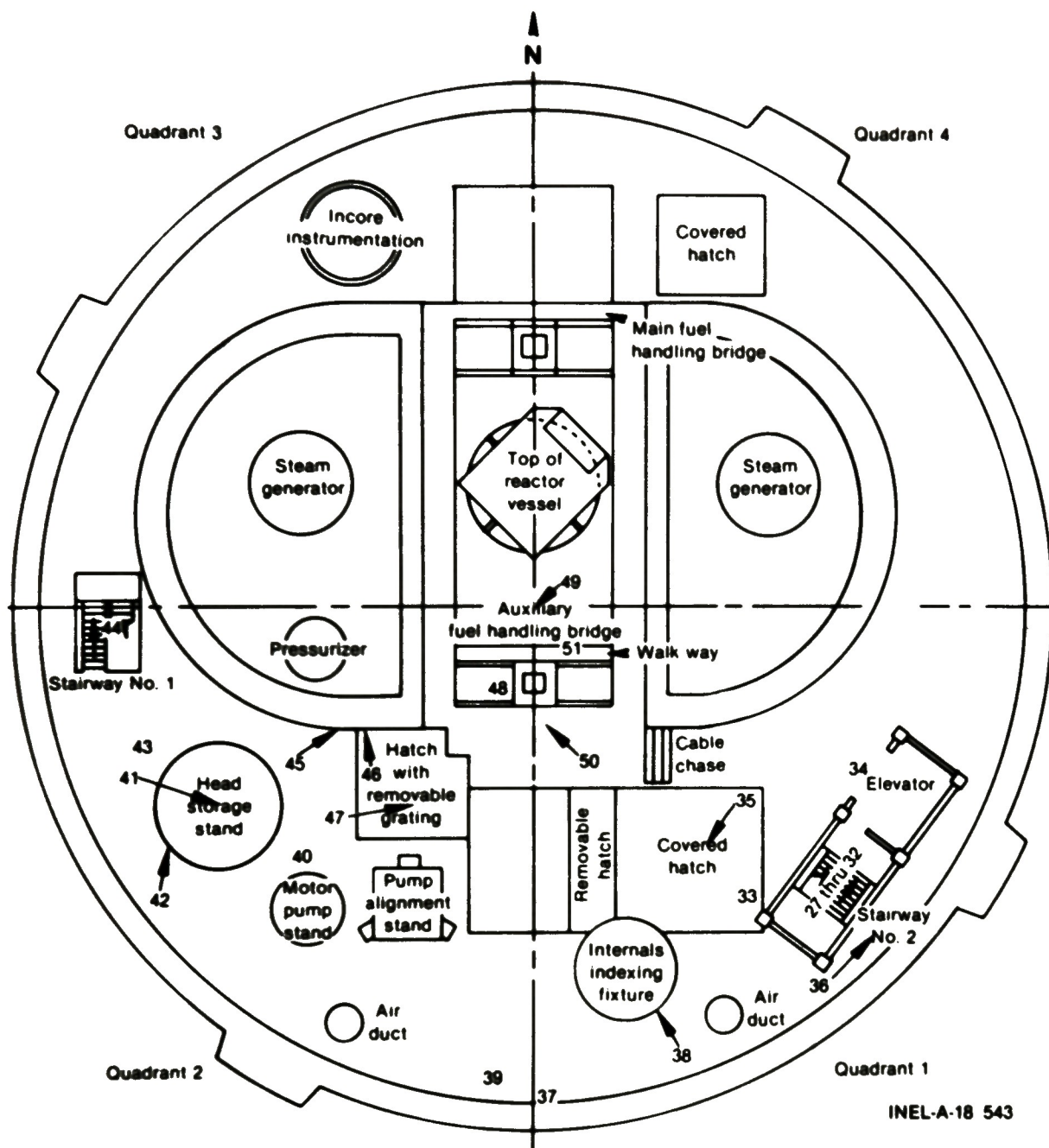


Figure 2. Elevation 347 reactor building radiation survey summary August 15, 1980.

TABLE 3. PRELIMINARY ANALYSIS RESULTS OF SWIPES TAKEN DURING INITIAL REACTOR BUILDING ENTRY, JULY 23, 1980

Swipe Specimen ^a	Sample Number	Swipe Location	Activity Detected (μCi)							Gross B/Y	Gross α	Remarks
			Co-60	Nb-95	Sb-125	Cs-134	Cs-137	Ce-144				
1	46279	Reactor building liner next to south wall of airlock	--	--	--	3.91 ⁻⁴	2.25 ⁻³	--	2.54 ⁻³	<1.75 ⁻⁷		
2	46280	Painted portion of north wall of elevator	--	--	--	1.51 ⁻³	9.81 ⁻³	--	6.59 ⁻³	<2.76 ⁻⁷		
3	46281	Reactor building floor at base of the entrance ramp	--	1.97 ⁻³	--	5.78 ⁻¹	3.48 ⁰	--	--	--		
4	46282	D-ring wall opposite entrance ramp	--	1.56 ⁻⁵	--	8.33 ⁻⁴	4.70 ⁻³	--	4.78 ⁻³	<1.75 ⁻⁷		
5	46283	Reactor building floor between equipment hatch and stairwell	--	--	--	1.98 ⁰	1.20 ¹	--	--	--	Swipe may have been cross-contaminated in airlock	
6	46284	D-ring adjacent to open stairwell	1.92 ⁻⁵	--	3.29 ⁻⁴	2.31 ⁻³	1.60 ⁻²	1.81 ⁻⁴	1.43 ⁻²	<2.76 ⁻⁷	Swipe may have been cross-contaminated in airlock	
10	46288	Sample recovered from July 16, 1980 inner door opening	--	--	--	4.12 ⁰	2.50 ¹	--	--	--	Unknown location and area	

a. All activity total. All swipes approximately 100 cm² except No. 10.

TABLE 4. TMI-2 REACTOR BUILDING PRELIMINARY BETTA GAMMA SCAN SWIPE/SPECIMENS, AUGUST 15, 1980

Swipe Specimen ^a	Number	Sample Location	Activity Detected (pCi)							Cs-137/Sr-90 Ratio
			Gross a	Gross b	Cs-134	Cs-137	Sr-90	Co-60	Nd-147	
Floor scrape A	47846	Elevation 305 floor crud at open stairwell	--	--	8.80 ⁻¹	5.25	--	--	--	--
Floor scrape B	47845	Elevation 305 floor crud at hatch cover	--	--	2.654	16.05	--	--	--	--
UF-1	47862	Elevation 305 floor decon test initial wipe	--	--	1.13/ 6.3 ⁻¹	6.95/ 4.69 ⁰	5.3 ⁻¹	--	--	0.85
UF-2	47861	Elevation 305 floor decon test final wipe	--	--	1.18 ⁻¹ / 8.9 ⁻²	7.15 ⁻¹ / 6.54 ⁻¹	6.98 ⁻²	--	--	9.37
Swipe 1	47847	Elevation 305 floor under HP-R-211	--	--	6.61/ 5.4	40.7/ 33.5	2.63	--	--	12.4
Swipe 2	47848	Elevation 305 floor in front of air cooler	--	--	3.75 ⁻² / 2.4 ⁻²	2.22 ⁻¹ / 1.7 ⁻¹	2.94 ⁻²	--	9.26 ⁻⁴	5.78
Swipe 3	47849	Elevator stairwell floor, top landing	--	--	8.16 ⁻¹ / 6.3 ⁻¹	5.10/ 4.50	2.4 ⁻¹	--	2.19 ⁻³	--
Swipe 4	47850	Elevation 347 floor behind elevator shaft	--	--	8.60 ⁻¹ / 5.21 ⁻¹	5.40/ 3.8	1.6 ⁻¹	--	2.44 ⁻³	23.6
Swipe 5	47851	Fuel handling bridge	--	--	6.80 ⁻¹ / 4.76 ⁻¹	4.25/ 4.23	4.76 ⁻¹	9.70 ^{-4c}	2.62 ⁻³	8.89
Swipe 6	47852	Elevation 347 liner southwall	<4.88 ⁻⁷	1.30 ⁻²	2.46 ⁻³ / 1.63 ⁻³	1.52 ⁻² / 1.2 ⁻²	2.3 ⁻³	--	--	5.22
Swipe 7	47853	Elevation 347 liner southwall	<4.88 ⁻⁷	9.22 ⁻³	2.87 ⁻³ / 1.27 ⁻³	1.91 ⁻² / 9.0 ⁻³	1.15 ⁻³	--	--	7.83

TABLE 4. (continued)

Swipe Specimen ^a	Number	Sample Location	Activity Detected (μCi)							Cs-137/Sr-90 Ratio
			Gross α	Gross β	Cs-134	Cs-137	Sr-90	Co-60	Nb-95	
Swipe 8	47854	Elevation 347 floor head stand area	--	--	$9.41^{-1}/b$	$5.80/-$	1.97^{-1}	--	--	29.4
Swipe 9	47855	Cable tray by northeast corner of canal	--	--	$3.95^{-2}/3.17^{-2}$	$2.57^{-1}/2.28^{-1}$	5.55^{-2}	--	--	4.11
Swipe 10	47856	Not used	--	--	--	--	--	--	--	--
Swipe 11	47857	Not used	--	--	--	--	--	--	--	--
Swipe 12	47858	Elevation 347 tool chest	--	--	$2.54^{-1}/2.05^{-1}$	$1.58/1.5$	9.00^{-2}	--	--	10.7
Swipe 13	47859	Elevation 347 linear--LMT wall	$<5.0^{-7}$	5.10^{-3}	$1.03^{-3}/5.97^{-4}$	$9.86^{-3}/3.95^{-3}$	6.99^{-4}	--	--	5.65
Swipe 14	47860	Elevation 347 east D-ring wall	1.29^{-6}	2.57^{-2}	$5.32^{-3}/4.0^{-3}$	$3.10^{-2}/2.72^{-8}$	3.12^{-3}	--	--	8.72
Class sample	47870	Elevation 305 floor near equipment hatch	--	--	1.73	10.7	--	--	--	--
HP-R-211	47910	Elevation 305 elevator shaft wall	3.60^{-6}	1.26^{-1}	$1.99^{-2}/2.2^{-2}$	$1.55^{-1}/1.64^{-1}$	3.1^{-3}	--	--	52.9
12 x 16 inch steel plate	47911	Elevation 305 east D-ring wall	3.00^{-6}	2.27^{-1}	$3.64^{-2}/3.4^{-2}$	$2.19^{-1}/2.5^{-1}$	3.98^{-2}	--	--	6.28

TABLE 4. (continued)

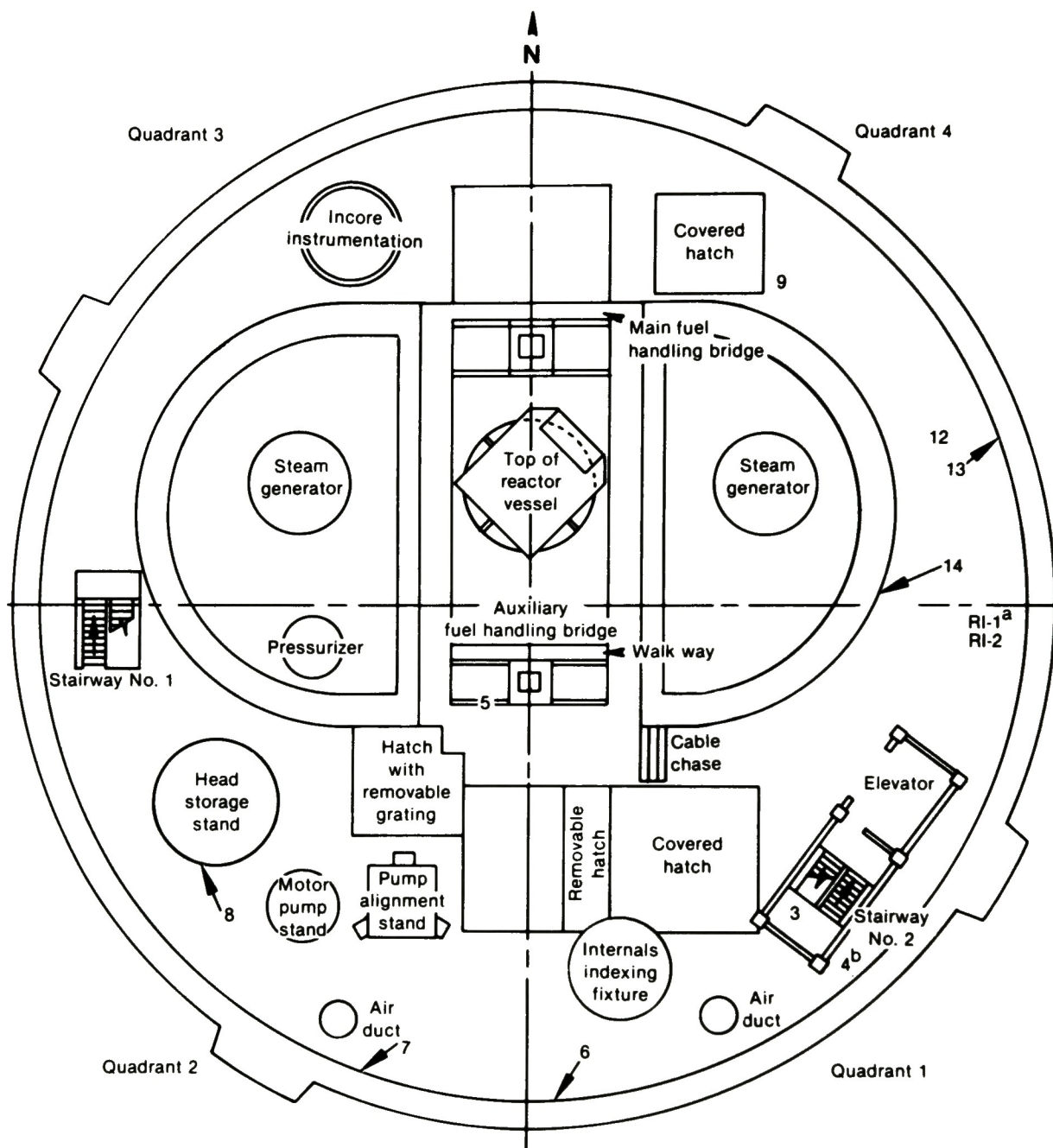
Swipe Specimen ^a	Number	Sample Location	Activity Detected (μCi)							Cs-137/Sr-90 ratio
			Gross α	Gross β	Cs-134	Cs-137	Sr-90	Co-60	Nd-95	
1C-1B-U5 sheet metal cover	47912	Elevation 347 floor near D-ring	9.01 ⁻⁷ 2.83 ⁻¹	7.65 ⁻² 2.06	1.06 ⁻² / 6.8 ⁻³	6.40 ⁻² / 4.96 ⁻²	1.62 ⁻²	--	--	3.10
1C-2B-U2 sheet metal housing	47913	Elevation 347 floor near D-ring	2.00 ⁻⁶	--	3.30 ⁻¹ / 2.83 ⁻¹	1.97/ 2.06	6.1 ⁻²	--	--	33.8
Funnel	47915	Elevation 305 near floor hatch to elevation 282	<4.66 ⁻¹	2.34 ⁻²	5.09 ⁻³ / 4.54 ⁻³	2.92 ⁻² / 3.27 ⁻²	1.6 ⁻³	--	--	20.4

a. Swipe/specimen numbers correspond to those shown in Figures 3 and 4.

b. B&W/SAL.

c. Cr-51 is 1.08⁻², Ce-144 is 1.41⁻².

NOTE: All activities total. All swipes ~100 cm².



- a. Number 4 is 14 wipes
 - b. RI-1 is reflective insulation 1C-1B05,
RI-2 is reflective insulation 1C-2B02
- Note: S wipes 10 and 11 were not used

INEL-A-18 544

Figure 3. Elevation 347 swipe specimen locations.

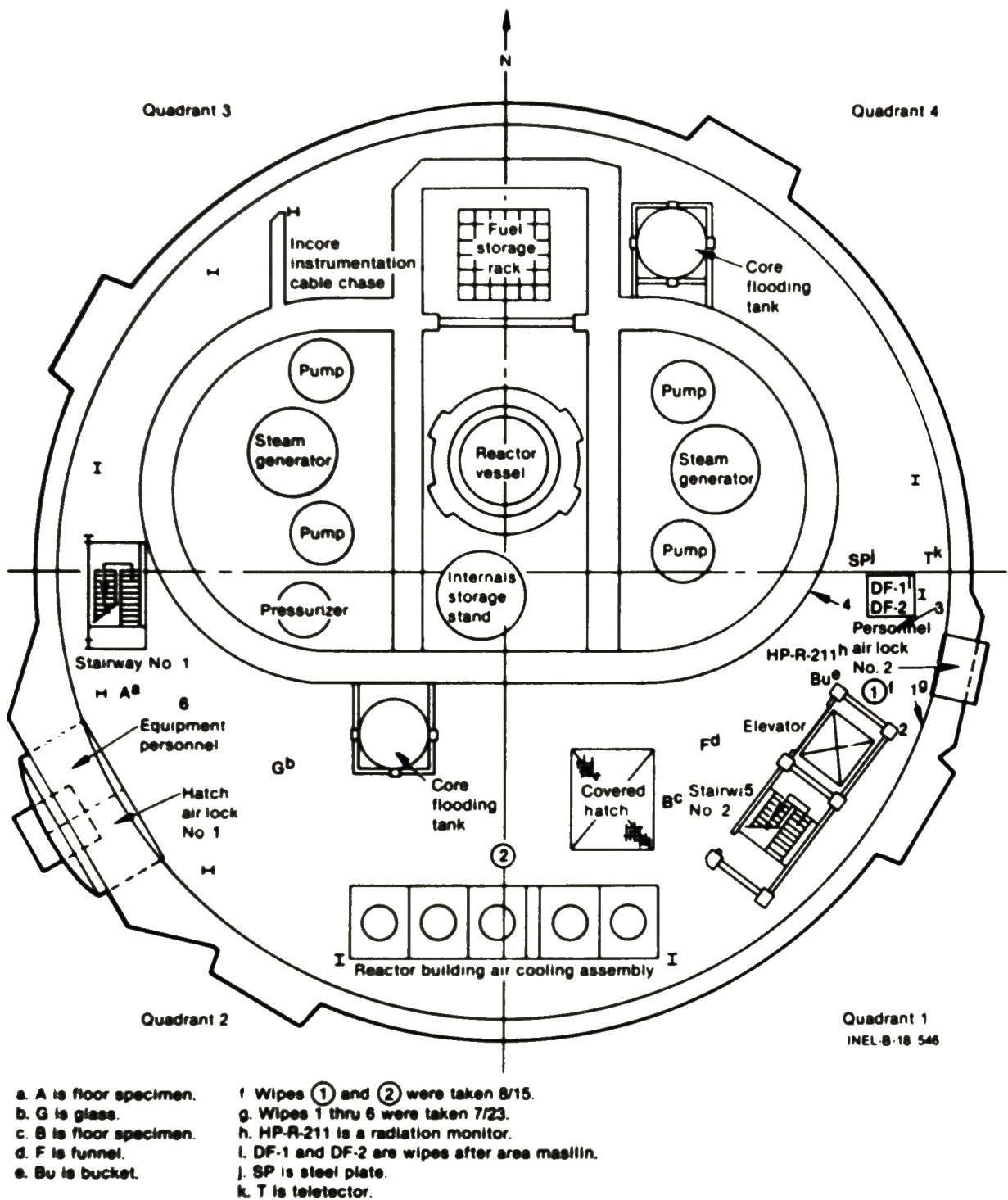


Figure 4. Elevation 305 swipe specimen locations.

TRANSCRIPT OF SECOND ENTRY

Command Center Tape Channel #1--Benson/Griffith

Benson to Base: Marty has just closed the outer door, over.

Base to Benson: Roger, we copy.

Benson to Group: I guess it's about time to open the inner door.
Everybody ready? You ready Sam?

Griffith to Benson: I'm ready Mike!

Benson to Base: Everybody's ready, here goes nothing. The airlock
is equalizing quickly, and I'm continuing to open.

Base to Benson: Roger, out.

Griffith to Base: - - - - -

Base to Griffith: Go ahead Sam, over.

Griffith to Base: Breakers 1 and 8 are open.

Base to Griffith: OK Sam, what happened to 7? Over.

Griffith to Base: It was open.

Base to Griffith: How is breaker 7?

Griffith to Base: Breaker 7 was already in the open position.

Base to Griffith: Roger, we copy, over.

Base to Griffith: Sam are you taking pictures P2, P3, and P4?

Griffith to Base: Yes, they have been taken.

Base to Griffith: Sam, we need your digital dosimeter, over.

Griffith to Base: 17.

Base to Griffith: Roger, 17 over.

Base to Benson: We need your digital over.

Benson to Base: I'm reading 46 millirem, over.

Base to Benson: Roger, out.

Griffith: - - - - -

Base to Griffith: Give me status, over.

Griffith to Base: Taking surveys.

Base to Griffith: Roger doing survey, over.

Benson to Base: I think some of the lights are on.

Base to Benson: Roger, we copy.

Base to Griffith: How about giving us your survey readings as you go, over.

Benson to Base: - - - - -

Base to Benson: Go ahead.

Benson to Base: Behrle has just taken the scrape sample, over.

Base to Benson: Roger we copy. Scrape sample taken. Give us your digital, Mike, over.

Benson to Base: I'm reading one-one-seven (117) millirem, over.

Base to Griffith: Give us your digital, over.

Griffith to Base: 29 millirem, over.

Base to Griffith: Roger we copy, two-nine (29).

Benson to Base: The inner airlock door is rusted in the locked position, over.

Base to Benson: Roger we copy, in the locked position. You guys hurry up and get out of there. Start moving back, over.

Griffith to Base: - - - - -

Base to Griffith: Roger, go ahead Sam.

Griffith to Base: - - - - - (?)

Base to Griffith: Go ahead, I can't copy, speak slower, over.

Griffith to Base: Everything looks good.

Base to Griffith: Roger we copy, everything looks good. Did you get the tie-wraps? Over.

Base to Griffith and Benson: You're now 7 minutes, 45 seconds into entry, over.

Griffith to Base: Didn't hear you, Base.

Base to Griffith and Benson: You are now 7 minutes, 48 seconds into entry, over.

Griffith to Base: Roger, 7 minutes, 48 seconds into entry.

Base to Griffith: Have you moved over and rejoined Cooper yet? Over.

Griffith to Base: Roger, Base. The four of us are all together in front of the air coolers taking smear sample.

Base to Griffith: Roger, in front of air coolers, taking smear sample, over.

Griffith to Base: I have a reading of 3.5 rem over penetration.

Base to Griffith: Roger.

Base to Benson: We need a digital on you, over.

Benson to Base: One-four-zero (140) millirem, over.

Base to Griffith: Roger we copy. We need a digital on you, over.

Griffith to Base: 61 millirem.

Base to Griffith: Roger, out.

Benson to Base: We've got both scrape samples, the funnel, and the piece of broken glass. We're ready to move to the front of stairs, over.

Base to Benson: Roger, you've taken both scrapes and moving to assembly area for trip up the steps.

Benson to Base: Roger.

Base to Griffith
and Benson: You are now 10 minutes, 15 seconds into entry,
over.

Griffith to Base: Roger, Base.

Base to Benson: Let us know when you are getting ready to go up
the stairwell, over.

Griffith to Base: - - - - -

Base to Griffith: Roger, Sam. Go ahead.

Griffith to Base: I have the plastic ties, over.

Base to Griffith: No copy, repeat.

Griffith to Base: I have the plastic ties.

Griffith to Base: 3 rem--open window, first landing.

Base to Griffith: Roger, out.

Griffith to Base: 800 millirem open window, second landing.

Base to Griffith: Roger, out.

Griffith to Base: Next landing 400.

Base to Griffith: Roger, we copy.

Griffith to Base: Fifth landing, 320.

Base to Griffith: Roger, out.

Griffith to Base: Sixth landing, 180.

Base to Griffith: Roger.

Griffith to Base: Door is open on the 347.

Base to Griffith: Roger we copy. In or out? Over.

Base to Benson: Could you give me your digital? You're now 12 minutes, 32 seconds into entry, over.

Benson to Base: 187, over.

Base to Griffith: Roger we copy. Sam, could we have your digital? Over.

Griffith to Base: 97 millirem.

Base to Griffith: Roger we copy.

Griffith to Base: Some lights tried to come on, but they tripped out.

Base to Griffith: Roger, lights tried to come on, but they tripped. Is that all 3 pushbutton stations? Over.

Griffith to Base: OK, there on, they're tripped out again!

Base to Griffith: Roger, they tripped out again. Try the other push-button station, over.

Griffith to Base: - - - - -

Base to Griffith: Roger, go ahead, Sam.

Griffith to Base: 30 millirem at the indexing fixture.

Base to Griffith: Roger, out.

Griffith to Base: - - - - -

Base to Griffith: Roger, go ahead.

Griffith to Base: 600 over top the decking just outside stairwell door.

Base to Griffith: We don't copy, but 600 somewhere.

Griffith to Base: 600 on the diamond plate decking in front of stairwell door.

Base to Griffith: Roger we copy.

Benson to Base: The 374 telephone is melted, over.

Base to Benson: Roger we copy. Also like a dosimeter on you Benson, over.

Benson to Base: 195 millirem, over.

Base to Benson: Roger we copy. Sam we need digital on you, over.

Griffith to Base: 104.

Base to Griffith: Roger, we copy.

Griffith to Base: Contact reading underneath the (head stand) 300. Do you copy, Base?

Base to Griffith: Roger we copy, 300, over.

Base to Griffith and Benson: You're now 16 minutes, 17 seconds into entry, over.

Griffith to Base: Roger, Base.

Griffith to Base: Contact reading 2 rad open window?

Base to Griffith: Roger, you took 1 open window, over.

Griffith to Base: - - - - -

Base to Griffith: Roger, go ahead.

Griffith to Base: The Pressurizer Spray Line reads 2.5 rem contact at the elbow by the penetration.

Base to Griffith: Roger, we copy.

Griffith to Base: The lighting is well warmed up. It is very bright.

Base to Griffith: Roger, we copy.

Griffith to Base: Contact reading on the D-ring wall opposite the pressurizer 100 millirem, contact.

Base to Griffith: Roger, we copy. We need your digital dosimeter, Sam. You're 18 minutes, 14 seconds into entry, over.

Griffith to Base: Roger, 18 minutes, 14 seconds. My digital reads 112, over.

Base to Benson: Roger we copy. Mike we need yours also, over.

Base to Benson: Could we have your digital?

Benson to Base: 219 millirem, over.

Base to Benson: Roger, we copy.

Griffith to Base: Open window reading looking in cavity under the bridge is 400 open window, over.

Base to Griffith: Roger, we copy. Hey, we would like you guys to try the pushbuttons by the open stairwell for the lights if they are not on, over.

Griffith to Base: We copy.

Griffith to Base: 50% of the lighting is on.

Base to Griffith: Roger, 50% are on, out.

Griffith to Base: Contact readings on the fuel bridge 1.5 rem open window.

Base to Griffith: Roger, 1.5 rem, over.

Base to Griffith: We want you guys to go ahead and stay while Cooper and Behrle leave, over.

Griffith to Base: Roger, Base.

Base to Griffith: Sam, also take the teletector from Behrle, over.

Base to Benson: Please repeat, you were stepped on, over.

Benson to Base: 210 millirem, over.

Base to Griffith: Roger, we copy, 210. Sam, can we get your digital? Over.

Griffith to Base: 123, over.

Base to Griffith: Roger, we copy. Sam take the teletector from Behrle, over.

Griffith to Base: It's with Behrle, over.

Base to Benson: Give us your digital again, over.

Benson to Base: 213 millirem, over, 14, over.

Base to Benson: Roger, we copy 214, over.

Benson to Base: How much time are we into this thing? Over.

Base to Benson: Roger, you're 22 minutes, 54 seconds into entry, over.

Benson to Base: Roger.

Base to Benson: Could you tell me what's going on? Over.

Benson to Base: We are walking around to the east side of D-ring, over.

Base to Benson: Roger, we copy. Walking the east side, over.

Benson to Base: There is a 55-gallon drum beside the elevator, and it looks like somebody put it in a vice-grip and caved it in, over.

Base to Benson: Roger, we copy. Smashed! Take a picture, over.

Benson to Base: I don't have anymore photos, over.

Base to Benson: All out of film? Over.

Benson to Base: Roger, but we're still going to take a visual, over.

Base to Benson: Roger, go ahead, over.

Base to Benson: Do you have the swipe box? Over.

Benson to Base: Marty Cooper took it downstairs, over. However, we've got a couple swipes. Do you want us to take swipes? Over.

Base to Benson: Roger, take swipes, note area, over.

Base to Benson: You're now 25 minutes, 26 seconds into entry. Could you give me your digitals? Over.

Benson to Base: 220, over.

Base to Benson: Could you repeat your digital? Over.

Benson to Base: 220. I took swipe number 12 off of the tool locker in front of D-ring on the north side of the building, over.

Base to Benson: Roger, we copy.

Base to Griffith: Could you please give us your digital? Over.

Griffith to Base: 144.

Base to Griffith: Roger, we copy.

Griffith to Base: I have a reading of 300 closed window on grating over the B core flood tank, over.

Base to Griffith: Roger, we copy, over.

Benson to Base: Swipe number 6 was taken off the cable tray, over.

Base to Benson: Roger, off the cable tray, over.

Griffith to Base: At the same location, I have 3 rad, open window.

Base to Griffith: Roger, we copy.

Benson to Base: Swipe 13 taken off liner.

Base to Benson: Roger, number 13 off the liner.

Benson to Base: There's a box on the ground, numbered 1C-2B-02, over.

Benson to Base: There was an instrument cover on the grating, number is 1C-2B-02, over.

Base to Benson: Roger, we copy 1C-2B-02, over.

Benson to Base: Something like that, Sam's bringing it out, over.

Base to Benson: Could we hae your digital? Over.

Benson to Base: 224, over.

Base to Griffith: Roger, we copy, Sam we need your digital.

Griffith to Base: 137, over.

Base to Griffith: Roger, we copy.

Benson to Base: 'That last swipe 14 was taken off D-ring. In front of me is an instrument, and it looks like some type of pressure tank. It's 26, I don't see any tags on it, and it is destroyed. Everything's rusted up. The glass or plastic in it melted, and I don't think it could be used for anything.

Base to Benson: Roger, well we probably won't reuse it again, OK, over.

Benson to Base: I've had it, we're coming out, over.

Base to Benson: Roger, we copy. You're coming out. You're now 29 minutes, 5 seconds into entry.

Base to Benson: When you guys pick up those instrument packages, let me know so we know what the time frame is, over.

Benson to Base: - - - - -

Base to Benson: Go ahead.

Benson to Base: Where are Behrle and Cooper? Over.

Base to Benson: They are in the Anteroom, over.

Benson to Base: Is the door shut? I have to open it to exit.

Base to Benson: Roger, you have to open the inner door to exit.

Benson to Base: Roger, my digital reads 230, over.

Base to Benson: Roger, your digital jumped to 230, over.

Benson to Base: We are tired, over!

Base to Benson: Roger, where are you located, over?

Benson to Base: Got a flight to go, over!

Base to Benson: Roger, we got you. Let us know when you get down and when you pick up the instrument packs. Let us know, over.

Benson to Base: Roger.

Base to Benson: The outer door is closed. You can proceed to inner at your will, over.

Base to Benson and Griffith: You're now 31 minutes into entry. Could we have digitals when you get out of the 305 level? Over.

Griffith to Base: We're already on 305.

Benson to Base: 245. I'm opening the door, over.

Base to Benson: Roger, opening the door. Are you then going to go and get the experimental package? Over.

Benson to Base: I'll get it after Sam exits, over.

Base to Benson: Roger, we copy.

Benson to Griffith: Go ahead and exit, Sam.

Base to Benson: Michael, are you going to go over and pick up the steel plate and the experimental package, or are you going to leave the steel plate and just get the experimental package?

Benson to Base: Yeh, Yeh, Yeh, we will do it.

Base to Benson: Roger, we copy. We can rely on you, over.

Benson to Griffith: Take off your gloves, Sam.

Base to Benson: Are you going to tell us when you pick up the experiments, correct? Over.

Benson to Base: They're now at the airlock.

Base to Benson: Have you picked up the experiments? Over.

Benson to Base: Yes.

Base to Benson: Roger.

Base to Benson and Griffith: Can we have your digitals? Over.

Griffith to Base: Not right now, Base.

Base to Benson: Can we have your digital?

Benson to Base: 258

Base to Griffith: Roger, we copy. Sam could we have your digital? Over.

Griffith to Base: 174.

Base to Griffith: That was a 174, roger?

Griffith to Base: Roger, Base.

Base to Griffith: Roger, out.

Base to Benson: Notify us when you close the inner door, over.

Benson to Base: I will.

Base to Benson: Thank you very much.

Benson to Base: That fire hose is still pretty rubbery, over.

Base to Benson: We didn't copy Benson, try again, over.

Base to Benson: We didn't get your last transmission, over.

Benson to Base: I'll tell you later, over.

Base to Benson: We still didn't copy. You're speaking too fast. If it's pertinent informaton go ahead and repeat, if not, hold off. Just let us know when you close the inner door, over.

Benson to Base: Please have someone open the door for us. We're in the airlock.

Base to Benson: Roger, we copy. Inner door closed, we'll have the outer door opened, over.

Benson to Base: I wish you would train those guys not to open it. My ears hurt now.

Base to Benson: Roger, we copy. They are getting ready to open the door, over.

Benson to Base: * No, they already opened it; my ears have popped,
 over.

Base to Benson: Roger, we copy.

TRANSCRIPT OF SECOND ENTRY

Command Center Tape Channel #3--Behrle/Cooper

Behrle to Base: The inner door is open, over.

Base to Behrle: Door is open, roger.

Base to Behrle and Cooper: Time is 10:42.

Behrle to Base: I read about 400 millirem per hour, over.

Cooper to Base: The inner airlock door is shut.

Base to Cooper: The inner door is shut, aye.

Behrle to Base: I have opened breakers 1, 4, 7, and 8 at panel 3A, over.

Base to Behrle: Understand you have opened breakers 1, 4, 7, and 8, over. Out.

Base to Behrle: Both breakers are closed.

Behrle to Base: I am reading about 2 rem behind the open stairwell, over.

Base to Behrle: Say again.

Cooper to Base: The cable on HP-R-211 broke!

Base to Cooper: Say again.

Cooper to Base: The cable on HP-R-211 broke!

Base to Cooper: The cable broke, over and out.

Base to Behrle: Give us a reading on your digital dosimeter, over.

Base to Cooper: Give us a reading on your digital dosimeter. This is 4 minutes into the entry, over.

Cooper to Base: 15 millirem.

Base to Behrle: Give us a reading on your digital dosimeter, over.

Behrle to Base: My digital reads 120 millirem, over.

Base to Behrle: Understand 120, over.

Base to Behrle: Turn the lights on, over.

Behrle to Base: I have turned the lights on and most of the lights I can see are coming on, over.

Base to Behrle: The lights are coming on, over.

Base to Behrle and Cooper: 6 minutes into entry, give me your digital dosimeter readings, over.

Cooper to Base: Dosimeter, 40.

Base to Cooper: Understand 40, over.

Cooper to Base: Correct, over.

Base to Behrle: Give me a digital reading please, over.

Behrle to Base: 174.

Base to Behrle: Understand 144, over.

Base to Behrle: Have you gotten your scrape sample? Over.

Behrle to Base: Yes, I got the scrape sample, over.

Base to Behrle: Roger, out.

Base to Cooper: Did you get the old detector? Over.

Base to Behrle and Cooper: 9 minutes into entry. Give me your readings please? Over.

Base to Cooper: Give me a reading on your dosimeter, over.

Base to Cooper: Radio check, over.

Cooper to Base: (words?)

Base to Cooper: You're cutting out.

Cooper to Base: Dosimeter, 86.

Base to Cooper: Dosimeter 86, roger, out.

Base to Behrle: Give me a digital dosimeter reading, over.

Behrle to Base: 190 millirem, over.

Base to Behrle: Say again, over.

Base to Behrle: Give me a reading on your digital dosimeter, over.

Behrle to Base: 210 millirem, over.

Base to Behrle: Understand 210, over.

Behrle to Base: I am going up the steps, reading 3 rem, 2 rem at the first landing, 1 rem at the second landing, 1 rem at the third landing, 500 millirem at the fourth landing.

Base to Behrle: Say again, over.

Behrle to Base: 300 millirem at the last landing, 180 millirem at the top landing.

Base to Behrle and Cooper: 12 minutes into the entry, give me digital dosimeter readings, over.

Cooper to Base: 107, over.

Base to Behrle: Give me a digital dosimeter reading, over.

Behrle to Base: 225.

Base to Behrle: Understand 225, over.

Behrle to Base: Reading behind elevator is 50 millirems, over.

Behrle to Base: We are having a little trouble getting lights on upstairs, over.

Base to Behrle: Trouble with lights, over.

Behrle to Base: (words?)

Base to Behrle: Say again, over.

Behrle to Base: The general background reading on the 347 elevation is 100 to 400 millirem, over.

Base to Behrle: Understand, 100 to 300 millirem. Where was that reading taken? Over.

Behrle to Base: Behind the indexing fixture is 100 to 200, 2-2-2-2-2.

Base to Behrle: Understand 100 to 200 millirem behind the indexing fixture, out.

Base to Behrle and Cooper: Give me a digital dosimeter reading, 15 minutes into entry.

Cooper to Base: Dosimeter, 116.

Behrle to Base: 242.

Base to Behrle: Understand 442.

Behrle to Base: 242. 2-2-2, 4-4-4, 2-2-2, over.

Base to Behrle: Understand 242, over and out.

Behrle to Base: Radiation levels between reactor head and reactor coolant motor stands are about 400 millirem, over.

Base to Behrle: Understand 400 millirem.

Behrle to Base: Radiation levels on the D-ring next to the head storage stand are 100 millirem, over.

Base to Behrle: 100 millirem next to the D-ring near the head stand, over.

Behrle to Base: Radiation levels over the open stairwell are 550 millirem, over.

Base to Behrle: Understand, readings are 550 millirem at the open stairwell, out.

Behrle to Base: Radiation levels over the open grating and the core flood tank are 250 millirem, over.

Base to Behrle: 550 millirem.

Behrle to Base: 2-2-2-5-0, over.

Base to Behrle: 250, roger, out.

Base to Behrle and Cooper: 18 minutes into the entry, give me digital dosimeter readings, over.

Cooper to Base: 127, over.

Behrle to Base: I am reading 170 millirem over the open fuel pool between the crane rails, over.

Base to Behrle: 170 millirem, out.

Base to Behrle: I need a reading on your digital dosimeter, over.

Cooper to Base: - - - - -

Base to Cooper: This is Base, over.

Cooper to Base: Getting vey tired and super hot, over.

Base to Cooper: Getting hot; what was the first statement? Over.

Cooper to Base: Getting very tired, over.

Base to Cooper: Do you want to come out?

Cooper to Base: I want to come out.

Base to Cooper: Alright.

Base to Cooper: Come out with Griffith, over.

Base to Behrle
and Cooper: Both of you come out.

Behrle and Cooper
to Base: That's affirmative, we are on our way, over.

Base to Behrle: Give Griffith your teletector, over.

Behrle to Base: Too late.

Base to Behrle
and Cooper: 21 minutes into the entry, give me your digital
dosimeter readings, over.

Base to Behrle
and Cooper: Give me a roger that you are coming out, over.

Cooper to Base: We are coming out, over.

Base to Behrle: Are you coming out with Cooper, over.

Behrle to Base: Affirmative.

Base to Behrle: Roger, out.

Cooper to Base: Opening the inner airlock door.

Cooper to Base: Opening the inner airlock door, over.

Base to Cooper: Roger on the inner door, over.

Base to Behrle: Give me a reading on your digital dosimeter, over.

Behrle to Base: It's not high.

Base to Behrle: Roger, out.

Cooper to Base: The inner airlock door is shut. Come and get us, over.

Base to Cooper: Inner airlock door shut, roger, out.

Cooper to Base: Opening outer airlock door, please hurry, over.

Base to Cooper: Hurry on opening outer door, over.

DEBRIEFING

REACTOR BUILDING RE-ENTRY AUGUST 15, 1980, 12:30 p.m. at the motel.

Bill why don't you start and you could all hand it around, just identify yourself.

Bill Behrle

This is Bill Behrle and I will try to identify some of the key events during the second containment entry. When we entered the reactor building I headed over toward power panel 3A to open breakers 1, 4, 7, and 8. I then went around the back of the stairwell, and I guess the highest reading I was getting over in that area was I think somewhere around 3 rem as I went behind the stairwell. And I went to the back into the stairwell and I tried to look down to see the water level and teletector down to see how close I could get to the top of the water level and I got the teletector about 5 to 7 feet away from the water which looked to me to be about a foot below the bottom landing and I got about 40 to 45 rem at 5 to 7 feet from the water level. I could see pieces of wood, what appeared to be pieces of wood floating on the top of the water and the water looked pretty scummy and pretty dark, it almost looked like oil. It looked like oil instead of water. I then energized the lights and they came on right away and I looked around, it appeared to me that all the lights that I could see on the 305 elevation came on. The mercury vapor lights came on low at first like they normally do, and then they built up in intensity as they warm up. I then took the A scrape and I took 2 passes with the scraper and maybe enough scrapings to make about a half of a cigarette if it were packed that way into the sample box. We then started to move back over in front of the air coolers to meet Marty and Sam, and I dropped the box for the A sample and the A sample fell onto the floor. I then bent down and took two scrapes over where the A sample had fallen on the floor and picked up some dark powdery rust that was in front of the coolers in addition to light orange rust that had originally been the A sample sample. So you will find both of those samples in the A sample box. We then proceeded to the closed

stairwell and started ascending the steps. As I remember, when I put the teletector into the bottom landing on the closed stairwell it read maybe 3 to 5 rem. I didn't keep it there long enough to get a stable reading because I was trying to keep my dose down. I went to the next landing up which would be the say the second landing, and the reading at that point was around 3 rem. The third landing the reading was around I believe 1 rem. The fourth landing the reading was a little bit lower than that it may have been 500 millirem. The readings just continued to decrease. I think the next landing it may have been 300 millirem, and the top landing it was 180. The top, the door was closed to the 347 elevation as was another door between 347 and 305, it was also closed. Marty Cooper opened the door at 347 and as I went into the, and by the way the stairwell lights were on at this time, and as I went into the operating deck at 347 the radiation levels got slightly higher from the 180 on the landing up to around 200, 250 as I first walked in. I then went behind the elevator or behind that closed stairwell so Marty could energize the lights, and I got a reading to 50 millirem behind the closed stairwell. Marty attempted to energize the lights, he had some problems. Some of the lights did come on. It looked like every other light came on around the ring girder. Those were the only lights I noticed that came on. I then took a general area survey around the internals indexing fixture, and it was reading around 100 to 200 millirem. I continued in a, I think moving in a westerly direction, I believe, but anyway from the closed stairwell over toward the open stairwell and stayed as closed to the containment wall as I could according to original plan, and the readings generally were around the 100 millirem; 100, 150 sometimes as high as 200, they tended to be more toward the 100 millirem level. And as I got to the head storage stand I did hit a pocket between the head storage stand and whatever is to the east of that, where I got about 300 to 400 millirems. As I proceeded from the head storage stand to the open stairwell the levels dropped back off again to 150 millirems. As I got to the open stairwell I teletected into the open stairwell and my radiation levels started to increase again; I got back up around 400 to 500 millirem over the open stairwell. I then came over to the D-ring and I took a reading on contact with the D-ring, and I don't recall what that was but it would be on the tape and I think it was somewhere around 100 millirems, and then proceeded along the D-ring to the reactor cavity and the

fuel handling bridge that limited my access to the reactor cavity. I teletectored out to head toward into the direction of the head and my radiation levels were somewhere around 100 to 125 millirems. I crawled over the first rail to the crane and I was now in between crane rails and I teletectored below the crane rail that is closest to the reactor head and I got a reading of about 150 millirem aimed directly at the head studs, say about 12 feet away from the head studs. That reading was about 150 millirems. At that point and time Marty Cooper and I had made plans to exit the building.

Mike Benson

This is Mike Benson, the photographer for the second entry. Upon entering the reactor building I set the two experimental packages down just in front of the elevator with the one experimental package head marked towards the D-ring wall as instructed. I then proceeded behind Bill, when I got so far away from the experimental packages I took 2 pictures of them to show their exact location. I then took 2 pictures of the instrumentation on D-ring wall; I think that was the outer core instrumentation panel box, and I took a couple of pictures over by the instrumentation in the D-ring wall by the open staircase that was supposedly for the seismic instrumentation. While Bill turned on the lights and was waiting I walked over to the equipment hatch airlock and checked the pressure delta P switch. It was locked in the up position, tried to force it down, but I did not have any success by just using the force of my hand. Bill at that time had gone behind the stairwell, I followed him behind the stairwell, took pictures back behind the D-ring on the west side as far as I could go. Pictures of instrumentation and some piping and valving. I came back, Bill seemed to be having problems reading the teletector. After understanding what he wanted, it appeared to read around 40 rem at the point that he had the teletector extended into the basement. I then took 2 or 3 pictures of the basement area, I'm not sure where the water was, the water, I can't recall how dirty it was but I did notice things floating in the basement, small dirt debris. At that time we headed back to the front of the stairwell where Bill took his scrape samples, I believe I took a picture of Bill doing this. I'm not sure though. The lights at that time had started to

get bright so that I could turn off my high-powered light. We then proceeded over to the mid point of the 305 where we met Marty and Sam. Marty was taking his swipes. At that point Bill dropped his scraping, so after a while I understood he wanted the scraper back and he scraped it back and rescraped the fallen rust into the box. Sam at that point had given me the second camera and we proceeded over towards the front of the stairwell where Marty took his scrape sample of the rust. I walked over the hatch and took a couple of pictures looking into the door, although I can't remember seeing the door from any angle due to the piping. I did take a close up of the bottom of the door to show a little bit of the bend to the door. I do remember that the hinges were all intact and the latch mechanism on the door jam was still intact. There was one cover for the hatch over the 305 floor that was cocked, maybe 3 inches from the others where there was a gap, but I did not look down through there since I had already turned my high powered light off. About this time we all gathered in front of the stairwell and I was the last up the steps. I am not sure of the order ascent, but as I got up to the first landing I allowed them to get a flight ahead of me and I took a picture going up the stairwell. As we got to the top of the stairwell at the 347 after Sam was the third person in, the door slammed shut. It appeared that the door was not in the lock position. It was cocked open because I don't remember turning that handle to open the door. When I opened it I'm assuming that there is some type of latch mechanism and it stayed in the open position. Upon entering the 347 elevation I started taking shots towards the D-rings of the indexing fixture and other components. I remembered walking over some copper ground wires. It appeared that it stretched from just inside the clear over to the open stairwell. Some type of ground wire. I took a couple pictures of that. Just about that time Bill and Marty were done. They proceeded around the back of the closest to the south wall on the 347. I tagged along as the lights were slowly coming on and proceeded taking pictures of all the refueling equipment that was on the 347. The only thing that strikes me now was that all the refueling equipment was rusted. The handling pendants that weren't stainless, they all rusted 100%.

The phone directly south was a western union phone was melted not to the point of one big glob, you could tell it was a phone, but the lower section was blistered, the dial was warped. I believe the receiver was solid with the body although I never tried to pick it up. Other small wiring in that area seemed to be completed derubberized from heat, and it was down to the bare wire. At that time we continued our trek over to the open stairwell. I went around the open stairwell back towards the incores, I got probably due west maybe a little bit to the north end of it and took two pictures of the incores. I don't remember any water or anything unusual from what I saw. I then proceeded back around the open stairwell to the front of the opening in the D-ring, took pictures of the fuel handling bridge, several pictures of the head. When looking down with the light into the canal, the small storage compartment for six assemblies at the south end had some water in it. I am not sure of the depth. It appeared to be a greenish, blueish color water from what I can remember. All of the neutron storage, neutron shield tanks were in place, dry, to the best I could see the bottom of them appeared to be rusty. The mirror insulation seemed to be pretty clean. The platform on the top of the mirror insulation with the handrails was beginning to rust or it had some rust on it. All the control rod drive, electrical connections to the top appeared to be intact, all the wires, all the electrical leads seemed to be hooked up properly. I didn't notice any of them broken. About that time I heard them give the orders that Sam and I could stay in but Marty and Bill were exiting. I took pictures of the overhead crane. I don't remember anything unusual about it. Everything appeared normal. None of the lights on the bottom of the polar crane were on. They were all off. Sam and I then started around the east side of the D-ring. By that time my camera ended and I had no more photos to take, but we continued just visually observing the area. There was a tool box on the 347 that appeared to be opened and the equipment inside was rusting. There was also a 55 gallon tank just to the north of the elevator shaft that appeared to be still sealed at the top, but was crushed like a pepsi can of some type. We then proceeded further around the D-ring over above the core flood tank. All the hatch was intact, didn't notice anything unusual except for the rust. Took several swipes. What swipes were left on Sam's back, one of the cable tray, one of the linear in that area, one off a tool box of some type and then of the D-ring

wall as we were proceeding back there was what seemed like an air tank of some type, a sandblasters tank set up on the D-ring wall that face of the gauges that was plastic was molten in the center. All the tags were removed, all the metal was rusting. It appeared to be in bad shape, although still in one piece, very rusted. At that time Sam had no more energy, neither did we so we descended the stairs as best we could to the airlock door. Sam went into the airlock, we were very cautious in taking his boots off and his gloves. Everything we brought out we bagged, I tested the first hose on the D-ring wall and I expected to have some breaking of the hose, but it was very solid it was rubbery it did not crack in any way. At that time I barely made it to the airlock door and we exited.

We put in the two lights that were left behind by the previous exitors. The tools, it looked like an allen wrench, a hammer, the equipment that they used for the radiations monitor we bagged that brought it out, the plate that Sam had brought from the around the D-ring wall on the east side we bagged that cameras on our person we bagged those, bagged the RO-2's, we bagged the experiment, both the TLD tree and the other experimental package. Everything that I can remember we took in we bagged out. We left the booties and our gloves either in the white bucket that was in there through the whole accident or to the side of the bucket we may not have put everything in the bucket.

Martin Cooper

This is Martin Cooper. We entered the containment, and after everybody was in I closed the inner airlock door. When Sam Griffith was done taking the picture of HP-R-211 I proceeded to try to unscrew the connector on top of HP-R-211. First I removed it from the slide, it wasn't in tight it was loose. It slid right out and I held it in my hands to try to loosen the connector. The connector was on tight, it appeared to be corroded a little bit. You will be seeing it when they examine the detector. I brought it out. Then I got the channel locks out, put that on

the connector to try and loosen it up. The channel locks didn't appear to be wide enough and I tried to use some force on it, get some leverage and it still wouldn't loosen up. And then the channel lock slipped up off the connector under the wire and broke the wire right off on top of the connector and then I emptied all the tools out on the floor. We had already discussed that we were going to leave the tools in and just put the two detectors, the new one and the old one in the bucket. I left it right there. Then proceeded north to meet Sam Griffith who was taking pictures down that side of the reactor building. He met me and told me he was having some problem with his camera, when he seemed to get it working again he was taking pictures and we took pictures of the vibration detector panels. And then Sam did the masslin experiment, took a swiped, masslined it and then took another swipe, and we put those in our plastic swipe box. I then got number 1 swipe of Sam's back, took a swipe from the area right near the bucket by HP-R-211. We then proceeded over to meet Behrle and Benson. We met them about right in front of the air coolers. I got the scraper off of Behrle, threw down my collector, took my scrape; I didn't seem to get much off of the floor. I just took one pass with it then shut it up, put the rubber band around, and I believe I gave the scraper to Benson. He was holding onto it, and then Behrle got it off of him. Then I got swipe number 2, I took that in the center right of the floor near the air cooling coils right in the middle of it. Took that swipe, put it in that heavy box. The three of us got together and proceeded to the stairwell. Behrle proceeded in first. Took some teletector readings and then he started making it up the steps. I followed him up the steps afterward with Sam Griffith behind me, and we moved up the steps fairly rapidly. Once we got upstairs, myself--the door at the top of the stairs and also the door in the middle of the stairway was shut. The door at the top of the stairs, I opened it, it opened freely, the door handle was covered with tape. I guess to keep from scratching up the door handle so that it operated very well. Behrle led me behind the stairwell to turn on the lights on the upper level. We picked the first on button we came to there was no problem, the next one was no problem. The third light switch button we hit we got some loud contactor noises coming from above our heads. We turned it back off looked around to see if anything was smoking or burning and tried it one more time. We got the noise, still nothing, turned it off again and tried it one more time, and then we turned it off and said that

is not going to work. So we did start getting lights in the upper level from the first two buttons, but not all of them were coming on.

You manually had turned it off then?

Yes. It didn't trip off it was still making all the noise until I manually stopped it. Then we found Sam Griffith, take another swipe right there in the area by the stairwell. I took swipe number 3 on the top landing on the diamond deck in the stairwell, another swipe on the floor right outside. Then we proceeded around to the west side of the reactor building hugging the liner. I took two more swipes on the liner right near the headstand. I believe that was 6 and 7. I also took another swipe, and the floor in front of the head stand I didn't take it behind it. I took the swipe in front of the handling fixture. I took swipes on the liner right here and then proceeded over here to where Benson, Behrle, and Griffith were. I got some more swipes. This time I was getting very tired; decided to start getting swipes where I felt like, and I took a swipe on the vertical face of the two handling bridge track. That was definitely swipe number 5. At that time I reported to base that I was getting very tired, and then after a little more consideration I decided I was getting too tired and too hot and that I had to come out. Behrle was taking radiation readings over the head at this time and he had asked me if I wanted to stick my arms a little bit further to get a closer reading and I told him I just couldn't do it. Base told myself and Behrle to come on out. And we started to proceed to the stairwell and came down the stairs fairly rapidly. Then I got down the stairs first, waited for Behrle at the airlock, and I was picking up the bucket and the swipe box and placing them on the ramp. I had to open the door to the air door, after I opened the door Behrle came up to the airlock, sat down inside the airlock, started taking off his boots. His right foot all of his yellow booties came off, and I pulled the rest of them off, and he swung around and put his feet inside the airlock, and I pulled the top bootie the left foot, and he swiveled all the way around to get inside the airlock to stand up. I went back and got the bucket with the radiation detectors and the swipe box. I placed them on the floor when I came down the stairs. Put those inside the airlock, and then got in and took my booties and outer gloves off as I was stepping into the airlock. Pulled the airlock shut from inside and that's it.

Sam Griffith

This is Sam Griffith. Went through the airlock, and after going down the ramp I was supposed to take a picture of HP-R-211. I had difficulty in getting the camera to operate. After approximately a minute or so I realized that the on/off switch on the camera was off and when I finally turned it on and snapped a picture, Marty Cooper had already had the ARM probe off of the wall and was trying to disconnect it. After taking a picture I proceeded off around the west side to open breakers 1, 7, and 8 on PDP 3B panel. When I got there - east side sorry. When I got there I found the breaker number 7 was already in the open position. The panel box was opened and I closed breakers 1 and 8 - opened breakers 1 and 8. The breaker panel was on the west side R14 pier. After opening the breakers and letting the command center know I proceeded to take pictures P2, P3, and P4 of the D-ring wall. Picture 3 and 4 are of the instrument rack, I believe it is a makeup instrument rack, and P4 is the piping underneath of the B core flood tank. It appeared that there was some leakage underneath of the core flood tank, however, the floor was dry at this time. Did you get any radiation readings back there? I thought that appeared out of normal.

All the radiation readings on the east side of D-ring appeared to be approximately a 4 to 1 ratio, beta to gamma.

Do you remember levels?

Levels, the floor drain in front Pier R-12 and R-11 was 3 rem open window contact with the floor drain. Closed window was 500. 500 millirem. Yes, I started to return to Marty Cooper and he was on his way over to me. At this time he handed me the special smear survey with the maslin cloths. I took a swipe of the floor, maslined approximately a 1 square foot area over top of where the swipe was taken, and then I swiped another area beside the original swipe which was already maslined. Marty Cooper and I then went over towards the air coolers to go back to Behrle and Benson. At this time, Marty removed some smears from my back and I took a rad reading on penetration, floor penetration rem 251. I don't recall what the reading was. I think it was somewhere between 3 and 4 rem open window. We got

that reading recorded too. At this point the four of us started to go back to the stairwell, and at that point I realized that I had not gotten the tie wraps off of the piping. So I took the dykes and I then returned to the east outside containment wall and took 4 tie wraps, cut 4 tie wraps off and deposited them into the bucket in which the arm or HP-R-211 was in. The four of us proceeded upstairs. Open window dose rate readings were taken on all landings and recorded back at the command center. The dose rates seemed, appeared to fall significantly from one landing to another. All the readings were taken directly at waist level over top of the decking on each landing. No readings were taken in the open stairwell or up against the wall. As we got to the -

At this point did you abandon the beta shield on the R02?

Yes, the beta shield was left at the 305 elevation outside the door.

From here on out did you attempt any readings with the slide window?

Not going up the steps.

Okay. You reported everything as open when the readings.

However, once I got on the 305 level I did open and close the window a few times. On 347, Bill Behrle and Marty Cooper were the first ones through the door I then walked in behind and the door slammed shut behind me. Realizing that Mike had not come I reached for the door and Mike was already opening the door. The four of us entered the readings right inside of the refuel floor at the stairwell door, seemed to be somewhere in the neighborhood of 100 millirem.

This is window closed?

This is window opened.

At waist level?

At waist level. However, on the deck plating which diamond plate just outside of the stairwell door I had a reading of 4 rem, and I could not find the sources. It was not at the floor, it was not at the wall. And I tried twice to locate the sources and all I could find was the 4 rem reading. This is diamond plate, as walked through the door it was right in this area right here. As I walked to the indexing fixture I had to reduce on two scales the R0-2A, and right up against the indexing fixture I had a reading of 40 millirem, open window. As we went back to turn on the lighting, behind the stairwell the R0-2 remained between 40 and 50 millirem.

And these are still all window open?

These are all window opened. At this point Marty and Bill tried to turn the lighting on and they experienced some difficulty in keeping the breaker closed. The one section of the lighting, it seemed like every other light all the way around the dome was on and as we remained on that elevation it did definitely get brighter. Approximately 5 minutes into the survey on that elevation at that point turned off my emergency light. We proceeded around the outside wall of the containment towards the head stand on the east of the indexing fixture; readings were at waist level 200 to 300 millirem. As I got to the head and internals handling device, the stand in which it was setting on, I believe I gave those readings back to the command center was 2 rem open window contact, and I think it was approximately 400 to 500 millirem closed window. Those were contact readings on the concrete base underneath the head handling devices. At this point I approached on the D-ring side of the head stand to survey the pressurizer spray line which is a 3-inch approximately 6 or 7 feet above the floor. When I got the elbow beside the D-ring I took a contact reading on the elbow and it was 2.5 rem closed window. Approximately 6 feet away I took a reading contact reading on the D-ring just opposite the pressurizer and had a 100 millirem open window reading. Marty then informed me that I was getting away from him and I had at this point forgotten all about the fact that I had two smears on my back. I tried to stay with him at that point. The four of us approached the reactor cavity, and I don't remember readings over the cavity. I don't think they were anything higher than 100 millirem. However, the fuel bridge manipulator crane was very corroded around the tracks. The floor around the fuel bridge was very very dirty,

and the reactor cavity itself was very clean. The head looked very clean. There had seemed that all instrumentation was intact. The control rod drive cables all seemed to be neatly placed. As Mike said before there was water in the 6 new fuel storage vault down in the cavity. I could see the second fuel bridge, however I could not see its physical condition which was back towards the fuel handling building. That is the one we saw on the TV tapes. Cooper and Behrle were getting ready to exit the building. I was informed by the command center to obtain the teletector from Behrle, and as I got to the stairwell door he was already two landings below. I returned to Mike Benson who asked me to hold the lighting down onto the head so that he could get some further pictures. After taking a few shots, he turned over one camera to me and proceeded around the east side of the D-ring towards the grading overtop of the B-core flood tank. We noticed insulation off an instrumentation box was laying on the floor and that mirror insulation I picked up and returned to the airlock. It is bagged and it seems to me, it was identified. We have the numbers. Okay. That insulation is in the airlock. There was another piece, it looked like a piece of plate steel that was laying the floor. Benson didn't want me to pick it up because it appeared to be wet to him, and he didn't want to contaminate anything with it. Benson took about 3 of 4 swipes since we were out of film. I tried to get behind the cable case to get over to the transfer canal, and with equipment I had on it was physically impossible. Readings on the grate work over top of the core flood tank were transferred back to the command center. The difference in closed window/open window, there was none, it was the same readings.

Were you still using the R02?

I was still using the R02.

Did you have the teletector at all back in here?

No. I didn't have the teletector.

You stuck with the R0-2 all the way?

Right. They went down Behrle. Benson; and I then returned to the 305 elevation back to the airlock and started to bag equipment to get everything into the airlock.

The two what were supposedly plates that were identified in previous pictures, you inspected both of them?

Okay; as we were gathering the equipment into the airlock I remembered the plate that had to be returned, walked over to the wall, and as I picked it up I realized that it just wasn't a steel plate. It was much lighter than I had expected. However, the plate which was directly beside it was definitely diamond plate. It seemed like the plate that I picked up was of a masonite material with some foam on it. That was put into the airlock and bagged.

Did you bring out the diamond plate?

I did not bring out the diamond plate. The blank flange plate looked to be approximately a 10- or a 12-inch blank flange plate, looked very heavy. So I left it there. Benson and I bagged the experiments, all the left equipment from the previous two, and we entered the airlock and closed the inner door. So there was no metal plate sample brought out. No. But some stainless steel insulation was. But mirror insulation was.

