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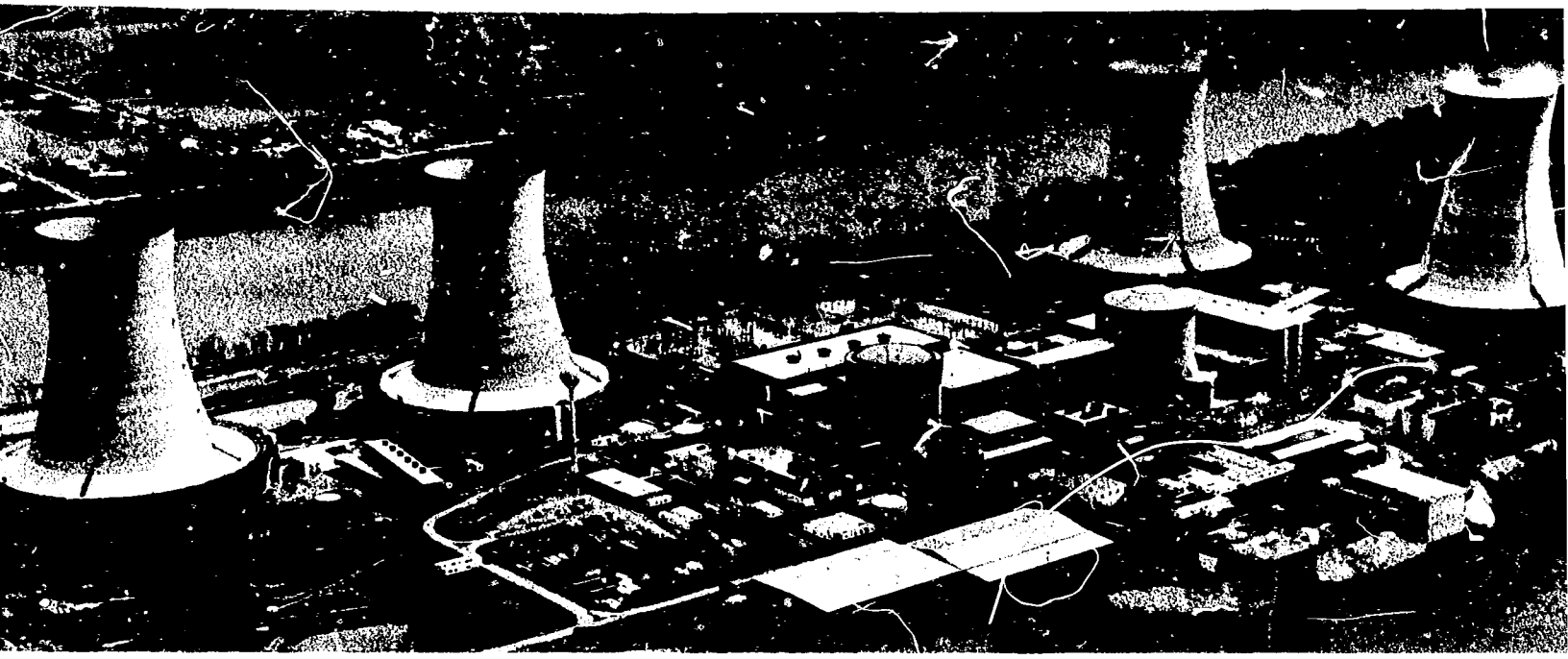
July 1981



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QUICK LOOK REPORT
ENTRY 3
THREE MILE ISLAND UNIT 2
OCTOBER 16, 1980

Bechtel Northern Corporation/
General Public Utilities Nuclear Corporation

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

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

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ABSTRACT

This report summarizes tasks performed during the third entry at Three Mile Island Unit 2. During the entry into containment, which was made on October 16, 1980, additional beta, gamma, and neutron surveys were performed to supplement data obtained on previous entries. In addition, several maintenance tasks were completed including testing the operation of both equipment hatch doors, replacing a loose parts monitor system pre-amplifier, and removing a source range monitor. The five-man entry team accomplished these tasks in about 1-1/2 hours.

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QUICK LOOK REPORT

ENTRY 3

THREE MILE ISLAND UNIT 2

OCTOBER 16, 1980

ENTRY 3 DEBRIEF TRANSCRIPT

Edited for clarification purposes. Numbers in parentheses in text correspond to those on the figures.

William (Sam) Griffith
Nuclear Support Service
Health Physics Technician

My name is Sam Griffith. Today five of us went inside the Unit 2 Reactor Building. We went down the ramp to the northwest side (1)[a] and removed some cabling from a dolly which was on a cart. We put herculite down on it and set equipment on top. We noticed that the upper portion of the elevator on Elevation 305 was bowed out approximately 6 inches from the lower door (2). Pete Keegan and I conducted a survey behind the elevator shaft and air coolers. At first, it seemed like we weren't going to get back there (3), but we were able to get there by crawling. When we got to the other side (4), we found out we needed to retrace our path to exit because the other passage out was too narrow. We went back by crawling through all the angle iron (4). It was just large enough for us to pass.

There was no detectable beta radiation that I could find on any of the floor drains behind the air coolers. The floor area from about the B to the E fans was covered with mud. It looked like river mud. There was a lot of water there as well. We came back (5) and proceeded to climb the front side of the air coolers. Right between the A and B fan, the gamma reading jumped to 2 rem/hr. I believe it was from the covered hatch (6). At the other end, the readings were much lower, but I don't remember the levels. It is recorded on the survey.

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a. Refer to Figure 1 for corresponding numbers (1) through (12).

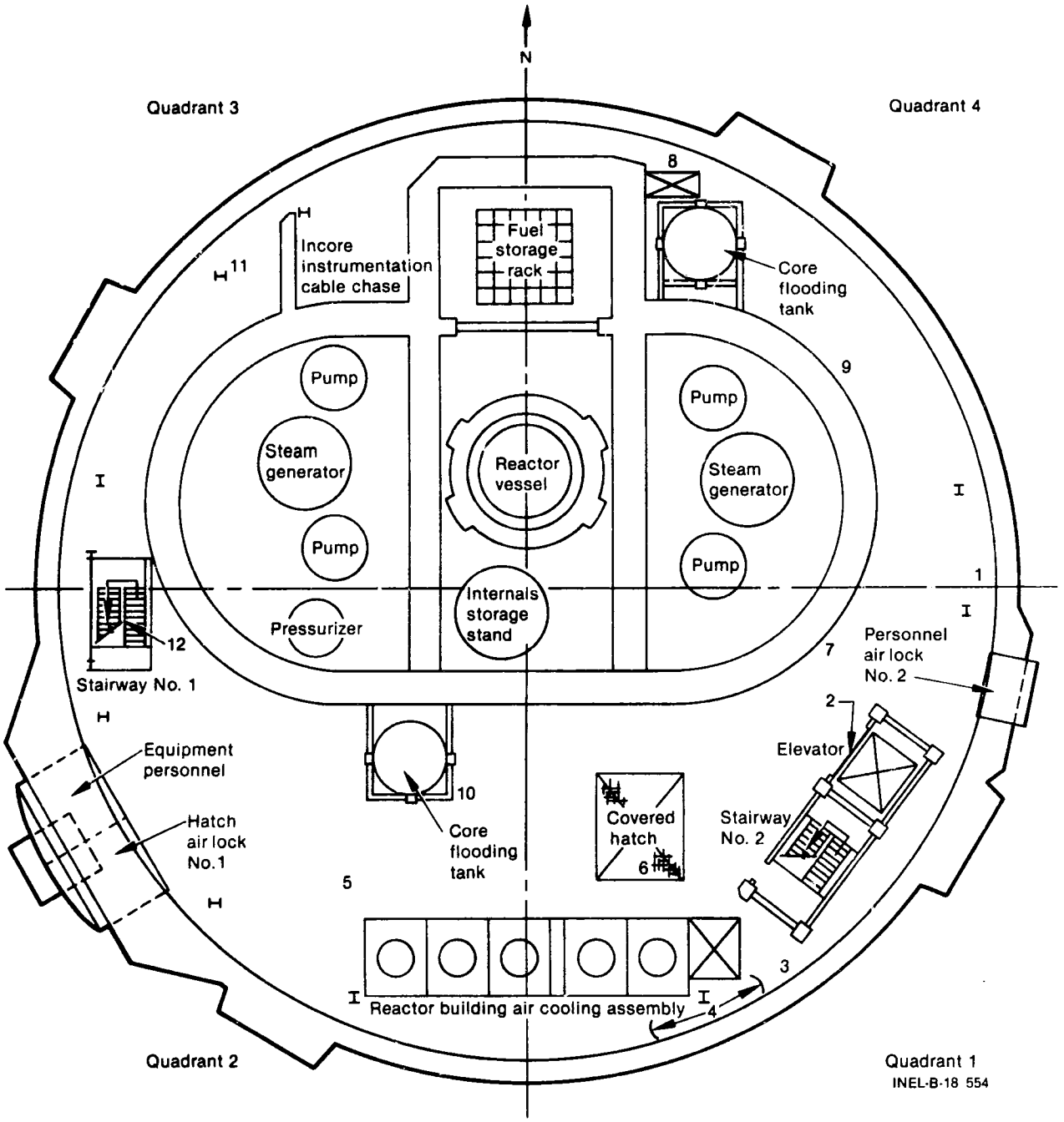

Figure 1. Elevation 305, Entry 3 task locations described by William (Sam) Griffith.

At this point, Larry Eberly looked like he was completing work on the source range box. I came down the ladder (5) and Pete Keegan remained to do his swipe survey. Larry and I went over to the first vibration monitor pre-amp box (7). He began work while I went around to do the pictures of the A Core Flood Tank. I wanted to get rid of the camera as soon as possible. Continuing to survey, I crawled back behind the CRD cable chase and over in the direction of the transfer chute tubes (8). There were no significant dose rates over there. I did notice that at different points around the steel liner, the gap in the floor varies from 4 to 12 inches wide on both sides. The reading there is 1.5 rem/hr gamma and no beta. The A Core Flood Tank is very dark and contact readings on the core flood piping and make-up lines are the same as the general area readings. That is not the case with the B tank which was much higher at 5 rem/hr. There is a lot of dirt and scale underneath the A tank.

Larry came over and opened up the second vibration monitor pre-amp box. I took a swipe on the inside of the box. Larry went back to the personnel hatch. In the meantime, Pete had come over and scaled to the top of the A Core Flood Tank. When he came back down, we went around to meet Richard (Rick) Croll (10). Pete tried to climb to the top of the B tank and I went towards the incore instrumentation cable chase. The dose rates in this area from what I have seen so far are the lowest on Elevation 305 (11).

It measured somewhere around 100 mrem/hr back here at the chase itself. Direct shine from the water is anywhere from 8 to 10 rem/hr 5 feet from the open stairwell as it shoots past the landings (12).

When Guy Wise was finished with the equipment airlock repair, we all went back to the personnel airlock at which time I was informed that Pete would have to go back out with the work party.

Richard Croll and I proceeded to the Elevation 347, dropped off the PNC-4 neutron detector, and went up to the elevator room. The elevator room was dark. We walked one step inside the room, but we withdrew since it looked very clean and we didn't want to spread contamination unnecessarily. There were no signs of fire or smoke in the elevator room.

We climbed the ladder to the top of the elevator shaft, opened up the hatch and went out on the roof. General area readings were about 250 to 280 mrem/hr in the vicinity of the HP-R-214 radiation monitor. The lighting on Elevation 347 was brighter than the last entry. However, some of the light bulbs that were on the last time are now burned out.

The polar crane is easily visible, but its hard to identify where the wires in question come from. The trolley crane cables seem to be intact. The crane is sitting somewhat like this. We took two panoramic pictures. The first is a shot looking at the B D-ring (13),[a] and the second is looking towards the pressurizer (14).

We went back downstairs to Elevation 347. Coming over to the top of the B Core Flook Tank, we noticed that the grating was not tied down and it should be movable by about three men. It's a pretty thick grating. You can see piping and valves underneath the grating, but I didn't take a photograph due to the poor lighting. I did get a picture of the D-ring wall just opposite the pressurizer where it looks like the burn mark was coming through the penetration. It is not tygon tubing or rope, but a wire, probably the three conductor type. We proceeded back and picked up the RO-7, left inside last entry, off the pump stand. I then took three pictures each of the telephone (15) and crushed drum (16). We came over to the A and got one picture looking towards the main fuel handling bridge. After coming back, I got a picture of what was believed to be the sand blasting equipment. It looks to me like a small demin water tank or something else mounted to the wall. There were some gauges associated with it. It is located in this area (17) where the tool boxes usually sit.

The plastic wrapped around the long reach tools was melted away (18). We picked up two steel brackets that hold on the polar crane cables, and two rubber insulators that go over those brackets. Also I brought out a piece of rubber insulation off the polar crane cable and an aluminum piece from the cable. I am not certain what the second object is. I took a picture of the 626 penetration (19) which was surrounded by debris from the

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a. Refer to Figure 2 for corresponding numbers (13) through (20).

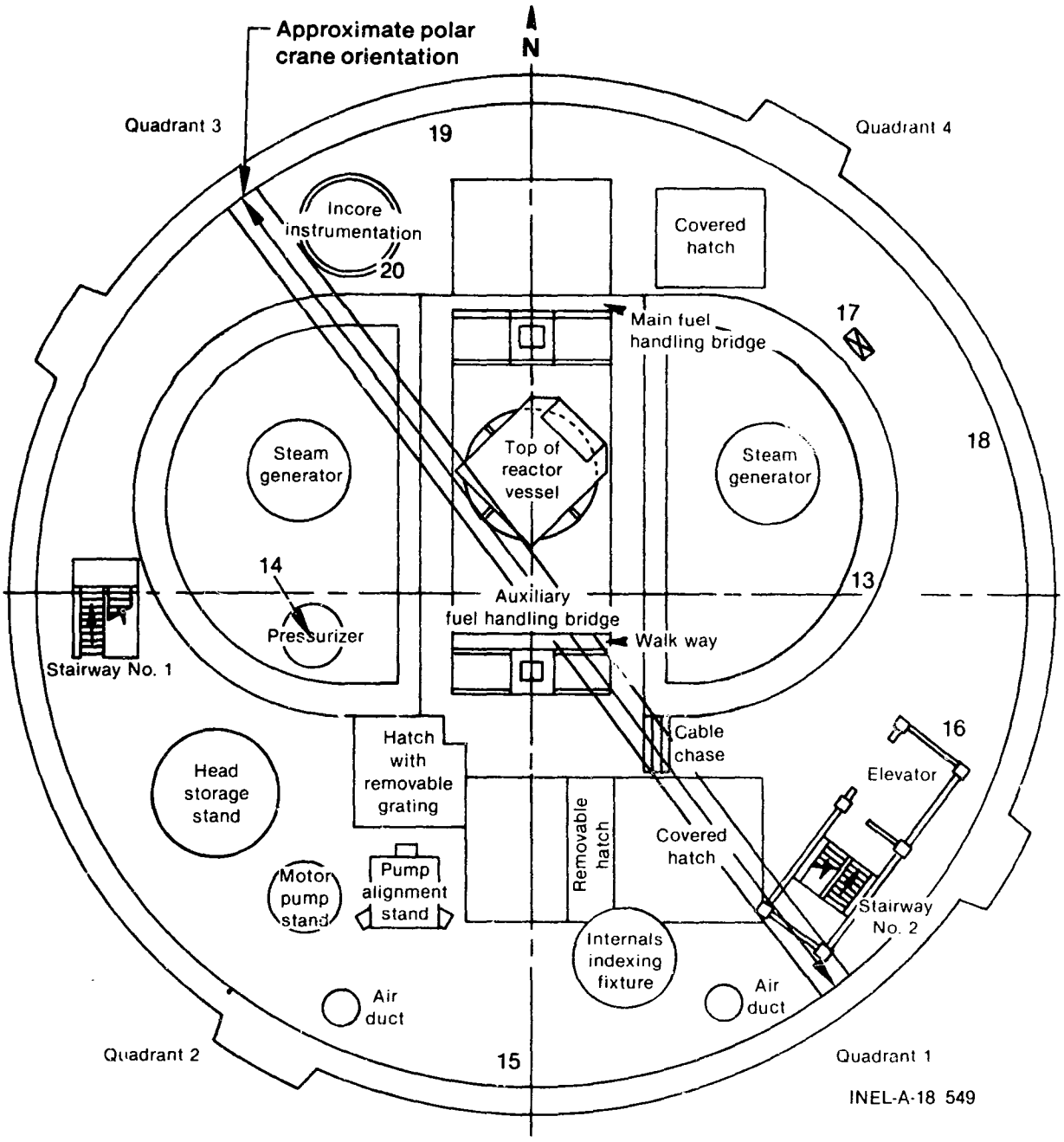

Figure 2. Elevation 347, Entry 3 task locations described by William (Sam) Griffith.

drilling. Rick Croll found a very high beta over the top of the incores (20) closest to the cavity. It looked like there were a couple sets of PC's laying on the floor. There was definitely a white chemical buildup on the floor around the incores on this side (20). We came back down to Elevation 305, moved the cart over to the ramp, removed all the equipment, set it in the airlock, and departed. It was comfortable in there. The lighting was good, and I did not become exhausted.

One thing I forgot to tell you was that the line going into the B Core Flood Tank read 5 rem/hr on contact.

Lawrence Eberly
Metropolitan Edison
Instrumentation and Control Technician

My name is Lawrence Eberly. I was one of the five men to enter the Reactor Building today. Upon entering the building, we moved directly to the vibration detector 7025 and verified that this was the vibration detector we has seen in the prints. From there, we moved directly to the source range amplifier and Richard (Rick) Croll took a swipe. I opened the door and verified that there was no heat shrink on the cables and I proceeded to remove the cables and mark them as such. I installed the jumpers and removed the source range amplifier. I was not able to bag it as the bags were smaller than the amplifier, so I placed it in the bucket. Upon finishing this, I moved back to the ramp, to the personnel hatch, there Sam Griffith met me. We removed the cover of the vibration detector and I proceeded to remove it. It was mounted in a 45 degree angle, which is a little different than what was indicated in our picture. I removed the wiring, removed the detector, installed the new detector, and bagged the old detector. After putting the cover back on, I moved back from there to the ramp and went to the door. I went to H-PR-211 and cut the small length of cable. I found it to be awful brittle, as it cut pretty easily with a pair of dikes. This was bagged and put in the bucket. From there we went to the vibration detector 7023, where Sam took swipes. I proceeded to remove this detector from the box. Right below the detectors there are two penetrations to the floor and it looked like a pretty high reading on my detectors. Sam said it was 1.5 rem/hr at the penetrations. So instead of trying to remove the wires by reaching in, I removed the bracket and took the wires off. Then I shoved them back in and put the cover back on. I put the detector and the bracket in the bag. From there I proceeded to move back to the ramp again. I noticed a lot of tags and miscellaneous items in the floor drains. It looks like it was washed towards them. The cable on H-PR-211 seemed to be very brittle. I expected to have a harder time cutting through it. Other than that, I was too busy trying to do my other duties.

The equipment we worked with was very good. I had no problems with it. The MSA masks we had were very good.

Richard Croll
Metropolitan Edison
Senior Radiochemistry Technician

I am Rick Croll. Today I entered the Unit 2 Reactor Building as one of the party of five. Initially Larry Eberly and I walked over to the vibration detector to verify it (1)[a] was in sight of the air handling equipment. Then we both walked over to the source range monitor (2), swiped the outside, did a radiation survey around it, and Larry opened it up. I walked part of the way back over to the personnel airlock (3), motioned to Guy Wise to follow me, and we went over to the equipment airlock (4). While he was working on that, I discovered my camera would not work. I spent a lot of time trying to make it work and still don't know what is wrong with it. By then Guy had opened the door. I went in to do a survey carrying the oxygen monitor. Initially it alarmed and we both came out. We notified the command center and waited a couple of minutes while it cleared. Then Guy went back in, and I worked on the camera some more, but still didn't get it to work. Having thought that the equipment airlock was fixed, we both came over to the personnel airlock. When we were informed by radio that it wasn't fixed, we both went back over again. Then Guy went in the airlock, shut the inner door, and I surveyed around it and in between the stairs and the air cooling assembly. Then Guy came out of the airlock. The first time he was in, when the door was open, I wiped of the door seal. As he said, it wiped clean. Then when he came out the second time, we both went over to the personnel airlock. Larry was already there.

I dropped off the camera and oxygen monitor. Sam Griffith and I went up to Elevation 347 taking the PNC-4 detector (5). When we got to the top of the stairwell, we went in the elevator machine room (6).[b] Like Sam had previously said, it looked clean in there. There was a small partially

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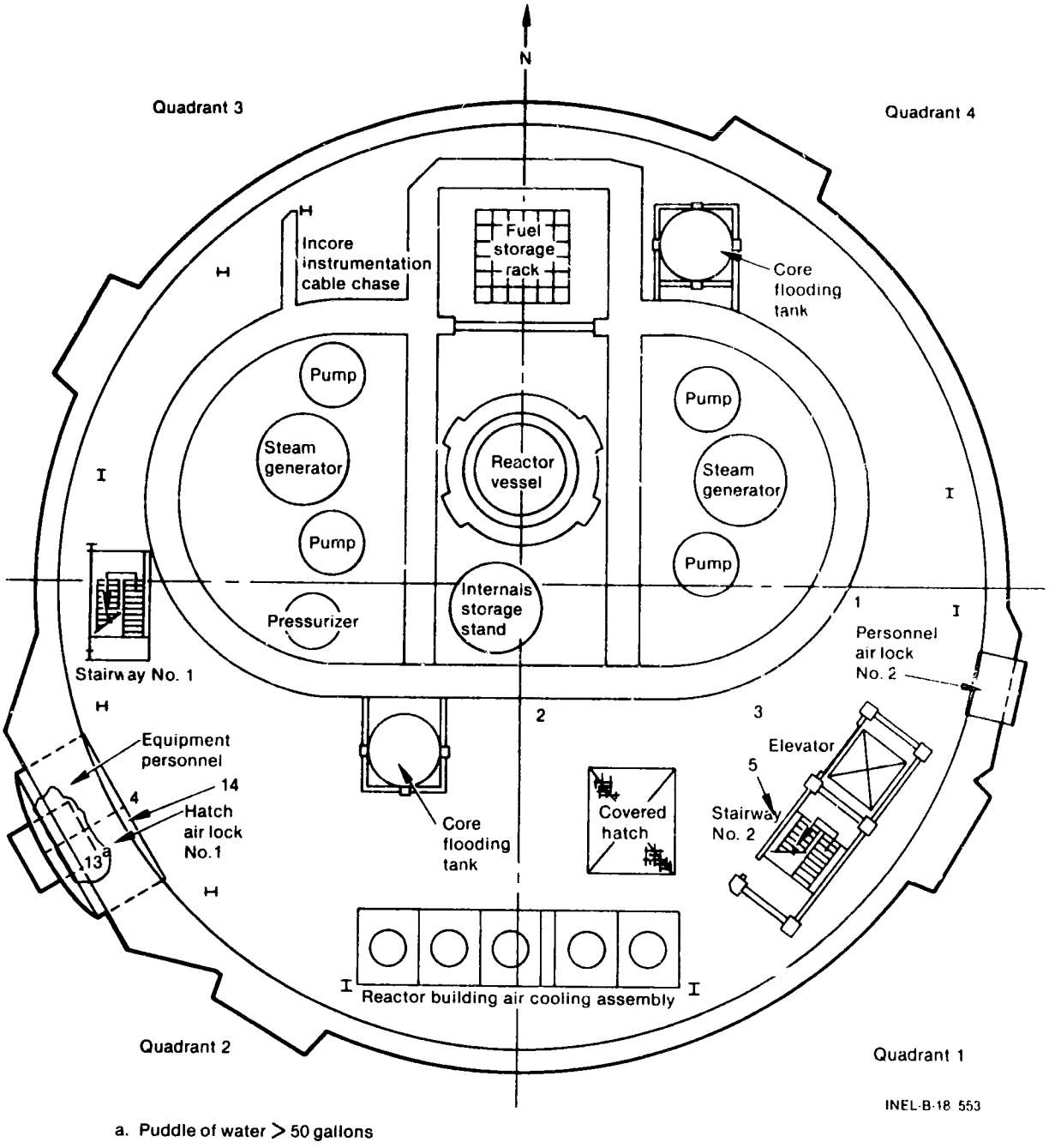
a. Refer to Figure 3 for corresponding numbers (1) through (5).

b. Refer to Figure 4 for corresponding numbers (6) through (12).



a. Puddle of water > 50 gallons

Figure 3. Elevation 305, Entry 3 task locations described by Richard Croll.

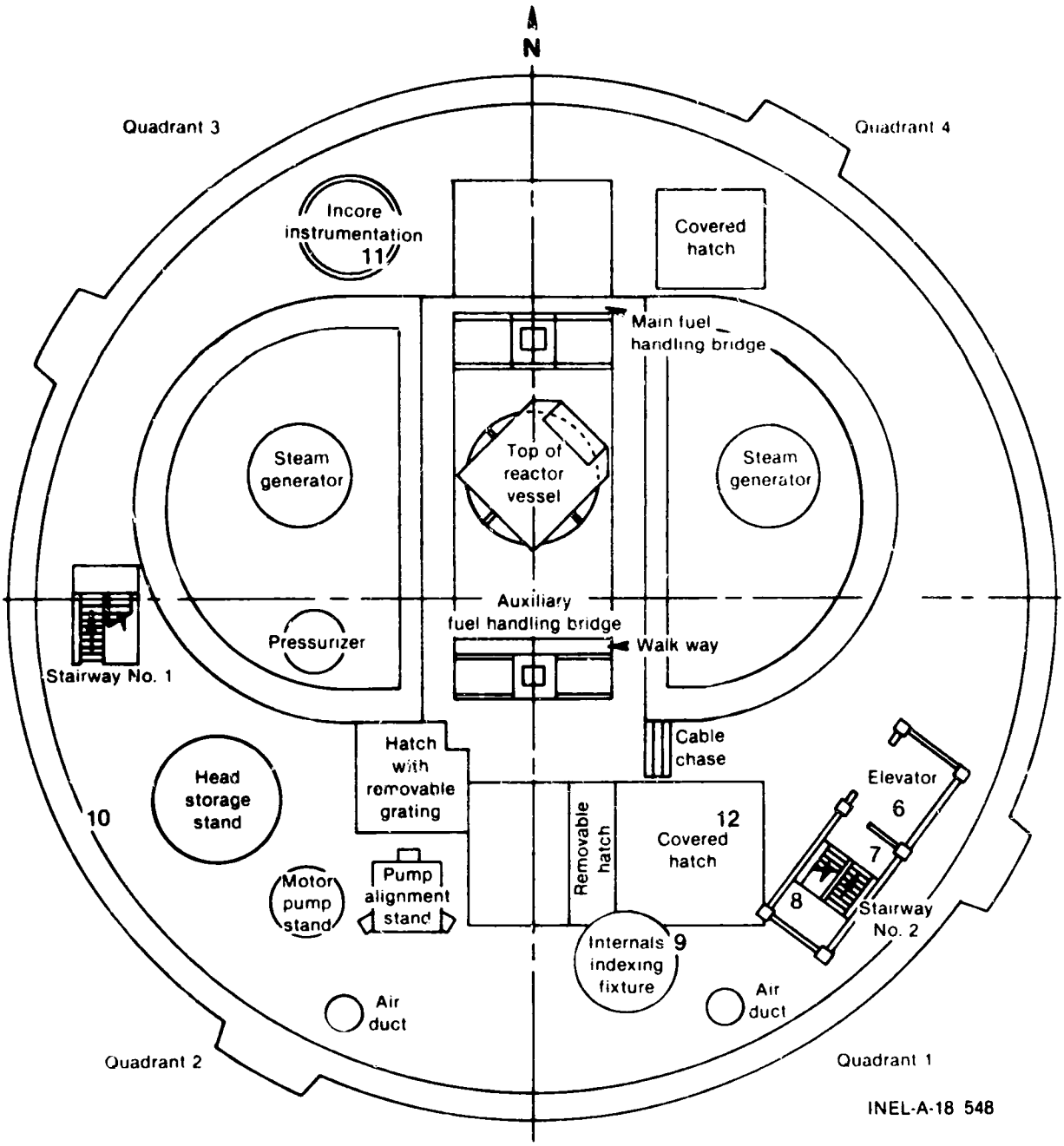


Figure 4. Elevation 347, Entry 3 task locations described by Richard Croll.

melted yellow bag in the corner. I couldn't tell what it was. It looked like there was an air duct up along the top where the blackened grating was on the outside.

We then left the room and climbed the ladder (7) over to the roof of the elevator. We looked around, but couldn't tell where this wire came from. It's pretty dark all the way up to the top of the dome. The dose rate over in this general area of HP-R-214 (8) was about 200 mrem/hr. Then we went down to Elevation 347. What we thought were cable laying over here were tandum copper bars (9) from the top of the dome. It looked like there was some kind of insulation that had been burned off. Over here by the jib crane boom support (10) was a piece of cable. There is cable thruway about 15 feet high with a piece of cable running through it and dangling to the floor. The penetration was marked S-20. I couldn't see anyplace where the other end of it may have come from. It was just hanging there. We then walked around the rest of the Elevation 347. The only high reading I got was in the southeast part of the incore instrumentation area (11). It was 2 rem/hr gamma and greater than 20 rad/hr beta. I am not sure of the number exactly anymore.

Other than that, there was just some miscellaneous items here and there that we picked up. There were no other survey readings that were out of the ordinary. After we collected the items, we came back over here to the stairwell and took a reading with the PNC-4 (12). It was less than 50 counts per minute. We went downstairs and out the personnel airlock. During the equipment hatch (13).[a] Again, I am not sure of the reading exactly, but I think I remember it was about 100 mrem/hr gamma, 400 mrad/hr beta. Further out away from the pit (14), it was about 200 mrem/hr gamma indicating at least part of that was background. I did not check a beta reading further out.

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a. Refer back to Figure 3 for corresponding numbers (13) and (14).

Guy Wise
Metropolitan Edison
Mechanical Mainenance Technician

My name is Guy Wise. I was one of the five that entered the Unit 2 Reactor Building. After closing the inner personnel door, I waited at the bottom of the ramp until Richard (Rick) Croll came back where we went together to the equipment hatch. I sprayed the liquid penetrating oil on all the joints and the latches. I checked the pin that was the interference, and it is rusted pretty bad. I opened the pressurizing valve by looking into the end of it to make sure it was open. I rocked the handwheel back and forth in order to get it to work because everything was rusted so bad. After that was opened, I pushed the pin down, cleaned it a little bit to make sure it was down the whole way, and then opened the door. I went inside, worked the outer door handwheel to see what was really going on there. The pin is also rusted very bad. I pushed it down as far as it would go against the solenoid. I came back over to wipe the O-rings off, the rust on the outside of those O-rings is bad, but between the O-rings is good. The surface of the door itself is good. I closed the door and looked through the small window, and I thought the man out there gave me the "two" signal, but he had given me the "three". It would not work. So thinking that the outer door was alright, I came back over to the personnel hatch where the command center radioed that I should go back over and try again. I then asked for permission to close the inner door and operate the outer door myself. I found out that the arm would not pass the pin with so much rust between the solenoid and the pin. It would not come down far enough. So by working a little bit, I got it past, but I could not get it back. I removed the two bolts and took the pin off. The solenoid is a separate unit. I put it in the closed position, checked the inner lock box, closed that again, came out to the inner door, closed that one, came back to the personnel door where Larry was waiting, and we exited the building. I have no additional observations that have not already been made. I was never in the building before.

Peter F. Keegan
Metropolitan Edison
Senior Radiochemistry Technician

My name is Peter Keegan. I went into the Unit 2 Reactor Building today. Initially upon entry, Sam Griffith layed down the herculite on the dolly and I was supposed to put down the E-530-N, but it was strapped underneath my airhose so it couldn't be removed. I was going to lay down the spotlight, but it was also strapped underneath my airhose so I couldn't put that down. I took the teletector from Sam Griffith and went behind the elevator shaft to start surveying (1).[a] The general area is about 200 mrem/hr right behind the elevator shaft (2). The first drain back there is reading about 2 rem/hr about six inches off the floor. I went down to the end of the elevator shaft and the stair number 2 (3), and it was just about 200 mrem/hr all the way along back there. It was so congested there (4) that I decided to come back out and go around and see if I could find an easier entrance to get behind the air handling units, before we decided to go back that way. While Sam was still out setting up his equipment, I walked out around in front of the elevators and looked in between the stairwell and the air handling unit A. It looked even tighter than location (4). I walked around to the end of the air handling unit E. There is another piece equipment on the end there not in this diagram (5). That piece of equipment comes within 6 inches of the wall, and it was impossible to get in back that way. So that time I tried to radio in that it didn't look like we were going to be able to get through back there, but my radio wasn't functioning very well. I tried to get that word to Sam Griffith, and about that time we decided to go back behind the stairs again and try to get through to the maze of angle irons. Then we did go around the round ducting (4) as Sam Griffith said and went back behind the air handling units, and took measurements along there (6). The space along the wall almost from the air handling unit A through air handling unit D is reading just about general area (about 200 mrem/hr). At the end of air handling unit E, the crack reading goes up to about 2 rem/hr. I assume there is

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a. Refer to Figure 5 for corresponding numbers (1) through (13).

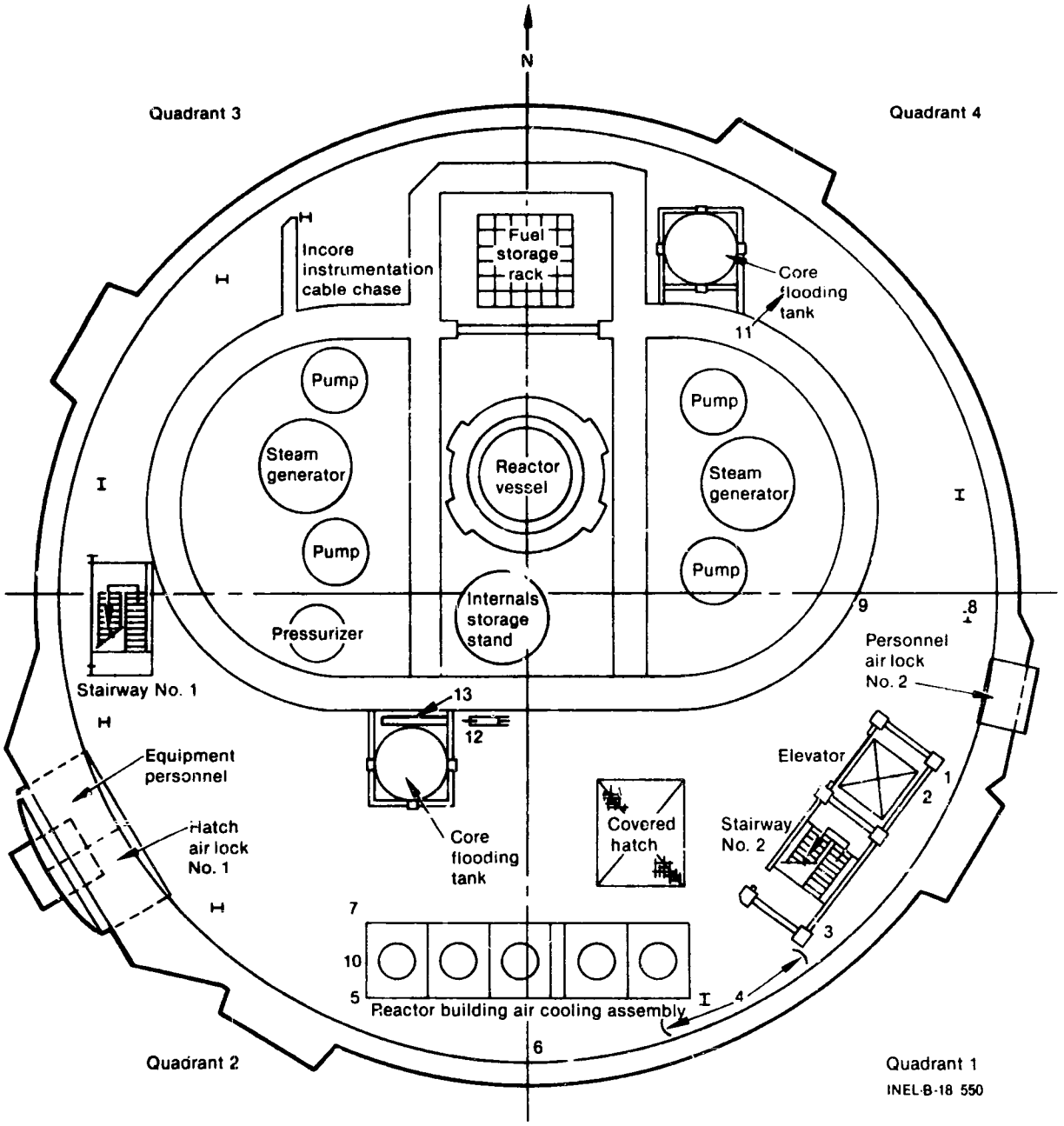


Figure 5. Elevation 305, Entry 3 task locations described by Peter Keegan.

something underneath that is blocking the shine that is coming up from air handling unit A through D, then you have an open shot down to the water down and around E. The general area down there also goes up about 100 mrem/hr. The general area down towards E is 300 to 500 mrem/hr, and it is 200 to 300 mrem/hr the rest of the way around. We couldn't get out that way so we came back out around the elevators and did our lower survey along the front of the air handling units. Sam Griffith went up onto the top and commenced his survey (7), and I went back and got the two smears from the dolly (8). About that time Larry Eberly was ready for Sam, so Sam left and went over to help Larry (9). I went up onto the catwalk with the teletector and the general area readings up there are from 300 mrem/hr at E, up to about 2 rem/hr down around A, and up. I extended the teletector as high as it would reach, but I could just get the teletector up over the top of the air handling units. It is 1200 mrem/hr constant all the way down all five units. Around the end of E, this unit (10) just goes up to that catwalk level, allowing you to step over there physically. There is no walkway or anything built, but it would be physically possible to get over there where the general area is about 1100 mrem/hr.

Next I climbed over the handrails and took the two smears on air handling units B and D. Then I came down with Sam Griffith and we went around to Core Flood Tank A, and climbed up to the short ladder. I performed radiation surveys with the E-530-N. Contact readings on the Core Flood Tank down 3 to 5 feet from the bottom of the tank were 5 to 10 mrem/hr contact facing the tank and 50 to 70 mrem/hr contact with the probe turned. Then I proceeded up the ladder, crossed over on to the long ladder that went up to the next landing, taking contact readings there. The contact readings were 15 to 17 mrem/hr facing the tank and 50 mrem/hr turned around. I went all the way up to the top of the tank, and the general area measured almost constant using the E-530-N at 50 mrem/hr. Most general area contact readings on everything were 50 mrem/hr.

I think the valve numbers WDG-168 and -169, a double isolation valve, had tygon tubing coming out. It looked like it had had a yellow poly sleeving over it. This had come out from the near the top of the Core Flood Tank A, run across the grating and down the long ladder. This was

melted and there was just blobs of it on each of the ladder steps. It had just partially melted off of the valves and it was laying there melted across the grating. I came on down the Core Flood Tank (11), went back around with Sam Griffith to Core Flood Tank B and climbed up the two ladders of Core Flood Tank B (12). The readings at the first ladder landing were around 300 mrem/hr general area on the first landing and 150 mrem/hr general area on the second landing. The contact readings facing the tank were 10 to 15 mrem/hr and facing away from the tank were 90 to 100 mrem/hr. At the top of the second landing on the Core Flood Tank 1B, there was tygon tubing coming down the wall of the D-ring (13). It had been taped about every 10 feet. In between the tapings it had been melted off and bent over until it was hanging there. I came down, went back over to the personnel hatch.

About the time we came out from behind the air handling units, my radio completely stopped working. When we came back to the personnel hatch, Sam Griffith said that I was to go on out with Larry and Guy Wise. After I exited, I believe that the radio was still hooked up and still turned on, so I don't no why it didn't work.

Visibility was great everywhere. It was a little dark back on Core Flood Tank 1A around the top, but I had the spotlight which helped me all the way. I felt comfortable climbing up the two tanks. There was no problem. I could also have gone up to Elevation 347. Those MSA purifier masks are nice.

NOTE: See Table 1 for task summary information, Table 2 for Elevation 305 radiation survey data, Table 3 for Elevation 347 radiation survey data, Table 4 for Elevation 305 surface contamination data, Table 5 for Entry 3 airborne activity data, Table 6 for man-rem assigned by ALARA, and Table 7 for an Entry 3 equipment list.

TABLE 1. ENTRY 3 TASK SUMMARY

Data Acquisition Task Number	Task Description	Task Accomplished	Problems Encountered	Comments/ Significant Findings
N/A	Exercise solenoid on No. 1 Personnel Airlock	Exercise solenoid Solenoid removed, conducted operational test; post entry leak test satisfactory	Door would not operate	Solenoid travel inhibited by corrosion
18	Remove Source Range B Pre-amplifier	Pre-amplifier removed		To be reinstalled next entry
18	Remove Vibration Monitors YN-AMP-7023 and YN-AMP-7025 (replace)	Removals completed	High dose rate obtained by worker forehead	
1	Conduct radiation surveys on Core Flood Tanks and Containment air coolers	Surveys completed	One HP tech contaminated while climbing; Radiological Investigative Report submitted	Radiation levels not greater than expected

NOTE: Containment temperature, 75°F; Containment pressure, 0.2 in. Hg; Relative humidity, 98%; Airborne activity, <LLD ($8.8^{-6}/Kr^{85}$).

TABLE 2. ENTRY 3, ELEVATION 305 RADIATION SURVEY

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (mrad/hr)	Location
1	(1)	RO-2A	700	--	Air coolers inboard
1	(2)	RO-2A	100	--	Behind air cooler E
1	(3)	RO-2A	5000	--	CFT B piping
1	(4)	RO-2A	1800	--	Stair No. 1, directed at sump
1	(5)	RO-2A	1200	--	Stair No. 1, directed at sump
1	(6)	RO-2A	500	400	Open area, northwest corner
1	(7)	RO-2A	400	400	Open area, northwest corner
1	(8)	RO-2A	300	--	Open area, northwest corner
1	(9)	RO-2A	200	--	West of incore instrumentation cable chase
1	(10)	RO-2A	400	800	Behind CFT 1A
1	(11)	RO-2A	1000	--	CFT 1A make-up lines
1	(12)	RO-2A	800	--	CFT 1A piping
1	(13)	RO-2A	400	800	Floor drain
1	(14)	RO-2A	400	400	Open area, northeast corner

TABLE 2. (continued)

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/nr)	Beta Dose Rate (mrad/hr)	Location
1	(15)	RO-2A	400	400	Open area, northeast corner
1	(16)	RO-2A	500	400	By No. 2 airlock
1	(17)	RO-2A	400	800	Opposite entrance No. 2 airlock
1	(18)	RO-2A	400	400	Bewteen No. 2 airlock and elevator
1	(19)	RO-2A	250	400	Outboard No. 2 elevator
3	(20)	RO-2A	300	600	Behind air cooler A
3	(21)	RO-2A	2000	--	Vicinity air coolers A, B
3	(22)	RO-2A	1000	--	Inboard air cooler D
3	(23)	RO-2A	500	--	Between air cooler E and CTF-B
5	(24)	RO-2A	1000	--	D-ring at crack
1	(25)	RO-2A	400	--	Source range B box
1	(26)	RO-2A	500	--	Between D-ring and CTF-B
1	(27)	RO-2A	1.2	--	Floor drain
5	(28)	RO-2A	100	400	No. 1 airlock by water puddle
5	(29)	RO-2A	200	--	No. 1 airlock at exit

TABLE 2. (continued)

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (mrad/hr)	Location
5	(30)	RO-2A	600	--	No. 1 airlock--near ramp
5	(31)	RO-2A	1000	--	Hot spot--crack at No. 1 airlock
1	(32)	RO-2A	200	--	No. 1 airlock--north edge
2	(33)	RO-2A	3000	--	Vicinity open stairwell
5	(34)	RO-2A	1800	--	Crack by D-ring near open
5	(35)	Teletector	2000	--	Soutnwest corner at liner
3	(36)	Teletector	500	--	Inboard air cooler E
3	(37)	Teletector	500	--	Inboard air cooler D
3	(38)	Teletector	1500	--	Inboard between air coolers A, B
3	(39)	Teletector	1000	--	Inboard air cooler A
3	(40)	Teletector	200	--	Outboard No. 2 elevator
1	(41)	Teletector	2000	--	Floor drain outboard No. 2 elevator
1	(42)	Teletector	250	--	Outboard No. 2 stair
1	(43)	Teletector	250	--	Outboard No. 2 stair
3	(44)	Teletector	1200	--	Between air cooler A and No. 2 stair

TABLE 2. (continued)

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (mrad/hr)	Location
3	(45)	Teletector	1000	--	Between air cooler A and No. 2 stair
3	(46)	Teletector	200	--	Air cooler A
3	(47)	Teletector	175	--	Outboard air cooler A
3	(48)	Teletector	200	--	Outboard air cooler B
3	(49)	Teletector	300	--	Outboard air cooler C
3	(50)	Teletector	400	--	Outboard air cooler D
3	(51)	Teletector	300	--	Outboard air cooler E
5	(52)	Teletector	500	--	Floor edge at liner

a. Location numbers correspond to locations shown on Figure 6.

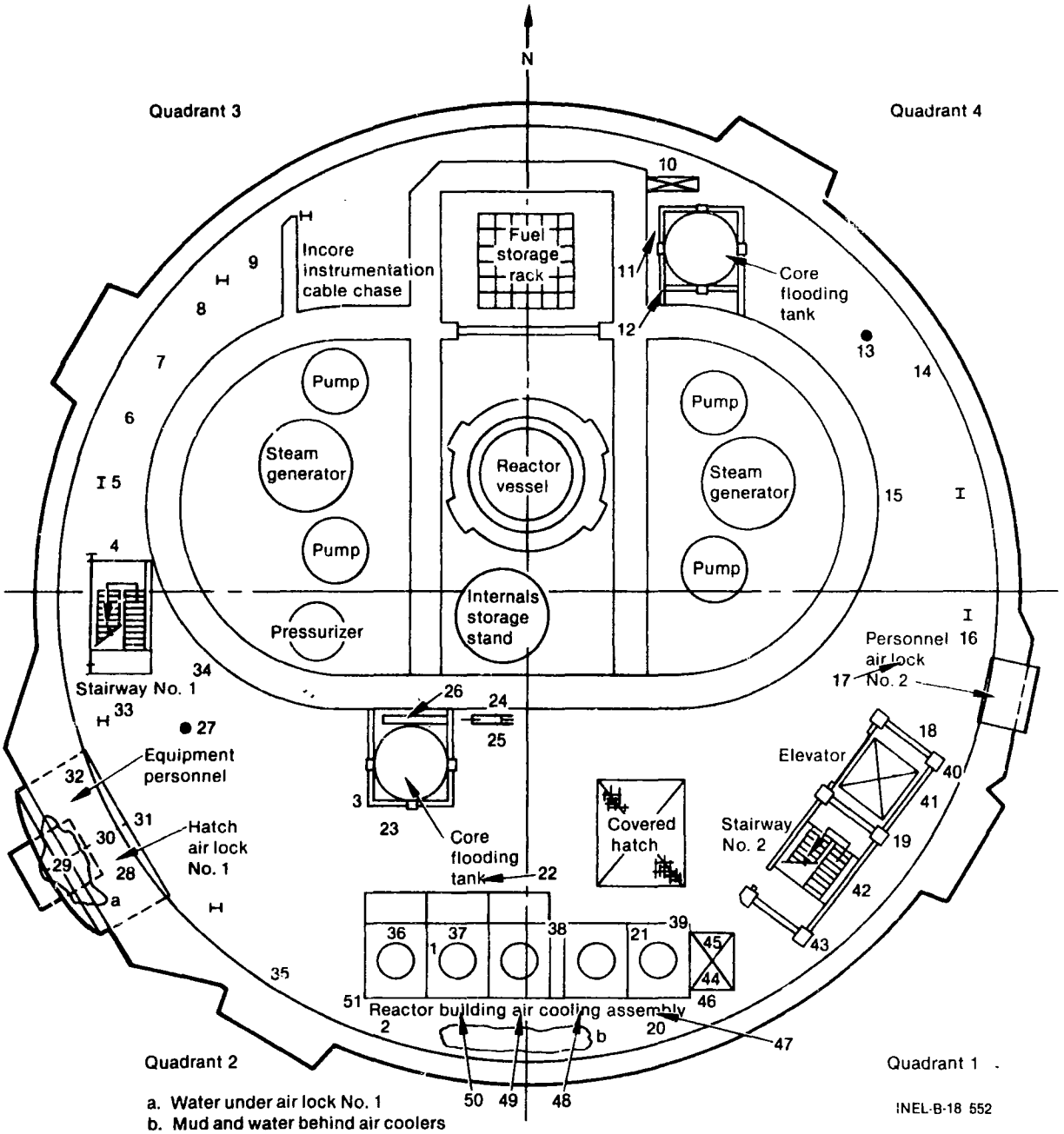


Figure 6. Elevation 305, Entry 3 radiation survey locations (see Table 2).

TABLE 3. ENTRY 3, ELEVATION 347 RADIATION SURVEY

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (mrad/hr)	Neutron Reading (CPM)	Location
22A	(1)	RO-2A	150	--	--	South side
22A	(2)	RO-2A	150	--	--	At hatch with removable grating
22A	(3)	RO-2A	400	--	-	Stair No. 1
22A	(4)	RO-2A	100	--	--	Open area northwest corner
22H	(5)	RO-2A	2000	--	--	Incore instrument service area
22A	(6)	RO-2A	100	--	--	Covered hatch northeast corner
22A	(7)	RO-2A	100	--	--	Open area northeast corner
22A	(8)	RO-2A	125	--	--	Between elevator and CRD cable chase
22A	(9)	RO-2A	280	--	--	Top of elevator No. 2
22A	(10)	RO-2A	100	--	--	Covered hatch southeast corner
22H	(11)	RO-2A	200	--	--	5 feet from HP-R-214
22A	(12)	RO-2A	125	--	--	Open area, south side

TABLE 3. (continued)

Data Acquisition Task Number	Location[a]	Instrument	Gamma Dose Rate (mrem/hr)	Beta Dose Rate (mrad/hr)	Neutron Reading (CPM)	Location
22A	(13)	RO-2A	300	--	--	Southeast of pump alignment side
22A	(14)	RO-2A	300	--	--	Hatch with removable grating
22A	(15)	RO-2A	400	--	--	Open area southwest corner
22H	(16)	RO-2A	2000	23	--	Incore instrument hot spot
22A	(17)	RO-2A	200	--	--	Open area northeast corner
22A	(18)	RO-2A	120	--	--	Near D-ring west on center line
22A	(19)	RO-2A	150	--	--	Elevator--contact reading
22A	(20)	PNC-4	--	--	<50	East of closed stairwell
22A	(21)	RO-2A	400	--	--	West of closed stairwell
22A	(22)	RO-2A	250	--	--	Open area south side

a. Location numbers correspond to locations shown on Figure 7.

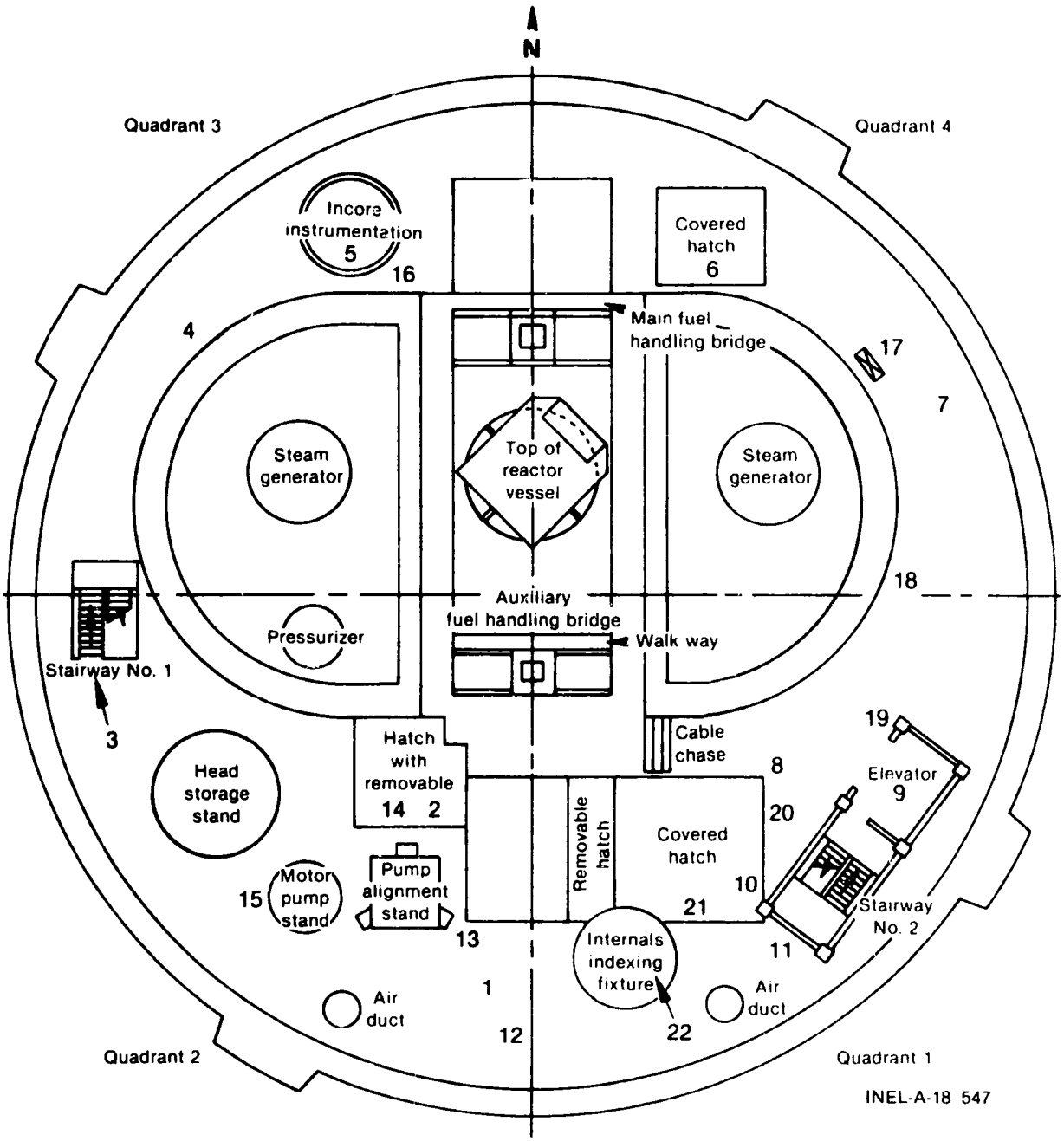


Figure 7. Elevation 347, Entry 3 radiation survey locations (see Table 3).

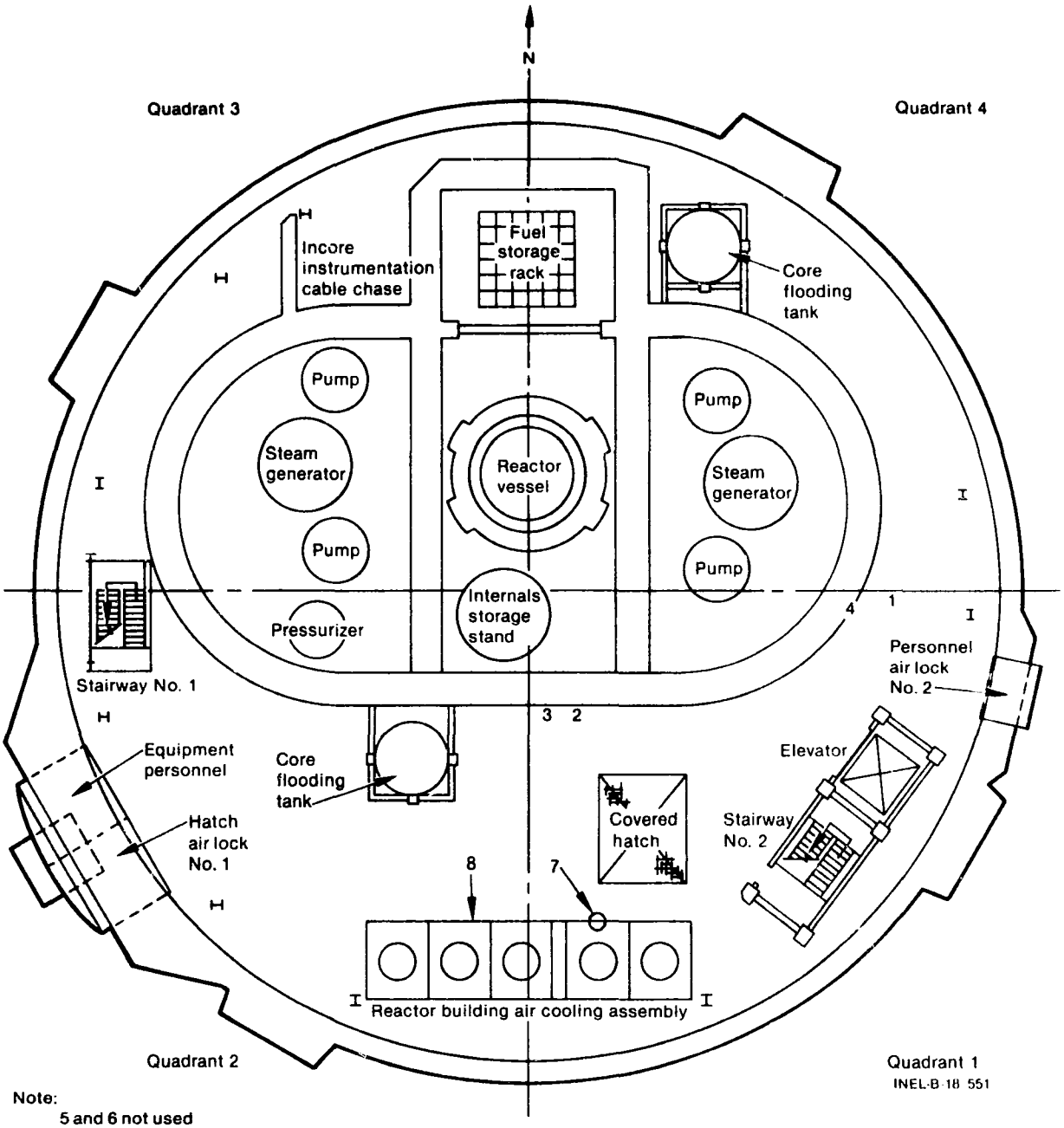
TABLE 4. ENTRY 3, ELEVATION 305 SURFACE CONTAMINATION

Data Acquisition Task Number	Specimen[a]	Sample Number	Location	Gross α[b] (μCi)	Gross β/γ (μCi)	Sr^{90}/Y^{90} (μCi)	Cs^{134} (μCi)	Cs^{137}[c] (μCi)	Cs^{137}/Sr^{90} Ratio[c]
7D	(1)	51068	Vibration detector	$<7.4^{-7}$	1.5^{-2}	1.8^{-3}	$/1.9^{-3}$	$/1.5^{-2}$	8.33
7D	(2)	51069	SR monitor	$<7.4^{-7}$	2.9^{-2}	5.2^{-3}	$/3.8^{-3}$	$/2.8^{-2}$	5.3
7D	(3)	51070	SR monitor	$<7.4^{-7}$	2.6^{-3}	4.5^{-5}	$5.4^{-4}/4.2^{-4}$	$3.2^{-3}/3.5^{-3}$	77.7
7D	(4)	51071	Vibration detector	--	--	7.0^{-2}	$/2.5^{-2}$	$/1.8^{-1}$	2.57
	(5)	Not used		--	--	--	--	--	--
	(6)	Not used		--	--	--	--	--	--
7G	(7)	51072	Air cooler B	--	--	2.7^{-1}	$/1.7^{-1}$	/1.2	4.44
7G	(8)	51073	Air cooler D	--	--	5.9^{-2}	$/2.8^{-2}$	$/2.1^{-1}$	3.56
7C	(9)	51074	Core flood piping	--	--	5.8^{-2}	$/9.3^{-2}$	$/6.9^{-2}$	1.19
7C	(10)	51075	Core flood piping	$<7.4^{-7}$	2.0^{-2}	5.6^{-4}	$3.7^{-3}/3.4^{-3}$	$2.5^{-2}/2.6^{-2}$	46.4
7C	(11)	51076	Valve in CFT line	--	--	1.2^{-1}	$/1.7^{-1}$	/1.2	10.0
7C	(12)	51077	RC make-up line	$<7.4^{-7}$	5.9^{-2}	3.7^{-3}	$9.7^{-3}/$	$7.0^{-2}/$	21.35
7C	(13)	51078	RC make-up line	--	--	3.3^{-2}	$/1.1^{-1}$	$/8.2^{-1}$	7.45
7B	(14)	51079	Floor under CFT A	--	--	1.8^{-1}	$/2.3^{-1}$	/1.7	9.44
7B	(15)	51080	Stained area under CFT A	--	--	5.5^{-2}	$1/6^{-1}/1.1^{-1}$	$1.1/8.0^{-1}$	14.55
7B	(16)	51081	Stained area under CFT A	--	--	1.0^{-1}	$1.5^{-1}/1.0^{-1}$	$9.3^{-1}/7.5^{-1}$	7.5

a. Specimen numbers correspond to those shown on Figure 8.

b. Less than symbol implies result below LLD.

c. B&W/SAI.



Note:
5 and 6 not used
9 and 10 – core floor piping
11 – valve in CFT line
12 and 13 – RC make-up line
14 – floor under tank
15 and 16 – stained area

Figure 8. Elevation 305, Entry 3 surface contamination locations (see Table 4).

TABLE 5. ENTRY 3 AIRBORNE ACTIVITY

Data Acquisition Task Number	Specimen	Sample Number	I^{131}[a] (μC/ml)	Cs^{134}[b] (μC/ml)	Cs^{137}[b] (μC/ml)	Co^{58}[a] (μC/ml)	Co^{60}[a] (μC/ml)	Sr^{90} (μC/ml)	Gross α (μC/ml)	Gross β/γ (μC/ml)	MPC Hours Used[c]	Comments
N/A	BZA (lapel air sample)	51058	$<5.2^{-10}$	1.11^{-8}/ 1.0^{-8}	8.3^{-8}/ 7.5^{-8}	$<1.9^{-10}$	$<1.6^{-10}$	3.0^{-9}	6.92^{-9}	6.01^{-8}		HP[d] No. 1
N/A	BZA	51057	$<4.2^{-10}$	6.2^{-9}/ 6.2^{-9}	4.7^{-8}/ 4.7^{-8}	$<1.6^{-10}$	$<2.5^{-10}$	2.2^{-9}	5.9^{-9}	3.65^{-8}		HP No. 2
N/A	BZA	51061	$<8.2^{-10}$	1.5^{-8}/ 1.2^{-8}	1.1^{-7}/ 9.1^{-8}	$<3.1^{-10}$	$<3.9^{-10}$	6.2^{-9}	8.98^{-9}	8.3^{-8}		HP No. 3
N/A	BZA	51059	$<5.4^{-10}$	6.1^{-9}/ 4.8^{-9}	4.4^{-8}/ 3.8^{-8}	$<2.3^{-10}$	$<3.9^{-10}$	1.2^{-9}	4.99^{-9}	3.2^{-8}		I&C[e] Technician
N/A	BZA	51060	$<4.8^{-10}$	6.3^{-9}/ 6.3^{-9}	5.0^{-8}/ 5.0^{-8}	$<2.0^{-10}$	$<2.4^{-10}$	1.8^{-9}	9.98^{-9}	3.64^{-8}		Mechanic

a. Less Than symbol implies result below LLD.

b. B&W/SAI.

c. Not available as of October 31, 1980.

d. Health physics technician.

e. Instrumentation and control.

TABLE 6. MAN-REM ASSIGNED BY ALARA

Team Member	Whole Body Gamma (mrem)	Skin Beta (mrem)	Maximum Extremity (mrem)		Whole Body Dose Dose Extension (mrem)
			Gamma	Beta	
HP[a] No. 1	570	0	700	0	500
HP No. 2	550	0	710	0	500
HP No. 3	340	0	390	0	500
I&C[b]	560	0	550	0	300
Mechanic	260	150	500	0	300

a. Health physics technician.

b. Instrumentation and control technician.

TABLE 7. ENTRY 3 EQUIPMENT LIST

Survey Equipment		Protective Clothing		Tools and Other Equipment	
Type	Quantity	Type	Quantity	Description	Quantity
E-530N	1	PC's set w/hoods, gloves	10	Nikon FE w/flash[a]	1
RO-2A	2	Firemans boots, pair	5	Nikonos w/flash	1
Teletector	1	MSA respirator	5	Two-way radios	5
PNC-4	1	BZA samplers	5	Large lights	2
Oxygen monitor	1			Small lights	10
Digital dosimeter	5			Tools as requested and provided by I&C, maintenance	3
Pencil dosimeter	5				

a. Both cameras used in Entry 3 failed to function properly; no still photographs were obtained.