UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:

IE TMI INVESTIGATION INTERVIEW

of

Kenneth E. Burkholder
Radiation Chemistry Technician

Trailer #203
NRC Investigation Site
TMI Nuclear Power Plant
Middletown, Pennsylvania

May 17, 1979
(Date of Interview)

July 9, 1979
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205 and 206
(Tape Number(s))

NRC PERSONNEL:

Douglas M. Collins
Owen C. Shackleton

SHACKLETON: This is an interview of Mr. Kenneth E. Burkholder. Mr. Burkholder is a Radiation Chemistry Technician with the Metropolitan Edison Company assigned to Three Mile Island. This interview is beginning at 7:32 a.m., May 17, 1979. The interview is taking place in trailer 203 which is located just outside the south gate of the Three Mile Island Nuclear Power Station operated by the Metropolitan Edison Company. Present to conduct this interview from the U.S. Nuclear Regulatory Commission is Mr. Douglas M. Collins. Mr. Collins is a Radiation Specialist assigned to Region II. My first name is Owen C. Shackleton, I'm an Investigator assigned to Region V. Just prior to going on tape, I presented to Mr. Burkholder a two-page document from the U.S. Nuclear Regulatory Commission which sets forth the purpose and scope of this investigation. It also identifies the authority of the U.S. Nuclear Regulatory Commission to conduct an investigation of this nature and advises persons being interviewed of their rights to refuse to be interviewed, of their rights to have someone present of their choice, and their rights to refuse to give any form of a signed statement. On the second page of this two-page document there are three questions. Mr. Burkholder answered all three questions in the affirmative. At this time we make it a matter of record on this tape, I'm going to ask Mr. Burkholder these three questions and asking him to respond orally. Mr. Burkholder did you understand the two-page document that I just described?

BURKHOLDER: Yes.

SHACKLETON: And do we at the U.S. Nuclear Regulatory Commission have your permission to tape the interview?

BURKHOLDER: Yes.

SHACKLETON: And, would you like a copy of this tape?

BURKHOLDER: Yes.

SHACKLETON: Alright sir, we'll provide you a copy at the close of this interview. And now Mr. Burkholder, to help identify yourself to those persons who would be listening with interest to the comments you provide to our Commission, would you please give us briefly a resume' of your work experience, bringing us up to date to your present job with Metropolitan Edison?

BURKHOLDER: Work experience, after graduating from high school, I worked in Harrisburg Bank and I worked there about a year and a half and went to the Hershey National Bank, worked there for about a year and a half. I left there in 1965, I started working for Metropolitan Edison Company. I started as a Turbine Room Attendant, I progressed to Fireman Second Class. I went to the line department and from there I

was accepted to go for training down here at Three Mile Island, and October 20, 1969 we started schooling down here for chemistry. Since that time, I've worked in chemistry and that's been changed to Radiation Chemistry Technician. I've been working in that job to the present.

SHACKLETON: Alright sir, thank you very much. Now I'll turn the interview over to Mr. Collins.

COLLINS: Thank you very much for taking some time out to come talk to us today, Mr. Burkholder. Before I speak I'm going to be saying my name so that the people who type the transcripts of what goes on here knows who's talking. Could you please provide a description of your actions and actions of others that you observed starting with the time you first heard of or were notified of the incident on the 28th of March, in your own words. What we'll do is let you go through and let you start when the incident took place and go through midnight of the 30th of March, the first three days, and then we'll go back afterwards and try to pick out specifics and let you elaborate on them. But please in your words start with whenever you he[illegible]out it and try to bring us through the 30th.

BURKHOLDER: When I came in to work on March 28th I was scheduled to work 7:00 to 3:30. When I first got here, the first thing we noticed was that the cooling towers were down, there wasn't very much steam

coming out, so we assumed that there was a problem. As soon as we walked into the search facility it seemed like there was an air of excitement or gloom and you could tell that there was a problem, and then we heard announcing that there was in fact an emergency and that certain people who were not essential were to go to the north auditorium and those who were essential were to go to their regular place. So we proceeded to go back since we were HP, proceeded to go back to the Unit 1 Health Physics lab which is the ES emergency center and await instructions. When I got there, it wasn't too long that we were assigned the job of the offsite team. We were Alpha. When we got, left there and we went to get our equipment and check it out before we left. When we were ready to go we had a radio and heard where they needed some onsite readings right away. Well there was confusion as to who was to be the onsite team and supposedly the onsite team had been sent down to take readings at the discharge RML 7. So in the haste, I radioed back and said that we would take over for the onsite team, since we were ready to go and get those readings. So as a result we were assigned to the onsite team and someone else had been assigned to the offsite team. We went around that day taking readings at whatever point they thought the wind direction was in. At first there was a lot of confusion, especially on my part. Since I had no training in the use of the Sam 2, I did not realize what, exactly how the thing worked. So I was a little bit confused up to that point. The guy who was with me luckily had had some previous training on the Sam 2 and he knew how it worked.

Together we worked it out and we were pretty well set towards the end of the day as to what we were doing. But in that time that we were taking readings there were particular times that we noticed the wind direction going in certain directions and they would radio us to go to another location to take readings. We radioed back and told them we saw the wind direction going in a different direction would they like us to get readings in that specific area, and they radioed back emphatically that they wanted us to go to the locations that they were telling us to go to. So, as an onsite team, I don't know that we did our job as far as getting some of the correct readings. The day was kind of eventful. In the confusion more or less, while they were trying to get readings and all, I had to, I cut my hand open and with having that bandaged and I had a bum knee anyway, and trying to run around getting readings, it was a little awkward that day anyway. I worked until about 3 or 4:00 o'clock that afternoon. No, it was 5:00 o'clock and I left that day. I was told to come back in regular time the next day and report to the observation center. On the 29th I was asked to use my vehicle to go up to Crawford Station to pick up some sample bottles that they needed for the onsite team to get some samples. Things were kind of easy from then on, just days kind of ran together because we were working 12 hour days and things were kind of mixed up.

COLLINS: Go ahead, just tell us what, if you can't put it in a specific day, within the first, 29th and 30th what were you doing? You got sample bottles you mentioned, did you then join any survey teams or work on the TLD's or what do you recall?

BURKHOLDER: From when I got the sample bottles, I reported back and I was...they wanted to get some equipment over to the observation center for reading TLD's and that, but I think that was the 30th they tried to do that.

COLLINS: Did you assist in frisking any people or equipment coming off the Island? Did you return to the Island and do anything on the Island?

BURKHOLDER: That second day we went back on the Island and after I had gotten those we were assigned to go onto the Island and they weren't, the areas that were contaminated or high airborne or had high dose rates, we were assigned to go to and escort people who needed assistance in doing jobs.

COLLINS: What was some of these jobs that were being performed on that day and where were they being performed?

BURKHOLDER: Some of them was in the aux building, it had to do with trying to get samples, trying to get dose rates. They wanted to know if they could go into certain areas to do some valving, to do some repacking, to do any little jobs that they had to do, we were to survey those areas and report back to them and tell them what we found. Everything was done Scott airpack.

COLLINS: What areas did you survey and what results do you recall?

BURKHOLDER: In the aux building, they wanted to go into the makeup valve alley on the 305 elevation and they wanted to...the job they had to do was to repack a valve that had been leaking. When I walked into the hallway to get to the makeup valve alley, it was reading 1 to 2 R in the hallway and till I got back to makeup valve alley, I was just at the door, and I had a teletector with me, and I extended the probe and it was 750 R contact on the door.

SHACKLETON: Mr. Burkholder when you say 750 R, you mean R per hour?

BURKHOLDER: That's correct.

SHACKLETON: Alright, thank you.

COLLINS: This is the door in the 305 level of the Unit 2 aux building near the valve alley and over by the decay heat removal coolers, which valve alley are you speaking of? This is, there's two valve alleys, there's one on the 281 level and there's one on the 305 level, this is the one that if you go through the doorway at the elevator in the aux building, and you walk back the hallway, it walks along, its the hallway that goes right by the spent fuel pool and down the whole way at the end of that hallway there's a door right to your left.

COLLINS: To your left?

BURKHOLDER: Uh, hum.

COLLINS: What was some of the other dose rates that you found on the way down the hall? Were there any high dose rates or any notable dose rates?

BURKHOLDER: Well, we were told not to linger, we were told to get down the hallway and take general readings and that's when I was getting 1, 2 R at the time, as best we could, get down there and check that area out because they wanted to see what they could do about that job.

COLLINS: Who did you report these results to?

BURKHOLDER: Dick Dubiel.

COLLINS: Was any record of these results maintained?

BURKHOLDER: I don't believe, no.

COLLINS: Who else went with you? You mentioned we.

BURKHOLDER: Well, we I said we, I meant that we were given specific jobs meaning the radiation protection people. But I went by myself on that occasion.

COLLINS: Did you make any other entries that day into the aux building, Unit 1 or Unit 2?

BURKHOLDER: No.

COLLINS: Do you recall any other assignments you had the second day, that would be the 29th, Thursday?

BURKHOLDER: The day that I'm talking about was either Thursday or Friday.

COLLINS: What time of day was this on the day that you went in? Was this morning, afternoon, right after you came on shift, close to the end of the shift?

BURKHOLDER: This would have been about 11:00 o'clock in the morning.

COLLINS: You mentioned that you, on one of the days, probably Friday, you went to the Island and got some equipment for reading TLDs. Can you elaborate on that? Where did you get the equipment? What was it? Who did you bring it to? Where?

BURKHOLDER: That day, as I said, the things, hours were so, days were so mumble jumbled that it hard to recall exactly which day now. That might even had been Saturday, but we came in with a truck. There was a guy who had worked here who left and went to Berwick, and he came down with a PP&L van and we came in with that and loaded up the TLD equipment from the TLD trailer that we have and loaded it on to that truck and took it over to the observation center.

COLLINS: Where did you leave it then? With whom at the observation center?

BURKHOLDER: Well we carried it upstairs to the second floor up to the top and we left it with him, he and this man that I was saying about. There was a supervisor here our foreman who went to Berwick. He helped to set this equipment up.

COLLINS: Who from the Rad Chem department was, TMI Rad Chem Department was there working with TLD equipment and helpint to set it up?

BURKHOLDER: Fred Huey.

COLLINS: Can you remember anything else before I go back and try to find some more specifics? Can you remember anything else about your actions on the first three days?

BURKHOLDER: No.

COLLINS: If you recall anything as we go through please try to add it in as you recall it so that you don't put it out of your mind. You mentioned that when you arrived on Wednesday, approximately at 7:00 o'clock, you went to the processing center and heard the announcement of a radiation emergency. About what time was the announcement and what did the announcement consist of?

BURKHOLDER: The announcement was said to be, I would say it was about a quarter after seven and they said that they had a radiation emergency in, I don't think they said what Unit, but they wanted the nonessential people to assemble in the north auditorium and operators and health physics people to report to their normal places.

COLLINS: You then proceeded to the Unit 1 HP lab which is the ECS. Was the ECS established and who was there?

BURKHOLDER: When I walked in there were people on the phone, I don't recall who was working, who was doing what at the time, but when I went in, I just waited for assignment and without noticing who was doing what job. We were talking among ourselves exactly what had happened, we weren't really sure, Pete Velez had come in and said that we had, this time it was not a practice drill, it was the real thing, and that they were reading 800 R in the dome of the Unit 2 reactor building but still we didn't know what had really happened. Nobody seemed to know. And we were then assigned to the job of going out and being the offsite team.

COLLINS: Who assigned you to go check the equipment out for surveys?

BURKHOLDER: No one did that, we took that upon ourselves to do.

COLLINS: Who was in charge of the ECS? Could you tell from the activities?

BURKHOLDER: No.

COLLINS: You then proceeded to the processing center to check out the operation of survey equipment. Was the equipment operable? Was it where it was suppose to be?

BURKHOLDER: The equipment we found was where it was supposed to be and it was operable at the time. I might add, not being familiar with the equipment myself, I wasn't really sure how it worked so I was glad that there was somebody with me who had worked it and knew about what to do.

COLLINS: Who was the other member of your team who did know how to operate the equipment?

BURKHOLDER: Dave Etheridge.

COLLINS: You mentioned that you were not familiar with the equipment, can you describe for us the training you had in previous emergency drills and in the use of equipment that would be used in an emergency?

BURKHOLDER: I have had no formal training at all. The drills that we were on, they were conducted, in the first place the drills was always kind of a laugh because they were supposed to be, we were supposed to be trained for them and we never were and the only training we had were drills before the NRC would come to see what we were actually doing. It was like we'd have a rehearsal maybe a week or so ahead of time and then a couple days before we would have a dress rehearsal where we would go through and most of the time, the people who actually did the emergency drill were not the same people who were trained, or who went through the dress rehearsal and things like that. In my particular case, we had a rehearsal the day before the NRC was to see our drill and I was an offsite team, but I had no previously experience in running the Sam 2 and we were never asked to operate the equipment. All we were told to do was to know the locations and go to locations. I don't know if they assumed that we would know how to operate the equipment and just so we knew how to operate the vehicles and get to the locations that they told us to go to. But the monitors that they sent along in the particular case that I was on, the monitor that they sent didn't know how to operate the equipment and didn't know exactly what to do either.

COLLINS: This was in the one drill that you participated in, the other Chem Rad Technician did not understand how to use the equipment either?

BURKHOLDER: Well the other persons that they sent along with me, that particular time, was an operator and he did not know how to use the equipment either. No.

COLLINS: How many drills have you participated in? Formal drills?

BURKHOLDER: One.

COLLINS: What did the dress rehearsal drills consist of? Were you assigned to go get equipment? Assigned a specific job and then told to go to specific locations and similate readings?

BURKHOLDER: No. We were told how to, we were supposed to look in the equipment and see that everything was there, take our equipment out and pick up what we had to do. The operator was there with the key, with a vehicle ready to go. We loaded everything on. Waited for our assignment and then when we were given the location to go to, we'd go to that location and wait for further instructions.

COLLINS: What other training, what other health physics training, formal or on the job have you received since arriving at TMI? You mentioned chemistry training, what about health physics training?

BURKHOLDER: When I first came to the department, we came down here in October 20, 1969, to start training, we were told that it was going to be a 42 week training program. We were then set up with separate departments, Chemistry and Health Physics, I was a chemistry technician and we were trained in both fields. Both HP and chemistry was trained in both fields so that we would be able to help each other out when the time came.

SHACKLETON: Gentlemen, we're going to have to change the tape at this time. The time is 8:01 a.m. eastern daylight time, May 17, 1979.

SHACKLETON: This is a continuation of the interview of Mr. Burkholder. The time is now 8:02 a.m. eastern daylight time, May 17, 1979. Mr. Burkholder will you please continue with your comments.

BURKHOLDER: I came down here in October 20, of 1969 to start a training program, I was a Chemistry Technician at the time and our department had been two separate departments. The training that I received in health physics, we were trained in both aspects, both chemistry and health physics. But since that time we have had sporatic but very little training in health physics.

COLLINS: When was the last time you had any training in the use of radiation detector equipment or any other formal health physics training?

BURKHOLDER: Well I'll have to give you some background before I can answer that question. When I was in the chemistry and health physics department we were told that our jobs were going to be daylight and we were told we were going to have separate departments, chemistry and health physics. It was changed. They combined the departments and they put us on shift work. I wasn't too happy about the situation, because I felt then that to do a proper job in the chemistry or health phyics field, the department shouldn't be combined. It was hard enough to try and learn one job without having to learn the other job. Plus, we were told that when the Unit 2 started up we will be having both Units, and this is the way it ended up. As a result I left the department, I was away from the department for approximately a year a half to two years, when I came back in the department I got training again for a couple of weeks and that would have been about 1977 and that's the last training I ever had. I wouldn't hestitate to say that I feel that that would be the only training that I would have gotten, I wouldn't have gotten that training if I would have stayed in the department. I have one other comment to make, that I am, in our department now we have radiation chemistry technician and radiation chemistry technician jr. When I came back into the department I served my probation time and I'd gotten some training in that area, in the health physics chemistry, mostly health physics, I didn't get any chemistry training. I'm sorry. I lost my train of thought.

SHACKLETON: You're referring to your training and you were talking about that there was a Rad Chem Tech Junior and a Rad Chem Tech. Does that help?

BURKHOLDER: That helps.

SHACKLETON: Okay.

BURKHOLDER: You move from Junior to Senior technicians, well they call them technicians, but we call them Senior to differentiate between the Junior. When I went from the Junior to the Senior job I was never tested to see that I was qualified for that job and I feel that that is completely wrong.

COLLINS: Was there, you say you were never tested. There was no written test, no oral test, no performance test at all to go from Junior to Senior technician?

BURKHOLDER: No. Not for me there wasn't.

COLLINS: Let's get back to the activities on the day of the 28th, you've gone out, you've checked out the equipment its operable and your own team with Erckeridge who does know how to use the equipment. Who radioed you to start taking onsite readings and what was the specific instructions, where did they ask you to go?

BURKHOLDER: I don't know who it was that radioed us, but they told us that they wanted readings on the western side of the island.

COLLINS: What instruments did you use and how did you use them to take the readings?

BURKHOLDER: We use the Sam-2 and air sampler.

COLLINS: What survey instruments did you have? Radiation measurement instruments?

BURKHOLDER: We had a Pic 6.

COLLINS: What type of readings did you take with the Pic 6, open and closed window, or was it just closed window or just open window?

BURKHOLDER: Just closed window.

COLLINS: To whom did you report the results of the surveys?

BURKHOLDER: We reported it to the ES.

COLLINS: Did you maintain any records of the survey results in the vehicle?

BURKHOLDER: At first during the confusion, there was several readings that had to be taken right away, there wasn't enough time to write things down and get them in order. But later on during the day we started to get the information together.

COLLINS: What happended to those records.

BURKHOLDER: I don't know.

COLLINS: Did you turn them over to the team who relieved you?

BURKHOLDER: Yes.

COLLINS: Throughout the first day, were all the readings you took closed window only?

BURKHOLDER: Yes.

COLLINS: Do you recall any of the readings or locations, significant readings or locations?

BURKHOLDER: There were significant readings at the...during the day there was a northerly wind and at the gate about the north weather station we were picking up about 10 mR.

COLLINS: You mentioned that Mr. Etheridge knew how to use the Sam 2 and you indicated later in the day, you and Mr. Etheridge became comfortable in the use of the Sam 2. Was there any change in the way you use the Sam 2 to count air samples during the day?

BURKHOLDER: Any change? I don't understand?

COLLINS: Did you change any of the window settings or thresholds or voltage or anything?

BURKHOLDER: No.

COLLINS: So, the Sam 2 was used the same way the entire day?

BURKHOLDER: That's correct.

COLLINS: You mentioned that you were instructed to go to locations that you thought were not in the direction of the prevailing winds. What did you use to determine the direction of the prevailing winds?

BURKHOLDER: Well the wind was heavy enough that day that you could tell what direction it was going just by the way it was blowing. We found that some of our higher readings were in areas that weren't, we weren't told to go to those areas to report.

COLLINS: Did you look at the cooling towers or any furnace stacks or anything that might have given a plume to determine what direction the wind was at about the stack?

BURKHOLDER: Yes, but even sometimes the stack is going in different directions then the air down below is going and we used...you could tell which way the air was blowing. Dust from the roads, whenever we would be driving you could see which way it was blowing, trees you could use those as reference.

COLLINS: Do you know who was giving the instructions by radio at anytime during that day, any of the individuals names?

BURKHOLDER: Yes. Jim Seelinger was giving us the instructions the time that we had radioed back and told him that we were getting, that we knew that the wind was going in another direction and that we were getting higher readings there and we were emphatically given instructions to go to where he told us to go.

COLLINS: Is there any thing else you recall significant that first day while you were taking readings offsite?

BURKHOLDER: No.

COLLINS: You stated that you left about 5:00, who did you turn your equipment over to? Who was your relief team?

BURKHOLDER: The relief team was Joe Hipple and Mike Gabner.

COLLINS: The 29th, you believe the 29th, you went into the auxiliary building to take radiation level measurements. Who told you to go in to take these measurements?

BURKHOLDER: Dick Dubiel.

COLLINS: How did you enter the auxiliary building? Which doorway did you use?

BURKHOLDER: We used the door at the 305 level. It goes into the HP area.

COLLINS: So you entered from the Unit 2 HP side?

BURKHOLDER: Yes.

COLLINS: What type of protective clothing did you have at that time? What did you wear?

BURKHOLDER: I wore cotten coveralls, a wet suit, cotton gloves, rubber gloves, and a Scott airpack.

COLLINS: What prebriefing did you receive that conveyed to you what kind of radiation levels and air concentrations you might encountered in the auxiliary building?

BURKHOLDER: There were no specific instructions as to what the problems were except they knew the airborne activity was high and that the readings were high in those areas to go into to where they specifically told us to go and told me to go and then come back out again.

COLLINS: Was there sufficient instrumentation available for radiation detection and measuring instrumentation available for you to go in with. Was there a teletector available?

BURKHOLDER: At the time there was, yes.

COLLINS: Did you have a RWP feed before you could enter?

BURKHOLDER: No.

COLLINS: What kind of access control was in effect at that time at the entry to the auxiliary building?

BURKHOLDER: There were two people there that were manning that doorway.

COLLINS: Could you recall who they were?

BURKHOLDER: No.

COLLINS: You mentioned a 750 R per hour field, was that with the teletector open window, closed window, do you recall?

BURKHOLDER: The teletector has no open window or closed window on it.

COLLINS. It has a little cap that goes over the end, you weren't using that type?

BURKHOLDER: Oh, no. No.

COLLINS: Who was in charge of the HP function on that day, who was the foreman?

BURKHOLDER: The person who was completely in charge of the HP function was Dick Dubiel.

COLLINS: Who did you report to immediately, was there a foreman?

BURKHOLDER: I was taking my instructions from Dick Dubiel.

COLLINS: Did you take any air samples on that day.

BURKHOLDER: No.

COLLINS: Did you make any other entries into the aux building?

BURKHOLDER: That particular day, no.

COLLINS: What dose did you pick up in doing that survey?

BURKHOLDER: 450 mR.

COLLINS: How long were you in the area?

BURKHOLDER: I was in that area for approximately 3 to 5 minutes.

COLLINS: Were you whole body counted subsequent to that entry?

BURKHOLDER: A few days later, yes.

COLLINS: What were the results?

BURKHOLDER: There was no results.

COLLINS: How did yout pocket chamber reading compare to the TLD readings?

BURKHOLDER: It was pretty close.

COLLINS: You mentioned picking up samples from Crawford Station on the 29th, some samples bottles from Crawford Station on the 29th, did you see any sample bottles that contain samples when you returned from Crawford Station. Who did you give the bottles to and what was the activity in that area?

BURKHOLDER: The bottles, I took them to the north gate and there was another truck going in at the time so they took them in for me.

COLLINS: In your wandering, or in your work at the observation center did you see any samples coming into the observation center and where were they going if you did?

BURKHOLDER: There was none that day that I saw, no.

COLLINS: Can you recall anything else happening those first three days? For example, were you in any way involved in taking primary coolant samples, or steam generator samples, or analyzing any of the samples taken?

BURKHOLDER: No.

COLLINS: Were you involved in surveying any people out or in assisting in decontamination of individuals?

BURKHOLDER: No.

COLLINS: During any of your entries into the aux building these first three days, did you receive any personnel contamination?

BURKHOLDER: No.

COLLINS: Did you participate in any investigations into personnel exposures or personnel contaminations.

BURKHOLDER: No.

COLLINS: Did you operate the TLD reader, read any TLDs, maintain any of the TLDs records?

BURKHOLDER: No.

COLLINS: Was you assigned to any offsite survey teams?

BURKHOLDER: No.

COLLINS: Have you had any other interviews prior to this one?

BURKHOLDER: No.

COLLINS: Have you been given any guidance as to how to respond to any of the questions that we might have in here?

BURKHOLDER: No.

COLLINS: Do you have any reason to believe that anyone would purposely try to damage the plant?

BURKHOLDER: No.

COLLINS: Do you have any other facts or any other comments you might want to bring to our attention at this time?

BURKHOLDER: I'm a little hazy on the time again, but it was within the first three days, I was in the auxiliary building in Unit 2, I had on cotton coveralls, Scott airpack, wetsuit, boots. I was supposeed to go in to get a sample from HPR 227 which is the reactor building containment. I was in on two different occasions to get those samples which was a air sample and on both occasions I thought that I had gotten the samples and it turned out that they did not have the valves open to that sampler and I got a high exposure from being in that area for no reason.

COLLINS: Who assigned to go take these samples?

BURKHOLDER: Dick Dubiel.

COLLINS: Was there any prebriefing or organized discussion between HP and operations with regard to when you were going to go in, what you were going to do, what valves needed to be lined up, what kind of communications there would be between you and the Control Room for the lineup of valves, or anything like that?

BURKHOLDER: Yes, we were, we had full knowledge that I was going in to take these samples. It was discussed between Dick and I when I got in there that I would line the sample up and call him and he would have them open up the valves from containment to the sampler and its a recirc line that there's two valves that are supposed to be open to get to the sampler and two valves back to the containment. When I called him he immediately told the control room operator that I needed those valves open so I could control my sample. They supposedly did that and I thought I was drawing the sample, but in fact it was in-leakage that caused the flow indicator to show me that I was getting some type of flow. And it took awhile to get the sample lined up. There was some confusion there and after it was lined up when I left the area and then came back again to get the sample. When I came back I noticed that the flow indicator showed no flow and evidently the inleakage had, the

pressures had compensated for each other and the flow indicator showed nothing. I called back and found out later on that those valves up there were not fully opened, they were open, there must be two different places to open those valves. The one place wasn't open and the other one the control room operator did in fact open the valves, but he didn't open the ones in back of the panel the way I understand.

SHACKLETON: Mr. Burkholder have you ever performed that assignment before under normal circumstances?

BURKHOLDER: Yes.

SHACKLETON: Frequently, so that you were familiar with it.

BURKHOLDER: Yes.

SHACKLETON: Thank you.

COLLINS: In these instances when you performed the change out previous to the change out that you are discussing now, were those other valves closed?

BURKHOLDER: Pardon me, I don't understand.

COLLINS: Did you have to call up to the control and have the valves opened under normal circumstances to take a sample, or were those valves normally opened?

BURKHOLDER: They were normally open?

COLLINS: What happened to the HPR 227 samples that were taken?

BURKHOLDER: When I was there they never got the sample.

COLLINS: Did you take any gas samples or hydrogen in the first three days?

BURKHOLDER: Yes.

COLLINS: Were you successful in taking these things? That is, did you get flow?

BURKHOLDER: Yes, supposedly I got flow, but there again it was in the middle of shift and it was supposed to be turned over that, they were supposed to have some type of lead shielding provided that after that sample was gotten they would put it in that lead shielding and take it

over for sampling. I have gotten those samples, I'm sorry I did. We've taken them over to Unit 1, then sampled them for the hydrogen content.

COLLINS: You mentioned you've gotten high dosage in trying to take the HPR-227 samples. What kind of dosage did you pick up?

BURKHOLDER: I picked up a combination of 700 mR trying to get those samples in that area, over a period of different times?

COLLINS: Did you take any other samples in the auxiliary building in the first three days? I know that the station vent HPR-219 was changed a few times during that period. Did you take any of those samples?

BURKHOLDER: No.

COLLINS: Do you know what happened to any of the valid samples that were taken during the first few days? Where were they being sent?

BURKHOLDER: The containment samples?

COLLINS: Containment or station vent or any other sample that you might know of. Were you asked to bring any for the observation center or see that certain water samples or atmospheric samples were analyzed by someone?

BURKHOLDER: As I said before there were several hydrogen samples from the containment building that I took and analyzed and gas partition over in Unit 1, those were left there, there was another sample, a liquid sample that was taken over to the...there was an NRC trailer at the observation center and we took a sample over to them.

COLLINS: This was a liquid sample, you recall how it was identified?

BURKHOLDER: No, I don't, we were instructed. It was just given to us in a bag and we were told to put it in the back of the truck and take it over.

COLLINS: Do you recall what day this was?

BURKHOLDER: No, I don't.

COLLINS: You brought it to the NRC trailer and it was received there?

BURKHOLDER: No, I took it in a truck, I was told to stay with the sample until somebody came back and took it to where it was supposed to go, then I was supposed to go back on the island again.

COLLINS: So then somebody came, picked it up from the north gate, I take it, and then brought it over to us.

BURKHOLDER: No, we actually brought it to the observation center. We parked in the parking lot and the foreman that was with me went into the observation center to find out where the sample was to go and the meantime I stayed outside to keep people away from, that might come near the sample.

COLLINS: Who was the foreman with you?

BURKHOLDER: Joe Deman.

COLLINS: And then you transfered to samples to someone from the NRC, or RMC, or to whom?

BURKHOLDER: In the meantime, Joe came back out and I was sent back onto the Island and he took care of the sample from there.

COLLINS: What was the radiation level on this sample?

BURKHOLDER: 10 mR on contact.

SHACKLETON: Time is now 8:34 a.m. eastern daylight time, May 17, 1979 this is a continuation of the interview of Mr. Kenneth E. Burkholder, the last tape went off at 8:31 a.m. and we will now resume the interview.

COLLINS: Did, at anytime right after the incident, you maintain any records or personel notes or official records, logs or results yourself?

BURKHOLDER: No.

COLLINS: Do you have any other facts or recommendations or any suggestions for improvement that you'll like to bring to our attention.

BURKHOLDER: Yes. One of the biggest is our department is much, there is too many things to do in our department. In our department you're a jack of all trades and a master of none. And I emphasize the master of none because there are many things in our department that we have to know and do in order to function and our department consists of Unit 1 HP, Unit 2 HP, Unit 1 Chemistry, Unit 2 Chemistry, Unit 1 Primary Chemistry and Unit 2 Primary Chemistry and the departments being the way they are we work six week rotation, we work two weeks of daylight,

7:00 to 3:30, Monday thru Friday and the following week we rotate on a daylight shift, 7:00 to 3:00 then we go the following week to 3:00 to 11:00 and the following week 11:00 to 7:00 and the whole rotation takes six weeks. The one six weeks, we're in chemistry; the next six weeks, we're in HP. By rotating back and forth to each, to the departments, we lose continuity of what we're doing, it takes us awhile to get back into the main stream of our particular job. There's health physics is too big of a job to have chemistry combined with it and chemistry is too big of a job to have health physics combined with it. You can't be a good technician and work in two different departments such as these. Did you have any specifics the you wanted to ask me?

COLLINS: No, I wanted to leave it open to your specific recommendations or other facts that you want to bring to our attention at this time.

BURKHOLDER: In the field of health physics particularly, its gotten to a point, there's so many things to be done, normal routine things, that are to be done that it makes the job so impersonal to a person who come back for health physics training. One of the things is recordkeeping, there's a lot of duplication in recordskeeping. We have releases that we have to do from time to time, gas releases that we do. There's so many paperwork type things to do that you cannot be, cannot have a personal relationship with people who come back there when there's a problem, and it's not that you want to feel this way but you have the

feeling that you got to get your work done because that paperwork shows how much work you've done, when you are working with a person as a person, that's not recorded work and you don't get credited with it and most people are of the same opinion that if HP and the way our department is worked is so, there's so many things to do in that department that its a very impersonal department as far as the personnel are concerned. When there's a contamination problem that comes in the first thing you do is tell that person to go back and take care of themselves. If their hands are contaminated or their shoes are contaminated, you ask them to take care of themselves before you do, because you have other things that you have to do. And this is not the way the department should be run. That department should be the, the person comes first, our training is nil. This is another thing we have, in our six week program a week that we call training week but our training week never consisted of any training it was always, we worked in Unit 2, that was the week we go to Unit 2 and it wasn't training is was normal HP or chemistry functions it was never any training. Our department, for the number of things that we have to do is way too small. we have found that since this accident has happened we have the same number of people in our department that we had before the accident minus two, excuse me, but still the functions that were doing now are so vast that the people that we had for both units still aren't enough for one Unit now that were working in Unit 1 only. I feel that there's enough to know in chemistry and there's enough to know in HP to have those two jobs,

different jobs, but as far as the HP function of it, I feel that there's just not enough training and not enough people and you can see a difference when they bring in an outside contractor such as NSS. It was much more professional because those people, the comments were always made, boy those NSS people were very good in their jobs. Well, they should be because that's the only job they do. Ours is such a vast amount of work that working two different departments we can't be the way they are.

COLLINS: Do you have some specific examples, things that should have been done, that weren't done, or things that done incorrectly because of a shortage of people or inadequate training?

BURKHOLDER: There's a lot of little things that weren't done because of the shortage of people. As far as contamination there's there's many people that were contaminated that were never reported or recorded contaminated because you have so much work to do that its easier to say to the person, go ahead and get yourself cleaned up and check yourself out again and see if everythings okay and if it is go on your merry way. It was much easier to do that than it is to sit down and fill out a sheet on them that, but the underlying thing was that there was so many other things to do that you were too busy to worry about that small petty stuff and actually its not small and petty.

COLLINS: What do your procedures call for when an individual is contaminated? You mentioned filling out a form.

BURKHOLDER: Yes, there's a form that's filled out, a personal loss of dosimetry or contamination form that's supposed to be filled out on every contamination or loss of dosimetry type thing. A lot of times they are not filled out. I'd say most times they are not filled out.

COLLINS: Do you know of any instances were individuals were contaminated and were unable to decontaminate themselves and no investigation was done with regard to how they became contaminated and what kind of doses they may have received in contamination? Is there any instances where somebody might have gone off the Island or gotten away without being decounted?

BURKHOLDER: I know of an instance where there was a person got contaminated but the contamination was a fixed contamination and they had been let go. Because they couldn't get the contamination off of them, it was a more of a fixed thing, it couldn't be washed off.

COLLINS: In that instances was a record of the individual's contamination maintained and an analysis of skin dose made?

BURKHOLDER: On one particular case no, on the other one I think there was but I wasn't involved in it.

COLLINS: Who are the individuals you are speaking of?

BURKHOLDER: They were people who worked for the catalytic.

COLLINS: When did this occur?

BURKHOLDER: What time of year?

COLLINS: What date? The best you can do, how long ago?

BURKHOLDER: Okay, it would have been the last, the refueling outage in Unit 1 before the last one. That would have been 78.

COLLINS: What were the levels of contamination?

BURKHOLDER: I don't recall offhand.

COLLINS: Was the personnel the individual's contamination brought to the attention of any foreman or management supervisors?

BURKHOLDER: Yes, it was.

COLLINS: What did they do?

BURKHOLDER: They tried deconning as best as possible, it was followed up in this case that they were to bring their pillowcase in the next day and check that to see if anything came off of that in their sleep at night.

COLLINS: Where was the contamination?

BURKHOLDER: It was on the back of the head, the hair.

COLLINS: Were these people body counted or urine, urinalysis taken for analysis...fecal ?

BURKHOLDER: No.

COLLINS: Was any records of this contamination maintained, you mentioned there was no Contamination Incident Form filled out? Was there any record made in log or their dosimetry file?

BURKHOLDER: I don't know.

COLLINS: You don't recall the names of these individuals?

BURKHOLDER: No.

COLLINS: You mentioned that you worked six weeks in chemistry and six weeks in HP. What kind of refresher or introductory discussion on changes that have occurred in six weeks is provided to you when you go back to these people?

BURKHOLDER: None.

COLLINS: How do you learn of changes?

BURKHOLDER: Through word of mouth, a lot of times. If you're doing something, somebody would say, hey, we're not doing that this way any more. And you'll say, who else isn't doing that? Well he'll say, well we were told that its not this way. Its always a word of mouth thing. There have been times though that there been memos put out on certain items, but in most cases its word of mouth

COLLINS: Do you know of any particular problems that have resulted, any specific problems that have resulted from the changes in procedures or equipment that you were not informed of when you changed from HP to chemistry and vice versa?

BURKHOLDER: No.

COLLINS: You mentioned that you participated in one drill, after the drill was there not a critique where you could express to your foreman or to some other individual areas where you thought there could be improvements or you could express your lack of understanding of how the Sam 2 operated?

BURKHOLDER: Yes, there was a critique, but that was set up mostly for the people who went to the critique. Anybody could go to the critique, but it was set up mostly for those people who were the monitors and it was what did they feel was the problems in the areas of responsibility as far as monitoring the drill was concerned. A lot of times there was jest made of the fact that one of the technicians would pull out something to use and it didn't work or he didn't know how to use it or took a very long amount of time to get results back and these things were supposed to be rectified in a subsequent drill.

COLLINS: Did you go to any if these critiques?

BURKHOLDER: I went to one.

COLLINS: So it was brought up at that critique that in fact equipment that was suppose to be functional was not and the people did not know how to the use the equipment that they were required to use.

BURKHOLDER: That's right.

COLLINS: To whom was this shortcoming expressed?

BURKHOLDER: It was up for whoever was there. There was recommendations made that maybe we should do this or do that, my particular instance was that I had been after the foreman several times to give us training and I was assured that this would happen. My problem was I told Tom Mulleavy that I did not know how to use the Sam 2 and I wanted training, he assured me that I would get training and I never did.

COLLINS: When was this?

BURKHOLDER: This was before the drill last September.

COLLINS: And that's the drill you participated in.

BURKHOLDER: That's correct.

COLLINS: At the critique who made the comment concerning the lack of training and the inadequate equipment?

BURKHOLDER: It was the, the monitor that was on with us at the time, said there was considerable confusion in the use of the equipment in the areas that we were at.

COLLINS: Were there any changes that resulted from that comment, was there any training provided to any of the HP technicains?

BURKHOLDER: No.

COLLINS: Any more frequent checks of equipment?

BURKHOLDER: No.

COLLINS: That's all that I can ...

BURKHOLDER: I have one other comment as far as HP is concerned and that's in the respect of air sampling. It comes to mind that up until now air sampling was nil as far as being done. We relied on our equipment at the plant to tell us what problems we had in the aux building, the fuel handling building and so on? We never took air samples as far as a part of our surveys that we did on a regular routine, it was too time

consuming. The only thing we ever did were smears and dose rate surveys never any air samples, they always told us to rely of the monitoring equipment for the particular areas.

COLLINS: By monitoring equipment you mean installed air samplers at each plant?

BURKHOLDER: That's correct.

COLLINS: What numbers did you use in filling out RWPs for air concentrations?

BURKHOLDER: Our limits are three E^{-10} and whenever we fill out for a particular cubicle the air in that cubicle was, we were told that the ventilating system was hooked up to the main monitoring and that we, as long as that monitoring equipment was not alarming, that we were told to put down on the RWPs less than three E-10.

COLLINS: This is, who told you to do that?

BURKHOLDER: Nobody in particular, its another word of mouth thing. It was something that was done, if you would ask the foreman they were of the same opinion.

COLLINS: So the standard operating order was that if there was no air monitors being alarmed then the concentrations everywhere no matter what work had to been down was less than 3×10^{-10}?

BURKHOLDER: Yes, at times there were, depending on the type of job that was done, if it was grinding or any thing else it was assumed their would be a possible airborne contamination and we would put them in a particulate respirator. And, at times there .. we use to have a HP technician take an air sample whenever any of these things would happen. They break open into a system, we would take an air sample, but that fell by the wayside because we didn't have the technicians to give to this particular job that had to be done, there was so many jobs that had to be done but too few technicians to go around to do them.

COLLINS: In determining whether you marked air sampler required on RWP, what requirement, what criteria did you use?

BURKHOLDER: If there was a air sampler, you mean the HP technician?

COLLINS: Correct. When you sign a RWP okay, there's a section on there where you could mark, or anybody completing a form, can mark air sample required.

BURKHOLDER: Its usually HP escort required on there.

COLLINS: But you can say, air sample during job or after job, or on breaking container, however you wanted to account it. What's the criteria for requiring an air sample for a specific job?

COLLINS: I guess what I'm asking is, is there a procedure that sets forth that criteria and if not, what criteria is used?

BURKHOLDER: No, there's no procedure and if there was a system that was .. if they were going to be working in an area for any length of time that they knew they were breaking into a system that might contain airborne they would take a sample, they would first require respiratory equipment and an air sample to be taken. And the air sample itself would determine whether they had to continue to wear respiratory equipment. But that was seldom done.

COLLINS: So you were not aware of any routine air samples in cubicles and you are not aware of any criteria for taking air samples at this time?

BURKHOLDER: There, well at this time, since the accident and since the NRC has been here we have been requiring on every survey to do air samples, but thats only been since this accident.

COLLINS: Okay. Is there anything else you would like to talk about at this time?

BURKHOLDER: No.

COLLINS: I want to thank you very much for coming in and talking to us and I know that things may come to your mind, specifics may come to your mind about the first three days in the future, I would like you very much to please contact either me or Mr. Shackleton or any of the NRC people, the investigating team or the NRC complement. We are most interested in getting information and facts from the first three days and we will be looking into your concerns expressed about the first three days. And your concerns expressed about t things that may have occurred in another time frame will be reviewed by someone, probably not this team. We are trying to restrict ourself to the first three days and the NRC will look into your other concerns.

BURKHOLDER: Thank you.

SHACKLETON: Mr. Burkholder, that last question I might have and it was somewhat covered, I want to be sure that there's no holes. Did you maintain any type of a log or a notebook in your pocket or something concerning dose rates or any of that type of information during those first three days?

BURKHOLDER: No, I did not.

SHACKLETON: Did any of your colleagues that you worked with maintain personal notes?

BURKHOLDER: Not that I know of.

SHACKLETON: Alright, thank you. Doug, if you have no further questions, again I'll extend appreciation of the Commission for coming in and sitting down and working your mind and trying to recall what happened nearly two months ago. We'll close this interview at 8:58 p.m., eastern daylight time, May 17, 1979.