

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

1 the Matter of:
2 IE TMJ INVESTIGATION INTERVIEW
3 of
4 Kenneth E. Burkholder
5 Radiation Chemistry Technician
6
7
8

9 Trailer #203
10 NRC Investigation Site
11 TMI Nuclear Power Plant
12 Middletown, Pennsylvania

13 May 17, 1979
14 (Date of Interview)

15 July 9, 1979
16 (Date Transcript Typed)

17 205 and 206
18 (Tape Number(s))
19
20

21 NRC PERSONNEL:

22 Douglas M. Collins
23 Owen C. Shackleton
24
25

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1 SHACKLETON: This is an interview of Mr. Kenneth E. Burkholder. Mr.
2 Burkholder is a Radiation Chemistry Technician with the Metropolitan
3 Edison Company assigned to Three Mile Island. This interview is beginning
4 at 7:32 a.m., May 17, 1979. The interview is taking place in trailer
5 203 which is located just outside the south gate of the Three Mile
6 Island Nuclear Power Station operated by the Metropolitan Edison Company.
7 Present to conduct this interview from the U.S. Nuclear Regulatory
8 Commission is Mr. Douglas M. Collins. Mr. Collins is a Radiation
9 Specialist assigned to Region II. My first name is Owen C. Shackleton,
10 I'm an Investigator assigned to Region V. Just prior to going on tape,
11 I presented to Mr. Burkholder a two-page document from the U.S. Nuclear
12 Regulatory Commission which sets forth the purpose and scope of this
13 investigation. It also identifies the authority of the U.S. Nuclear
14 Regulatory Commission to conduct an investigation of this nature and
15 advises persons being interviewed of their rights to refuse to be
16 interviewed, of their rights to have someone present of their choice,
17 and their rights to refuse to give any form of a signed statement. On
18 the second page of this two-page document there are three questions.
19 Mr. Burkholder answered all three questions in the affirmative. At
20 this time we make it a matter of record on this tape, I'm going to ask
21 Mr. Burkholder these three questions and asking him to respond orally.
22 Mr. Burkholder did you understand the two-page document that I just
23 described?

1 BURKHOLDER: Yes.

2
3 SHACKLETON: And do we at the U.S. Nuclear Regulatory Commission have
4 your permission to tape the interview?

5
6 BURKHOLDER: Yes.

7
8 SHACKLETON: And, would you like a copy of this tape?

9
10 BURKHOLDER: Yes.

11
12 SHACKLETON: Alright sir, we'll provide you a copy at the close of this
13 interview. And now Mr. Burkholder, to help identify yourself to those
14 persons who would be listening with interest to the comments you provide
15 to our Commission, would you please give us briefly a resume' of your
16 work experience, bringing us up to date to your present job with Metro-
17 politan Edison?

18
19 BURKHOLDER: Work experience, after graduating from high school, I
20 worked in Harrisburg Bank and I worked there about a year and a half
21 and went to the Hershey National Bank, worked there for about a year
22 and a half. I left there in 1965, I started working for Metropolitan
23 Edison Company. I started as a Turbine Room Attendant, I progressed to
24 Fireman Second Class. I went to the line department and from there I
25

1 was accepted to go for training down here at Three Mile Island, and
2 October 20, 1969 we started schooling down here for chemistry. Since
3 that time, I've worked in chemistry and that's been changed to Radiation
4 Chemistry Technician. I've been working in that job to the present.
5

6 SHACKLETON: Alright sir, thank you very much. Now I'll turn the
7 interview over to Mr. Collins.
8

9 COLLINS: Thank you very much for taking some time out to come talk to
10 us today, Mr. Burkholder. Before I speak I'm going to be saying my
11 name so that the people who type the transcripts of what goes on here
12 knows who's talking. Could you please provide a description of your
13 actions and actions of others that you observed starting with the time
14 you first heard of or were notified of the incident on the 28th of
15 March, in your own words. What we'll do is let you go through and let
16 you start when the incident took place and go through midnight of the
17 30th of March, the first three days, and then we'll go back afterwards
18 and try to pick out specifics and let you elaborate on them. But
19 please in your words start with whenever you hear about it and try to
20 bring us through the 30th.
21

22 BURKHOLDER: When I came in to work on March 28th I was scheduled to
23 work 7:00 to 3:30. When I first got here, the first thing we noticed
24 was that the cooling towers were down, there wasn't very much steam
25

1 coming out, so we assumed that there was a problem. As soon as we
2 walked into the search facility it seemed like there was an air of
3 excitement or gloom and you could tell that there was a problem, and
4 then we heard announcing that there was in fact an emergency and that
5 certain people who were not essential were to go to the north auditorium
6 and those who were essential were to go to their regular place. So we
7 proceeded to go back since we were HP, proceeded to go back to the
8 Unit 1 Health Physics lab which is the ES emergency center and await
9 instructions. When I got there, it wasn't too long that we were assigned
10 the job of the offsite team. We were Alpha. When we got, left there
11 and we went to get our equipment and check it out before we left. When
12 we were ready to go we had a radio and heard where they needed some
13 onsite readings right away. Well there was confusion as to who was to
14 be the onsite team and supposedly the onsite team had been sent down to
15 take readings at the discharge RML 7. So in the haste, I radioed back
16 and said that we would take over for the onsite team, since we were
17 ready to go and get those readings. So as a result we were assigned to
18 the onsite team and someone else had been assigned to the offsite team.
19 We went around that day taking readings at whatever point they thought
20 the wind direction was in. At first there was a lot of confusion,
21 especially on my part. Since I had no training in the use of the
22 Sam 2, I did not realize what, exactly how the thing worked. So I was
23 a little bit confused up to that point. The guy who was with me luckily
24 had had some previous training on the Sam 2 and he knew how it worked.
25

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

1 COLLINS: Go ahead, just tell us what, if you can't put it in a specific
2 day, within the first, 29th and 30th what were you doing? You got
3 sample bottles you mentioned, did you then join any survey teams or
4 work on the TLD's or what do you recall?
5

6 BURKHOLDER: From when I got the sample bottles, I reported back and I
7 was...they wanted to get some equipment over to the observation center
8 for reading TLD's and that, but I think that was the 30th they tried to
9 do that.
10

11 COLLINS: Did you assist in frisking any people or equipment coming off
12 the Island? Did you return to the Island and do anything on the Island?
13

14 BURKHOLDER: That second day we went back on the Island and after I had
15 gotten those we were assigned to go onto the Island and they weren't,
16 the areas that were contaminated or high airborne or had high dose
17 rates, we were assigned to go to and escort people who needed assistance
18 in doing jobs.
19

20 COLLINS: What was some of these jobs that were being performed on that
21 day and where were they being performed?
22
23
24
25

1 BURKHOLDER: Some of them was in the aux building, it had to do with
2 trying to get samples, trying to get dose rates. They wanted to know
3 if they could go into certain areas to do some valving, to do some
4 repacking, to do any little jobs that they had to do, we were to survey
5 those areas and report back to them and tell them what we found.
6 Everything was done Scott airpack.
7

8 COLLINS: What areas did you survey and what results do you recall?
9

10 BURKHOLDER: In the aux building, they wanted to go into the makeup
11 valve alley on the 305 elevation and they wanted to...the job they had
12 to do was to repack a valve that had been leaking. When I walked into
13 the hallway to get to the makeup valve alley, it was reading 1 to 2 R
14 in the hallway and till I got back to makeup valve alley, I was just at
15 the door, and I had a teletector with me, and I extended the probe and
16 it was 750 R contact on the door.
17

18 SHACKLETON: Mr. Burkholder when you say 750 R, you mean R per hour?
19

20 BURKHOLDER: That's correct.
21

22 SHACKLETON: Alright, thank you.
23
24
25

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

9
10 COLLINS: To your left?

11
12 BURKHOLDER: Uh, hum.

13
14 COLLINS: What was some of the other dose rates that you found on the
15 way down the hall? Were there any high dose rates or any notable dose
16 rates?

17
18 BURKHOLDER: Well, we were told not to linger, we were told to get down
19 the hallway and take general readings and that's when I was getting 1,
20 2 R at the time, as best we could, get down there and check that area
21 out because they wanted to see what they could do about that job.

22
23 COLLINS: Who did you report these results to?

1 BURKHOLDER: Dick Dubiel.

2
3 COLLINS: Was any record of these results maintained?

4
5 BURKHOLDER: I don't believe, no.

6
7 COLLINS: Who else went with you? You mentioned we.

8
9 BURKHOLDER: Well, we I said we, I meant that we were given specific
10 jobs meaning the radiation protection people. But I went by myself on
11 that occasion.

12
13 COLLINS: Did you make any other entries that day into the aux building,
14 Unit 1 or Unit 2?

15
16 BURKHOLDER: No.

17
18 COLLINS: Do you recall any other assignments you had the second day,
19 that would be the 29th, Thursday?

20
21 BURKHOLDER: The day that I'm talking about was either Thursday or
22 Friday.

1 COLLINS: What time of day was this on the day that you went in? Was
2 this morning, afternoon, right after you came on shift, close to the
3 end of the shift?
4

5 BURKHOLDER: This would have been about 11:00 o'clock in the morning.
6

7 COLLINS: You mentioned that you, on one of the days, probably Friday,
8 you went to the Island and got some equipment for reading TLDs. Can
9 you elaborate on that? Where did you get the equipment? What was it?
10 Who did you bring it to? Where?
11

12 BURKHOLDER: That day, as I said, the things, hours were so, days were
13 so mumble jumbled that it hard to recall exactly which day now. That
14 might even had been Saturday, but we came in with a truck. There was a
15 guy who had worked here who left and went to Berwick, and he came down
16 with a PP&L van and we came in with that and loaded up the TLD equipment
17 from the TLD trailer that we have and loaded it on to that truck and
18 took it over to the observation center.
19

20 COLLINS: Where did you leave it then? With whom at the observation
21 center?
22
23
24
25

1 BURKHOLDER: Well we carried it upstairs to the second floor up to the
2 top and we left it with him, he and this man that I was saying about.
3 There was a supervisor here our foreman who went to Berwick. He helped
4 to set this equipment up.
5

6 COLLINS: Who from the Rad Chem department was, TMI Rad Chem Department
7 was there working with TLD equipment and helpint to set it up?
8

9 BURKHOLDER: Fred Huey.
10

11 COLLINS: Can you remember anything else before I go back and try to
12 find some more specifics? Can you remember anything else about your
13 actions on the first three days?
14

15 BURKHOLDER: No.
16

17 COLLINS: If you recall anything as we go through please try to add it
18 in as you recall it so that you don't put it out of your mind. You
19 mentioned that when you arrived on Wednesday, approximately at 7:00
20 o'clock, you went to the processing center and heard the announcement
21 of a radiation emergency. About what time was the announcement and
22 what did the announcement consist of?
23
24
25

1 BURKHOLDER: The announcement was said to be, I would say it was about
2 a quarter after seven and they said that they had a radiation emergency
3 in, I don't think they said what Unit, but they wanted the nonessential
4 people to assemble in the north auditorium and operators and health
5 physics people to report to their normal places.
6

7 COLLINS: You then proceeded to the Unit 1 HP lab which is the ECS.
8 Was the ECS established and who was there?
9

10 BURKHOLDER: When I walked in there were people on the phone, I don't
11 recall who was working, who was doing what at the time, but when I went
12 in, I just waited for assignment and without noticing who was doing
13 what job. We were talking among ourselves exactly what had happened,
14 we weren't really sure, Pete Velez had come in and said that we had,
15 this time it was not a practice drill, it was the real thing, and that
16 they were reading 800 R in the dome of the Unit 2 reactor building but
17 still we didn't know what had really happened. Nobody seemed to know.
18 And we were then assigned to the job of going out and being the offsite
19 team.
20

21 COLLINS: Who assigned you to go check the equipment out for surveys?
22

23 BURKHOLDER: No one did that, we took that upon ourselves to do.
24
25

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

3
4 BURKHOLDER: No.

5
6 COLLINS: You then proceeded to the processing center to check out the
7 operation of survey equipment. Was the equipment operable? Was it
8 where it was suppose to be?

9
10 BURKHOLDER: The equipment we found was where it was supposed to be and
11 it was operable at the time. I might add, not being familiar with the
12 equipment myself, I wasn't really sure how it worked so I was glad that
13 there was somebody with me who had worked it and knew about what to do.

14
15 COLLINS: Who was the other member of your team who did know how to
16 operate the equipment?

17
18 BURKHOLDER: Dave Etheridge.

19
20 COLLINS: You mentioned that you were not familiar with the equipment,
21 can you describe for us the training you had in previous emergency
22 drills and in the use of equipment that would be used in an emergency?
23
24
25

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

21
22 COLLINS: This was in the one drill that you participated in, the other
23 Chem Rad Technician did not understand how to use the equipment either?
24
25

1 BURKHOLDER: Well the other persons that they sent along with me, that
2 particular time, was an operator and he did not know how to use the
3 equipment either. No.
4

5 COLLINS: How many drills have you participated in? Formal drills?
6

7 BURKHOLDER: One.
8

9 COLLINS: What did the dress rehearsal drills consist of? Were you
10 assigned to go get equipment? Assigned a specific job and then told to
11 go to specific locations and simulate readings?
12

13 BURKHOLDER: No. We were told how to, we were supposed to look in the
14 equipment and see that everything was there, take our equipment out and
15 pick up what we had to do. The operator was there with the key, with a
16 vehicle ready to go. We loaded everything on. Waited for our assignment
17 and then when we were given the location to go to, we'd go to that
18 location and wait for further instructions.
19

20 COLLINS: What other training, what other health physics training,
21 formal or on the job have you received since arriving at TMI? You
22 mentioned chemistry training, what about health physics training?
23
24
25

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

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

11
12 SHACKLETON: This is a continuation of the interview of Mr. Burkholder.
13 The time is now 8:02 a.m. eastern daylight time, May 17, 1979. Mr.
14 Burkholder will you please continue with your comments.

15
16 BURKHOLDER: I came down here in October 20, of 1969 to start a training
17 program, I was a Chemistry Technician at the time and our department
18 had been two separate departments. The training that I received in
19 health physics, we were trained in both aspects, both chemistry and
20 health physics. But since that time we have had sporadic but very
21 little training in health physics.

22
23 COLLINS: When was the last time you had any training in the use of
24 radiation detector equipment or any other formal health physics training?
25

1 BURKHOLDER: Well I'll have to give you some background before I can
2 answer that question. When I was in the chemistry and health physics
3 department we were told that our jobs were going to be daylight and we
4 were told we were going to have separate departments, chemistry and
5 health physics. It was changed. They combined the departments and
6 they put us on shift work. I wasn't too happy about the situation,
7 because I felt then that to do a proper job in the chemistry or health
8 physics field, the department shouldn't be combined. It was hard enough
9 to try and learn one job without having to learn the other job. Plus,
10 we were told that when the Unit 2 started up we will be having both
11 Units, and this is the way it ended up. As a result I left the department,
12 I was away from the department for approximately a year a half to two
13 years, when I came back in the department I got training again for a
14 couple of weeks and that would have been about 1977 and that's the last
15 training I ever had. I wouldn't hesitate to say that I feel that that
16 would be the only training that I would have gotten, I wouldn't have
17 gotten that training if I would have stayed in the department. I have
18 one other comment to make, that I am, in our department now we have
19 radiation chemistry technician and radiation chemistry technician jr.
20 When I came back into the department I served my probation time and I'd
21 gotten some training in that area, in the health physics chemistry,
22 mostly health physics, I didn't get any chemistry training. I'm sorry.
23 I lost my train of thought.
24
25

1 SHACKLETON: You're referring to your training and you were talking
2 about that there was a Rad Chem Tech Junior and a Rad Chem Tech. Does
3 that help?
4

5 BURKHOLDER: That helps.
6

7 SHACKLETON: Okay.
8

9 BURKHOLDER: You move from Junior to Senior technicians, well they call
10 them technicians, but we call them Senior to differentiate between the
11 Junior. When I went from the Junior to the Senior job I was never
12 tested to see that I was qualified for that job and I feel that that is
13 completely wrong.
14

15 COLLINS: Was there, you say you were never tested. There was no
16 written test, no oral test, no performance test at all to go from
17 Junior to Senior technician?
18

19 BURKHOLDER: No. Not for me there wasn't.
20
21
22
23
24
25

1 COLLINS: Let's get back to the activities on the day of the 28th,
2 you've gone out, you've checked out the equipment its operable and your
3 own team with Erckeridge who does know how to use the equipment. Who
4 radioed you to start taking onsite readings and what was the specific
5 instructions, where did they ask you to go?
6

7 BURKHOLDER: I don't know who it was that radioed us, but they told us
8 that they wanted readings on the western side of the island.
9

10 COLLINS: What instruments did you use and how did you use them to take
11 the readings?
12

13 BURKHOLDER: We use the Sam-2 and air sampler.
14

15 COLLINS: What survey instruments did you have? Radiation measurement
16 instruments?
17

18 BURKHOLDER: We had a Pic 6.
19

20 COLLINS: What type of readings did you take with the Pic 6, open and
21 closed window, or was it just closed window or just open window?
22

23 BURKHOLDER: Just closed window.
24
25

1 COLLINS: To whom did you report the results of the surveys?
2

3 BURKHOLDER: We reported it to the ES.
4

5 COLLINS: Did you maintain any records of the survey results in the
6 vehicle?
7

8 BURKHOLDER: At first during the confusion, there was several readings
9 that had to be taken right away, there wasn't enough time to write
10 things down and get them in order. But later on during the day we
11 started to get the information together.
12

13 COLLINS: What happened to those records.
14

15 BURKHOLDER: I don't know.
16

17 COLLINS: Did you turn them over to the team who relieved you?
18

19 BURKHOLDER: Yes.
20

21 COLLINS: Throughout the first day, were all the readings you took
22 closed window only?
23
24
25

1 BURKHOLDER: Yes.

2
3 COLLINS: Do you recall any of the readings or locations, significant
4 readings or locations?

5
6 BURKHOLDER: There were significant readings at the...during the day
7 there was a northerly wind and at the gate about the north weather
8 station we were picking up about 10 mR.

9
10 COLLINS: You mentioned that Mr. Etheridge knew how to use the Sam 2
11 and you indicated later in the day, you and Mr. Etheridge became com-
12 fortable in the use of the Sam 2. Was there any change in the way you
13 use the Sam 2 to count air samples during the day?

14
15 BURKHOLDER: Any change? I don't understand?

16
17 COLLINS: Did you change any of the window settings or thresholds or
18 voltage or anything?

19
20 BURKHOLDER: No.

21
22 COLLINS: So, the Sam 2 was used the same way the entire day?

1 BURKHOLDER: That's correct.
2

3 COLLINS: You mentioned that you were instructed to go to locations
4 that you thought were not in the direction of the prevailing winds.
5 What did you use to determine the direction of the prevailing winds?
6

7 BURKHOLDER: Well the wind was heavy enough that day that you could
8 tell what direction it was going just by the way it was blowing. We
9 found that some of our higher readings were in areas that weren't, we
10 weren't told to go to those areas to report.
11

12 COLLINS: Did you look at the cooling towers or any furnace stacks or
13 anything that might have given a plume to determine what direction the
14 wind was at about the stack?
15

16 BURKHOLDER: Yes, but even sometimes the stack is going in different
17 directions then the air down below is going and we used...you could
18 tell which way the air was blowing. Dust from the roads, whenever we
19 would be driving you could see which way it was blowing, trees you
20 could use those as reference.
21

22 COLLINS: Do you know who was giving the instructions by radio at
23 anytime during that day, any of the individuals names?
24
25

1 BURKHOLDER: Yes. Jim Seelinger was giving us the instructions the time
2 that we had radioed back and told him that we were getting, that we
3 knew that the wind was going in another direction and that we were
4 getting higher readings there and we were emphatically given instructions
5 to go to where he told us to go.
6

7 COLLINS: Is there any thing else you recall significant that first day
8 while you were taking readings offsite?
9

10 BURKHOLDER: No.
11

12 COLLINS: You stated that you left about 5:00, who did you turn your
13 equipment over to? Who was your relief team?
14

15 BURKHOLDER: The relief team was Joe Hipple and Mike Gabner.
16

17 COLLINS: The 29th, you believe the 29th, you went into the auxiliary
18 building to take radiation level measurements. Who told you to go in
19 to take these measurements?
20

21 BURKHOLDER: Dick Dubiel.
22
23
24
25

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

3
4 BURKHOLDER: We used the door at the 305 level. It goes into the HP
5 area.

6
7 COLLINS: So you entered from the Unit 2 HP side?

8
9 BURKHOLDER: Yes.

10
11 COLLINS: What type of protective clothing did you have at that time?
12 What did you wear?

13
14 BURKHOLDER: I wore cotten coveralls, a wet suit, cotton gloves, rubber
15 gloves, and a Scott airpack.

16
17 COLLINS: What prebriefing did you receive that conveyed to you what
18 kind of radiation levels and air concentrations you might encountered
19 in the auxiliary building?

20
21 BURKHOLDER: There were no specific instructions as to what the problems
22 were except they knew the airborne activity was high and that the
23 readings were high in those areas to go into to where they specifically
24 told us to go and told me to go and then come back out again.

1 COLLINS: Was there sufficient instrumentation available for radiation
2 detection and measuring instrumentation available for you to go in
3 with. Was there a teletector available?
4

5 BURKHOLDER: At the time there was, yes.
6

7 COLLINS: Did you have a RWP feed before you could enter?
8

9 BURKHOLDER: No.
10

11 COLLINS: What kind of access control was in effect at that time at the
12 entry to the auxiliary building?
13

14 BURKHOLDER: There were two people there that were manning that doorway.
15

16 COLLINS: Could you recall who they were?
17

18 BURKHOLDER: No.
19

20 COLLINS: You mentioned a 750 R per hour field, was that with the
21 teletector open window, closed window, do you recall?
22

23 BURKHOLDER: The teletector has no open window or closed window on it.
24
25

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

3
4 BURKHOLDER: Oh, no. No.

5
6 COLLINS: Who was in charge of the HP function on that day, who was the
7 foreman?

8
9 BURKHOLDER: The person who was completely in charge of the HP function
10 was Dick Dubiel.

11
12 COLLINS: Who did you report to immediately, was there a foreman?

13
14 BURKHOLDER: I was taking my instructions from Dick Dubiel.

15
16 COLLINS: Did you take any air samples on that day.

17
18 BURKHOLDER: No.

19
20 COLLINS: Did you make any other entries into the aux building?

21
22 BURKHOLDER: That particular day, no.
23
24
25

1 COLLINS: What dose did you pick up in doing that survey?
2

3 BURKHOLDER: 450 mR.
4

5 COLLINS: How long were you in the area?
6

7 BURKHOLDER: I was in that area for approximately 3 to 5 minutes.
8

9 COLLINS: Were you whole body counted subsequent to that entry?
10

11 BURKHOLDER: A few days later, yes.
12

13 COLLINS: What were the results?
14

15 BURKHOLDER: There was no results.
16

17 COLLINS: How did your pocket chamber reading compare to the TLD readings?
18

19 BURKHOLDER: It was pretty close.
20
21
22
23
24
25

1 COLLINS: You mentioned picking up samples from Crawford Station on the
2 29th, some sample bottles from Crawford Station on the 29th, did you
3 see any sample bottles that contain samples when you returned from
4 Crawford Station. Who did you give the bottles to and what was the
5 activity in that area?
6

7 BURKHOLDER: The bottles, I took them to the north gate and there was
8 another truck going in at the time so they took them in for me.
9

10 COLLINS: In your wandering, or in your work at the observation center
11 did you see any samples coming into the observation center and where
12 were they going if you did?
13

14 BURKHOLDER: There was none that day that I saw, no.
15

16 COLLINS: Can you recall anything else happening those first three
17 days? For example, were you in any way involved in taking primary
18 coolant samples, or steam generator samples, or analyzing any of the
19 samples taken?
20

21 BURKHOLDER: No.
22

23 COLLINS: Were you involved in surveying any people out or in assisting
24 in decontamination of individuals?
25

684 066

1 BURKHOLDER: No.

2
3 COLLINS: During any of your entries into the aux building these first
4 three days, did you receive any personnel contamination?
5

6 BURKHOLDER: No.

7
8 COLLINS: Did you participate in any investigations into personnel
9 exposures or personnel contaminations.
10

11 BURKHOLDER: No.

12
13 COLLINS: Did you operate the TLD reader, read any TLDs, maintain any
14 of the TLDs records?
15

16 BURKHOLDER: No.

17
18 COLLINS: Was you assigned to any offsite survey teams?
19

20 BURKHOLDER: No.

21
22 COLLINS: Have you had any other interviews prior to this one?
23
24
25

1 BURKHOLDER: No.

2
3 COLLINS: Have you been given any guidance as to how to respond to any
4 of the questions that we might have in here?

5
6 BURKHOLDER: No.

7
8 COLLINS: Do you have any reason to believe that anyone would purposely
9 try to damage the plant?

10
11 BURKHOLDER: No.

12
13 COLLINS: Do you have any other facts or any other comments you might
14 want to bring to our attention at this time?

15
16 BURKHOLDER: I'm a little hazy on the time again, but it was within the
17 first three days, I was in the auxiliary building in Unit 2, I had on
18 cotton coveralls, Scott airpack, wetsuit, boots. I was supposed to go
19 in to get a sample from HPR 227 which is the reactor building containment.
20 I was in on two different occasions to get those samples which was a
21 air sample and on both occasions I thought that I had gotten the samples
22 and it turned out that they did not have the valves open to that sampler
23 and I got a high exposure from being in that area for no reason.
24
25

1 COLLINS: Who assigned to go take these samples?
2

3 BURKHOLDER: Dick Dubiel.
4

5 COLLINS: Was there any prebriefing or organized discussion between HP
6 and operations with regard to when you were going to go in, what you
7 were going to do, what valves needed to be lined up, what kind of
8 communications there would be between you and the Control Room for the
9 lineup of valves, or anything like that?
10

11 BURKHOLDER: Yes, we were, we had full knowledge that I was going in to
12 take these samples. It was discussed between Dick and I when I got in
13 there that I would line the sample up and call him and he would have
14 them open up the valves from containment to the sampler and its a
15 recirc line that there's two valves that are supposed to be open to get
16 to the sampler and two valves back to the containment. When I called
17 him he immediately told the control room operator that I needed those
18 valves open so I could control my sample. They supposedly did that and
19 I thought I was drawing the sample, but in fact it was in-leakage that
20 caused the flow indicator to show me that I was getting some type of
21 flow. And it took awhile to get the sample lined up. There was some
22 confusion there and after it was lined up when I left the area and then
23 came back again to get the sample. When I came back I noticed that the
24 flow indicator showed no flow and evidently the inleakage had, the
25

684 069

1 pressures had compensated for each other and the flow indicator showed
2 nothing. I called back and found out later on that those valves up
3 there were not fully opened, they were open, there must be two different
4 places to open those valves. The one place wasn't open and the other
5 one the control room operator did in fact open the valves, but he
6 didn't open the ones in back of the panel the way I understand.
7

8 SHACKLETON: Mr. Burkholder have you ever performed that assignment
9 before under normal circumstances?
10

11 BURKHOLDER: Yes.
12

13 SHACKLETON: Frequently, so that you were familiar with it.
14

15 BURKHOLDER: Yes.
16

17 SHACKLETON: Thank you.
18

19 COLLINS: In these instances when you performed the change out previous
20 to the change out that you are discussing now, were those other valves
21 closed?
22

23 BURKHOLDER: Pardon me, I don't understand.
24
25

1 COLLINS: Did you have to call up to the control and have the valves
2 opened under normal circumstances to take a sample, or were those
3 valves normally opened?
4

5 BURKHOLDER: They were normally open?
6

7 COLLINS: What happened to the HPR 227 samples that were taken?
8

9 BURKHOLDER: When I was there they never got the sample.
10

11 COLLINS: Did you take any gas samples or hydrogen in the first three
12 days?
13

14 BURKHOLDER: Yes.
15

16 COLLINS: Were you successful in taking these things? That is, did you
17 get flow?
18

19 BURKHOLDER: Yes, supposedly I got flow, but there again it was in the
20 middle of shift and it was supposed to be turned over that, they were
21 supposed to have some type of lead shielding provided that after that
22 sample was gotten they would put it in that lead shielding and take it
23
24
25

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

4
5 COLLINS: You mentioned you've gotten high dosage in trying to take the
6 HPR-227 samples. What kind of dosage did you pick up?

7
8 BURKHOLDER: I picked up a combination of 700 mR trying to get those
9 samples in that area, over a period of different times?

10
11 COLLINS: Did you take any other samples in the auxiliary building in
12 the first three days? I know that the station vent HPR-219 was changed
13 a few times during that period. Did you take any of those samples?

14
15 BURKHOLDER: No.

16
17 COLLINS: Do you know what happened to any of the valid samples that
18 were taken during the first few days? Where were they being sent?

19
20 BURKHOLDER: The containment samples?

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

5
6 BURKHOLDER: As I said before there were several hydrogen samples from
7 the containment building that I took and analyzed and gas partition
8 over in Unit 1, those were left there, there was another sample, a
9 liquid sample that was taken over to the...there was an NRC trailer at
10 the observation center and we took a sample over to them.

11
12 COLLINS: This was a liquid sample, you recall how it was identified?

13
14 BURKHOLDER: No, I don't, we were instructed. It was just given to us
15 in a bag and we were told to put it in the back of the truck and take
16 it over.

17
18 COLLINS: Do you recall what day this was?

19
20 BURKHOLDER: No, I don't.

21
22 COLLINS: You brought it to the NRC trailer and it was received there?
23
24
25

1 BURKHOLDER: No, I took it in a truck, I was told to stay with the
2 sample until somebody came back and took it to where it was supposed to
3 go, then I was supposed to go back on the island again.
4

5 COLLINS: So then somebody came, picked it up from the north gate, I
6 take it, and then brought it over to us.
7

8 BURKHOLDER: No, we actually brought it to the observation center. We
9 parked in the parking lot and the foreman that was with me went into
10 the observation center to find out where the sample was to go and the
11 meantime I stayed outside to keep people away from, that might come
12 near the sample.
13

14 COLLINS: Who was the foreman with you?
15

16 BURKHOLDER: Joe Deman.
17

18 COLLINS: And then you transferred to samples to someone from the NRC,
19 or RMC, or to whom?
20

21 BURKHOLDER: In the meantime, Joe came back out and I was sent back
22 onto the Island and he took care of the sample from there.
23
24
25

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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,

1 7:00 to 3:30, Monday thru Friday and the following week we rotate on a
2 daylight shift, 7:00 to 3:00 then we go the following week to 3:00 to
3 11:00 and the following week 11:00 to 7:00 and the whole rotation takes
4 six weeks. The one six weeks, we're in chemistry; the next six weeks,
5 we're in HP. By rotating back and forth to each, to the departments,
6 we lose continuity of what we're doing, it takes us awhile to get back
7 into the main stream of our particular job. There's health physics is
8 too big of a job to have chemistry combined with it and chemistry is
9 too big of a job to have health physics combined with it. You can't be
10 a good technician and work in two different departments such as these.
11 Did you have any specifics the you wanted to ask me?

12
13 COLLINS: No, I wanted to leave it open to your specific recommendations
14 or other facts that you want to bring to our attention at this time.

15
16 BURKHOLDER: In the field of health physics particularly, its gotten to
17 a point, there's so many things to be done, normal routine things, that
18 are to be done that it makes the job so impersonal to a person who come
19 back for health physics training. One of the things is recordkeeping,
20 there's a lot of duplication in recordskeeping. We have releases that
21 we have to do from time to time, gas releases that we do. There's so
22 many paperwork type things to do that you cannot be, cannot have a
23 personal relationship with people who come back there when there's a
24 problem, and it's not that you want to feel this way but you have the
25

1 feeling that you got to get your work done because that paperwork shows
2 how much work you've done, when you are working with a person as a
3 person, that's not recorded work and you don't get credited with it and
4 most people are of the same opinion that if HP and the way our department
5 is worked is so, there's so many things to do in that department that
6 its a very impersonal department as far as the personnel are concerned.
7 When there's a contamination problem that comes in the first thing you
8 do is tell that person to go back and take care of themselves. If
9 their hands are contaminated or their shoes are contaminated, you ask
10 them to take care of themselves before you do, because you have other
11 things that you have to do. And this is not the way the department
12 should be run. That department should be the, the person comes first,
13 our training is nil. This is another thing we have, in our six week
14 program a week that we call training week but our training week never
15 consisted of any training it was always, we worked in Unit 2, that was
16 the week we go to Unit 2 and it wasn't training is was normal HP or
17 chemistry functions it was never any training. Our department, for the
18 number of things that we have to do is way too small. we have found
19 that since this accident has happened we have the same number of people
20 in our department that we had before the accident minus two, excuse me,
21 but still the functions that were doing now are so vast that the people
22 that we had for both units still aren't enough for one Unit now that
23 were working in Unit 1 only. I feel that there's enough to know in
24 chemistry and there's enough to know in HP to have those two jobs,
25

684 077

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

9
10 COLLINS: Do you have some specific examples, things that should have
11 been done, that weren't done, or things that done incorrectly because
12 of a shortage of people or inadequate training?

13
14 BURKHOLDER: There's a lot of little things that weren't done because
15 of the shortage of people. As far as contamination there's there's
16 many people that were contaminated that were never reported or recorded
17 contaminated because you have so much work to do that its easier to say
18 to the person, go ahead and get yourself cleaned up and check yourself
19 out again and see if everythings okay and if it is go on your merry
20 way. It was much easier to do that than it is to sit down and fill out
21 a sheet on them that, but the underlying thing was that there was so
22 many other things to do that you were too busy to worry about that
23 small petty stuff and actually its not small and petty.

1 COLLINS: What do your procedures call for when an individual is con-
2 taminated? You mentioned filling out a form.
3

4 BURKHOLDER: Yes, there's a form that's filled out, a personal loss of
5 dosimetry or contamination form that's supposed to be filled out on
6 every contamination or loss of dosimetry type thing. A lot of times
7 they are not filled out. I'd say most times they are not filled out.
8

9 COLLINS: Do you know of any instances where individuals were contaminated
10 and were unable to decontaminate themselves and no investigation was
11 done with regard to how they became contaminated and what kind of doses
12 they may have received in contamination? Is there any instances where
13 somebody might have gone off the Island or gotten away without being
14 decounted?
15

16 BURKHOLDER: I know of an instance where there was a person got con-
17 taminated but the contamination was a fixed contamination and they had
18 been let go. Because they couldn't get the contamination off of them,
19 it was a more of a fixed thing, it couldn't be washed off.
20

21 COLLINS: In that instances was a record of the individual's contamin-
22 ation maintained and an analysis of skin dose made?
23
24
25

1 BURKHOLDER: On one particular case no, on the other one I think there
2 was but I wasn't involved in it.
3

4 COLLINS: Who are the individuals you are speaking of?
5

6 BURKHOLDER: They were people who worked for the catalytic.
7

8 COLLINS: When did this occur?
9

10 BURKHOLDER: What time of year?
11

12 COLLINS: What date? The best you can do, how long ago?
13

14 BURKHOLDER: Okay, it would have been the last, the refueling outage in
15 Unit 1 before the last one. That would have been 78.
16

17 COLLINS: What were the levels of contamination?
18

19 BURKHOLDER: I don't recall offhand.
20

21 COLLINS: Was the personnel the individual's contamination brought to
22 the attention of any foreman or management supervisors?
23
24
25

1 BURKHOLDER: Yes, it was.
2

3 COLLINS: What did they do?
4

5 BURKHOLDER: They tried deconning as best as possible, it was followed
6 up in this case that they were to bring their pillowcase in the next
7 day and check that to see if anything came off of that in their sleep
8 at night.
9

10 COLLINS: Where was the contamination?
11

12 BURKHOLDER: It was on the back of the head, the hair.
13

14 COLLINS: Were these people body counted or urine, urinalysis taken for
15 analysis...fecal ?
16

17 BURKHOLDER: No.
18

19 COLLINS: Was any records of this contamination maintained, you mentioned
20 there was no Contamination Incident Form filled out? Was there any
21 record made in log or their dosimetry file?
22

23 BURKHOLDER: I don't know.
24
25

1 COLLINS: You don't recall the names of these individuals?
2

3 BURKHOLDER: No.
4

5 COLLINS: You mentioned that you worked six weeks in chemistry and six
6 weeks in HP. What kind of refresher or introductory discussion on
7 changes that have occurred in six weeks is provided to you when you go
8 back to these people?
9

10 BURKHOLDER: None.
11

12 COLLINS: How do you learn of changes?
13

14 BURKHOLDER: Through word of mouth, a lot of times. If you're doing
15 something, somebody would say, hey, we're not doing that this way any
16 more. And you'll say, who else isn't doing that? Well he'll say, well
17 we were told that its not this way. Its always a word of mouth thing.
18 There have been times though that there been memos put out on certain
19 items, but in most cases its word of mouth
20

21 COLLINS: Do you know of any particular problems that have resulted,
22 any specific problems that have resulted from the changes in procedures
23 or equipment that you were not informed of when you changed from HP to
24 chemistry and vice versa?
25

1 BURKHOLDER: No.

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

8
9 BURKHOLDER: Yes, there was a critique, but that was set up mostly for
10 the people who went to the critique. Anybody could go to the critique,
11 but it was set up mostly for those people who were the monitors and it
12 was what did they feel was the problems in the areas of responsibility
13 as far as monitoring the drill was concerned. A lot of times there
14 was jest made of the fact that one of the technicians would pull out
15 something to use and it didn't work or he didn't know how to use it or
16 took a very long amount of time to get results back and these things
17 were supposed to be rectified in a subsequent drill.

18
19 COLLINS: Did you go to any if these critiques?

20
21 BURKHOLDER: I went to one.

1 COLLINS: So it was brought up at that critique that in fact equipment
2 that was suppose to be functional was not and the people did not know
3 how to the use the equipment that they were required to use.
4

5 BURKHOLDER: That's right.
6

7 COLLINS: To whom was this shortcoming expressed?
8

9 BURKHOLDER: It was up for whoever was there. There was recommendations
10 made that maybe we should do this or do that, my particular instance
11 was that I had been after the foreman several times to give us training
12 and I was assured that this would happen. My problem was I told Tom
13 Mulleavy that I did not know how to use the Sam 2 and I wanted training,
14 he assured me that I would get training and I never did.
15

16 COLLINS: When was this?
17

18 BURKHOLDER: This was before the drill last September.
19

20 COLLINS: And that's the drill you participated in.
21

22 BURKHOLDER: That's correct.
23
24
25

1 COLLINS: At the critique who made the comment concerning the lack of
2 training and the inadequate equipment?
3

4 BURKHOLDER: It was the, the monitor that was on with us at the time,
5 said there was considerable confusion in the use of the equipment in
6 the areas that we were at.
7

8 COLLINS: Were there any changes that resulted from that comment, was
9 there any training provided to any of the HP technicians?
10

11 BURKHOLDER: No.
12

13 COLLINS: Any more frequent checks of equipment?
14

15 BURKHOLDER: No.
16

17 COLLINS: That's all that I can ...
18

19 BURKHOLDER: I have one other comment as far as HP is concerned and
20 that's in the respect of air sampling. It comes to mind that up until
21 now air sampling was nil as far as being done. We relied on our equipment
22 at the plant to tell us what problems we had in the aux building, the
23 fuel handling building and so on? We never took air samples as far as
24 a part of our surveys that we did on a regular routine, it was too time
25

1 consuming. The only thing we ever did were smears and dose rate surveys
2 never any air samples, they always told us to rely of the monitoring
3 equipment for the particular areas.
4

5 COLLINS: By monitoring equipment you mean installed air samplers at
6 each plant?
7

8 BURKHOLDER: That's correct.
9

10 COLLINS: What numbers did you use in filling out RWPs for air concen-
11 trations?
12

13 BURKHOLDER: Our limits are three E^{-10} and whenever we fill out for a
14 particular cubicle the air in that cubicle was, we were told that the
15 ventilating system was hooked up to the main monitoring and that we, as
16 long as that monitoring equipment was not alarming, that we were told
17 to put down on the RWPs less than three E^{-10} .
18

19 COLLINS: This is, who told you to do that?
20

21 BURKHOLDER: Nobody in particular, its another word of mouth thing. It
22 was something that was done, if you would ask the foreman they were of
23 the same opinion.
24
25

1 COLLINS: So the standard operating order was that if there was no air
2 monitors being alarmed then the concentrations everywhere no matter
3 what work had to been down was less than 3×10^{-10} ?
4

5 BURKHOLDER: Yes, at times there were, depending on the type of job
6 that was done, if it was grinding or any thing else it was assumed
7 their would be a possible airborne contamination and we would put them
8 in a particulate respirator. And, at times there .. we use to have a
9 HP technician take an air sample whenever any of these things would
10 happen. They break open into a system, we would take an air sample,
11 but that fell by the wayside because we didn't have the technicians to
12 give to this particular job that had to be done, there was so many jobs
13 that had to be done but too few technicians to go around to do them.
14

15 COLLINS: In determining whether you marked air sampler required on
16 RWP, what requirement, what criteria did you use?
17

18 BURKHOLDER: If there was a air sampler, you mean the HP technician?
19

20 COLLINS: Correct. When you sign a RWP okay, there's a section on
21 there where you could mark, or anybody completing a form, can mark air
22 sample required.
23
24
25

684 087

1 BURKHOLDER: Its usually HP escort required on there.
2

3 COLLINS: But you can say, air sample during job or after job, or on
4 breaking container, however you wanted to account it. What's the
5 criteria for requiring an air sample for a specific job?
6

7 COLLINS: I guess what I'm asking is, is there a procedure that sets
8 forth that criteria and if not, what criteria is used?
9

10 BURKHOLDER: No, there's no procedure and if there was a system that
11 was .. if they were going to be working in an area for any length of
12 time that they knew they were breaking into a system that might contain
13 airborne they would take a sample, they would first require respiratory
14 equipment and an air sample to be taken. And the air sample itself
15 would determine whether they had to continue to wear respiratory equipment.
16 But that was seldom done.
17

18 COLLINS: So you were not aware of any routine air samples in cubicles
19 and you are not aware of any criteria for taking air samples at this
20 time?
21

22 BURKHOLDER: There, well at this time, since the accident and since the
23 NRC has been here we have been requiring on every survey to do air
24 samples, but thats only been since this accident.
25

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

3
4 BURKHOLDER: No.

5
6 COLLINS: I want to thank you very much for coming in and talking to us
7 and I know that things may come to your mind, specifics may come to
8 your mind about the first three days in the future, I would like you
9 very much to please contact either me or Mr. Shackleton or any of the
10 NRC people, the investigating team or the NRC complement. We are most
11 interested in getting information and facts from the first three days
12 and we will be looking into your concerns expressed about the first
13 three days. And your concerns expressed about things that may have
14 occurred in another time frame will be reviewed by someone, probably
15 not this team. We are trying to restrict ourself to the first three
16 days and the NRC will look into your other concerns.

17
18 BURKHOLDER: Thank you.

19
20 SHACKLETON: Mr. Burkholder, that last question I might have and it was
21 somewhat covered, I want to be sure that there's no holes. Did you
22 maintain any type of a log or a notebook in your pocket or something
23 concerning dose rates or any of that type of information during those
24 first three days?

1 BURKHOLDER: No, I did not.
2

3 SHACKLETON: Did any of your colleagues that you worked with maintain
4 personal notes?
5

6 BURKHOLDER: Not that I know of.
7

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