UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:

IE TMI INVESTIGATION INTERVIEW

of Thomas E. Pyke
Rad Chem Tech, Jr.

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

May 16, 1979
(Date of Interview)

July 7, 1979
(Date Transcript Typed)

203 and 204
(Tape Number(s))

NRC PERSONNEL:
Gregory P. Yuhas
Bob Marsh
Tracy Binion

BINION: The following interview is conducted with Mr. Thomas E. Pyke. Mr. Pyke is a Rad. Chem Tech Junior at the Three Mile Island Nuclear Power Facility. The present time is 10:15 p.m. (eastern daylight time). Today is May 16, 1979. The place of the interview is Trailer #203, located immediately outside the south gate to the Three Mile Island Site. Individuals present for the interview will be: interviewer Gregory P. Yuhas, Mr. Yuhas is a Radiation Specialist, Region I; also present will be Mr. Bob Marsh, NRC Investigator, Region III. I will be monitoring the interview with a tape recorder. My name is Tracy Binion, I'm with the Office of Inspector and Auditor, my position is Inspector Auditor, US Nuclear Regulatory Commission. Prior to the interview being recorded, Mr. Pyke was provided a copy of a document explaining his rights concerning information to be obtained regarding the incident at Three Mile Island. In addition, Mr. Pyke was apprised at the purpose of the investigation, its scope, and the authority by which Congress authorizes the Nuclear Regulatory Commission to conduct an investigation. On the second page of the advisement document Mr. Pyke has answered three questions. The questions and Mr. Pyke's replies will now be recorded as part of the interview. Mr. Pyke, do you understand the document?

PYKE: Yes, I do.

BINION: Thank you. Do we have your permission to tape the interview?

PYKE: Yes.

BINION: Thank you. Would you like a copy of the tape or transcript?

PYKE: Yes.

BINION: OK. In addition, we have a fourth question regarding an issue that was covered in the text of the document. And that is, do you, would you like a company representative present at this interview?

PYKE: No.

BINION: Thank you. Mr. Pyke, will you please give a brief description of your employment in the nuclear industry and any education or training that you feel is pertinent.

PYKE: I began my career with Metropolitian Edison, September 22, 1969, in the capacity of a Utility B worker in the Western Division; worked my ranks through the various levels of the Line Department to a Classification of Second Class Second Year Lineman; 1974, I was offered a opportunity to come to Three Mile Island versus a layoff; I took the opportunity to come to Three Mile Island as a Utility B worker. After working here three years I did not exercise my right to bid any jobs for the fact that I wanted to go back to the Western Division pending...the layoff status warranted such action. After three years of this I decided it would be better if I stayed

at Three Mile Island for my own personal benefit. I bid a job into operations. I started training in the Aux. C program after approximately nine (9) weeks I dropped out for personal reasons. Several months thereafter, approximately six (6) months, another job came up as a Rad. Tech Chem Junior. I took the job and at that point I was interviewed for that job, took an exam and with my past history and educational background I qualified for that job. At that point Metropolitian Edison went out and hired an outside contractor to train a group of people and that contractor was Rad Services. They trained us in the different capacities of HP work and calibration of instruments. After completion of that course and passing the final exam, they considered us off probation and as Rad Chem Techs. Several months thereafter they also sent the same group in different... breakdown. They took four people at a time and sent us out to Alliance, Ohio, to Babcock & Wilcox Analytical Chemistry School. That was a two week course. We completed that, returned to Three Mile Island and continued to work in the capacity of our classification. And presently, I am now a Rad Chem Tech Junior.

BINION: Thank you, at this point the interview will be turned over to Mr. Yuhas.

YUHAS: Thank you Yuhas: Are you a high school graduate?

PYKE: Yes.

YUHAS: Did you take your preparatory course in high school?

PYKE: Yes.

YUHAS: Can you explain the amount of chemistry or physics that you took in high school?

PYKE: I took general chemistry in high school, inorganic chemistry in college.

YUHAS: How much college experience did you have?

PYKE: One year of college.

YUHAS: You apparently became a Rad Tech somewhere in the latter part of 1977?

PYKE: Approximately, yes.

YUHAS: The school provided by Rad Services were taught by Ralph Jacobs.

PYKE: True.

YUHAS: Was that a six week course?

PYKE: Six or eight weeks. I can't be sure exactly what it was. It was six or eight, I don't know.

YUHAS: Did this course consist of not only lectures but films?

PYKE: I don't recall any films. It was strictly a lecture course, along with practical application in the calibration of instruments.

YUHAS: What we are going to do now is, Mr. Pyke, I'm going to ask you to go through the sequence of involvement with the incident that occurred at TMI-2 on March 28. What I'm specifically interested finding out is how you were informed of the incident, when you came to work the first day; what your job assignments were; points of interest that stand out in your mind for the period from the first day till Friday the 30th. In other words we are talking about a three day period. After you go through that, then I'll come back and ask some specific questions to try to bring up some little more detail out of what you tell us. At the conclusion of that, I'll discuss the general health physics program at TMI with you and give you the opportunity to bring forth any comments, criticisms, or compliments you might have about that program. So why don't you go ahead and begin with the incident on the 28th.

PYKE: On the 28th, I was off schedule. My second off schedule day. The first I knew of the accident was that noon on the 28th by local media. At that point I didn't respond to telephone calls because I, as far as myself

calling in, I just figured that possibly it was a normal trip with some abnormalites to it. I didn't really feel it was probably anything to get excited about and I said well, I told my wife, I said well if its anything serious, they will call me. They never called me and I just didn't feel that it had the clout that it did. On Thursday I was scheduled to come in 3-11. Upon arriving to the gate, I was told that I couldn't enter the north gate, I was to proceed to the 500 Sub. I did that and at that point I discovered that it was a serious matter and at that particular time the HP control point was at the 500 Sub. That particular day I started at the control point monitoring personnel and equipment until approximately 8:00 o'clock or 2000 or 2100 hours that evening. Pat Donnachie and myself were dispatched to Unit 1 to take a pre-drawn letdown sample of Unit 2 whereby we were to take this sample and dilute it to a fraction of something less than 1 mR. I myself diluted that sample. Prior to diluting it, I took a dose rate reading on it. It was 10 R at 1 cc. I extracted that liquid from a gas, 60 gas vial using a syringe. I diluted that sample 100 million to 1 to get it less than 1 mR. After doing so, we left the lab. We found ourselves to be, I found myself to be contaminated on the left wrist. At that point then I discovered that this liquid wasn't of the normal nature that letdown was prior to the accident. We had handled letdowns hundreds of times and at that point I discovered that this stuff was a lot hotter than I had ever experienced before. I worked around the clock. I worked till 11:00 straight through till Thursday morning. At that point I went home, came back in again Thursday afternoon, and I was put on an onsite monitoring team. I stayed onsite to the best of my recollection all night

and went home. On Friday, I came in and my assignment at that point varied. It was at one point I was onsite team and another point I was offsite team and it was sort of an atmosphere of confusion as far as where they wanted this particular team that night and I wound up, I stayed offsite the entire night coming home approximately 9:00 o'clock on Friday.

YUHAS: Thank you. Let me clarify some dates to start off with. You said that you were off on Wednesday? That would have been the 28th?

PYKE: True.

YUHAS: OK, so you did not come in Wednesday?

PYKE: I did not come in Wednesday.

YUHAS: You came in Thursday?

PYKE: Thursday afternoon at....

YUHAS: At 3:00?

PYKE: Three o'lock in the afternoon.

YUHAS: Until the 11:00 shift?

PYKE: Yes.

YUHAS: And actually you worked over?...

PYKE: I worked double.

YUHAS: Till Friday morning?

PYKE: Right.

YUHAS: OK, so when you said...

PYKE: Oh, okay.

YUHAS: So when you said you, so that really it should have been Friday morning.

PYKE: OK.

YUHAS: OK, then you returned Friday afternoon...

PYKE: Right.

YUHAS: Okay, and you worked over till Saturday morning.

PYKE: Right.

YUHAS: And then that was really Saturday you were talking about the confusion on what team to be assigned to?

PYKE: Right, it began on Friday night and ended up Saturday morning.

YUHAS: OK. Allright, fine. Can you describe the conditions at the north gate when you arrived Wednesday at 3:00, excuse me Thursday at 3:00?

PYKE: The conditions of the north gate were cluttered with media, reporters and security personnel, other than that there wasn't very many people, and State police.

YUHAS: Who directed you to go to the 500 KV?

PYKE: Security personnel.

YUHAS: Who was on duty at the 500 KV substation when you arrived?

PYKE: Bob McCann, H. P. wise.

YUHAS: Mr. McCann is a foreman?

PYKE: Yes, he is.

YUHAS: Did Mr. McCann assign you to stay there at the 500 KV and monitor personnel?

PYKE: Yes.

YUHAS: Which other Rad Chem Techs were at the 500 KV at the time?

PYKE: Pat Donnachie, our entire shift was there. Pat Donnachie, I'm not sure if Vince Heilman was there or not, and uh Walt Deimler was there and there was an off going shift.

MARSH: Can you spell those last two names of the last two individuals?

PYKE: Donnachie, no.

MARSH: Not Donnachie but you mentioned a second man who you thought may be there?

PYKE: Vince Heilman.

MARSH: Heilman?

PYKE: Yes.

MARSH: Ok, and what was the other name?

PYKE: Walt Deimler.

MARSH: Deimler.

YUHAS: I'll spell those names, for the record Mr. Donnachie is spelled D O N N A C H I E, Mr. Deimler is spelled D E I M L E R, and Mr. Heilman is spelled H E I L M A N. The afternoon of Thursday, the 29th, in surveying personnel and vehicles did you find any of them to be contaminated?

PYKE: No.

YUHAS: OK.

MARSH: When we get into surveying here, can you tell me about instrumentation? Was instrumentation available for your survey instruments at the 500 KV station?

PYKE: Yes, it was.

MARSH: What about availability, were there adequate instruments available for you?

PYKE: At that point yes.

YUHAS: That evening did you survey either Houser or Velez?

PYKE: No.

YUHAS: So they had not arrived at the 500 KV before you were asked to come offsite and split the sample?

PYKE: That's more than I can tell you. They did not pass by me.

YUHAS: Were you aware who had collected the reactor coolant letdown sample that evening?

PYKE: Vaguely.

YUHAS: Were you aware that there had been a large exposure involved in that?

PYKE: I was not aware of that.

YUHAS: Who directed you and Mr. Donnachie to proceed to the Unit 1 area to split the sample?

PYKE: I don't remember.

MARSH: At that 500 KV site, do you recall who was in charge? Do you recall who was the senior man was there upon your arrival?

PYKE: Well we moved from the 500 sub after dark. NSS was, it was either NSS or Rad Services were taking care of most of it. They had moved a lot of the Med Ed personnel up to the observation center, from there they were dispatching them to jobs. I did coordinate though with Lyn Landry in Unit 1 control room. At that point, he instructed me on what he wanted in relation to the sample. He wanted 5 composite samples of the letdown, of the diluted letdown.

YUHAS: Landry indicated that he wanted 5 split samples.

PYKE: Yes.

YUHAS: When you and Donnachie went to the north gate did you already have your TLD badges?

PYKE: Yes.

YUHAS: OK, did you go to the north gate by bus?

PYKE: I don't remember.

YUHAS: Did you take a bus from the north gate into the process center?

PYKE: I think we did take a bus to the north gate but at that point we swapped vehicles. There was a party coming out and I believe at that point we took our vehicle and proceeded with that.

YUHAS: Did the security personnel search any packages you may have had or frisk you or anything like that.

PYKE: No.

YUHAS: When you got to the process center was there any one manning the process center?

PYKE: Yes. And if I am not mistaken, it was Rad Services, but I really can't be sure. It was such a point of confusion and that place looked so much different. The whole Unit 1 looked a lot different. It looked like a cyclone went through the place. It was a little bit scary when you walked in there. There was just debris laying all over the halls and so forth. I wasn't scared but it was a little erie feeling to pass through that kind of, because there wasn't people milling about except in the Unit 1 control room.

MARSH: Tom, I noticed on that one you're giving a little bit more broad answer. Don't feel confined to the question, if you have recollection of details, feel free to put them out.

YUHAS: As you came through the process center was there anyone there either Security guards or other that was performing the normal security functions?

PYKE: I believe there was. Now this is, you know going back seven weeks or eight weeks or whatever its been. In my mind all that I can remember is that there was maybe a half dozen people at that point and there were security personnel there and there were HPs there controlling that point and we were wearing masks to enter at that point. I had a lot of other things on my mind, I really didn't scope out the whole thing. I wasn't taking notes at this point in time.

YUHAS: So then you went to the Unit 1 control room?

PYKE: We proceeded to Unit 1 control room; talked to Lyn Landry; he gave us our instructions and we went down to perform the job. At that time, Pat Donnachie and myself entered the lab, suited up and went in, which seemed like a simple job to perform and it didn't turn out quite that easy because I didn't think it was going to take that kind of dilution factor to get the sample down to less than what I marked. I thought the first shot maybe I overdid it. I diluted the first time 1 cc to a 1,000. My final

dilution was 1 cc to 1,000. I took that, 1 cc of that to another 1,000 and 1 to 100, gave it a 10^8 dilution.

YUHAS: Let's go back up a little bit. Do you recall specifically what Landry told you?

PYKE: He told us where the vial would be found, and he told us essentially what he wanted in relation to mR readings and how many samples he wanted.

YUHAS: Did he tell you what the 6 ml sample read?

PYKE: I think that we were under the impression it was supposed to have read 3 R. Pat did the dose rate on it and he told me then at that point it was 10 R. It didn't sink into me at the time, I mean a 10 R, 1 cc 10 R. I just went ahead and because of handling letdowns at the frequency that we did, it just didn't sink in at the time you know, that 1 cc was 10 R. Basically maybe 500 cc under normal conditions would be approximately 500 mR depending how long it sat. So at that time it was really probably my fault as far as, I got an 880 beta dose on that night and I guess...well if I would have had it to do all over again I would have suited up differently.

YUHAS: Yes, let's back up again to what instructions Landry gave you. Did Landry tell you what the dose rate was going to be?

PYKE: I believe he told Pat. In my mind I remember there was a 3 R reading, and at that point we were a little astonished to find it to be 10 R but we were not wasting anytime; we jumped in; we did the job.

YUHAS: Did Landry ask you if you and Donnachie were volunteers to do the job?

PYKE: Not to my recollection.

YUHAS: Were you volunteers?

PYKE: I wasn't volunteering, I was told.

YUHAS: But you don't recall who you were told by?

PYKE: No I don't, that came out of the observation center, and at that point there was so many people in the observation center, somebody told us, maybe Pat..maybe the direction was given to Pat and Pat got ahold of me and said this is what we are going to do. I really don't remember.

YUHAS: Can you give me an approximation of the amount of time, including that time that Mr. Landry spent, till the time that you actually got dressed.. was available for you to plan the task?

PYKE: From the time I talked to Landry to the time we actually got in the lab, it was maybe 15 minutes.

YUHAS: Did you and Mr. Donnachie discuss precautions and procedures in that 15 minute period to how you were going to do it?

PYKE: We talked over what each individual was going to do. I told him I would do the dilution factor, and he agreed. He went in and he did the dose rate. I prepared the glassware, and so forth and prior to that..yes, we talked the job over.

YUHAS: Did you fellows fill an RWP for the test?

PYKE: No.

YUHAS: Can you describe the protective clothing you and Mr. Donnachie wore?

PYKE: I wore a pair of paper coveralls, black boots, triple gloves, a hood, and a respirator, and darned it with the appropriate tape.

YUHAS: Did Donnachie dress the same way?

PYKE: Yes.

YUHAS: Can you describe the type of dosimetry that you wore?

PYKE: I wore a high range, low range dosimeter and a TLD.

YUHAS: Can you describe the ranges of the dosimeters?

PYKE: The high range was 1 to 5 R and low range was 0 to 200 mR.

YUHAS: Did you have a shielded syringe available to you?

PYKE: I didn't use a shielded syringe and I don't know that we have such a piece of equipment.

YUHAS: What did you use to aliquot the sample for dilution...to pipette it?

PYKE: I didn't pipette it. I used a graduated syringe.

YUHAS: This would be a standard syringe then?

PYKE: Ok, initially I used a syringe to take it from the 6 cc vial. Once I got my first dilution, then I pipetted it with disposal pipettes, because they are the plastic type.

YUHAS: This would be using a suction bowl?

PYKE: Yes.

YUHAS: Where was the actual operation done, what room, what bench?

PYKE: It was done in the Unit 1 primary analysis room or primary lab. Now that's not the sampling room, that's the primary lab, and it was performed when I used the syringe to remove it from the gas vial. I did that under the hood. When I made my liquid dilutions after the first 1,000, I did it on the south lab bench.

YUHAS: The 6 ml container containing the 1 ml reactor coolant letdown sample was initially stored in the hood?

PYKE: No, it was initially stored on the south bench behind lead bricks.

YUHAS: How did you get it from the south bench to the hood?

PYKE: I picked it up with my hands and moved it.

YUHAS: Which hand did you use?

PYKE: I can't tell you, probably my left because I had the syringe in my right hand.

YUHAS: Did Donnachie take a dose rate on it before you picked it up?

PYKE: Yes.

YUHAS: What instrument was he using?

PYKE: Teletechor.

YUHAS: At what distance did he take the 10 R per hour reading?

PYKE: Contact reading.

YUHAS: Ok. So did he tell you they were at 10 R per hour?

PYKE: Yes he did.

YUHAS: So you picked it up with your left hand with two fingers, around the neck, around the body of the vial?

PYKE: Around the top of the vial, so that would be it had a septum on it.

YUHAS: About how long did it take you to pick it up and carry it to the hood?

PYKE: Two seconds.

MARSH: What's the distance from the location over to the hood?

PYKE: Twelve-foot.

MARSH: You're talking two or three steps then to pick it? One motion to move across. Another question, at this time was the hood operational? Was the venting system working on the hood or had the ventilation system been shutdown overall?

PYKE: I don't remember.

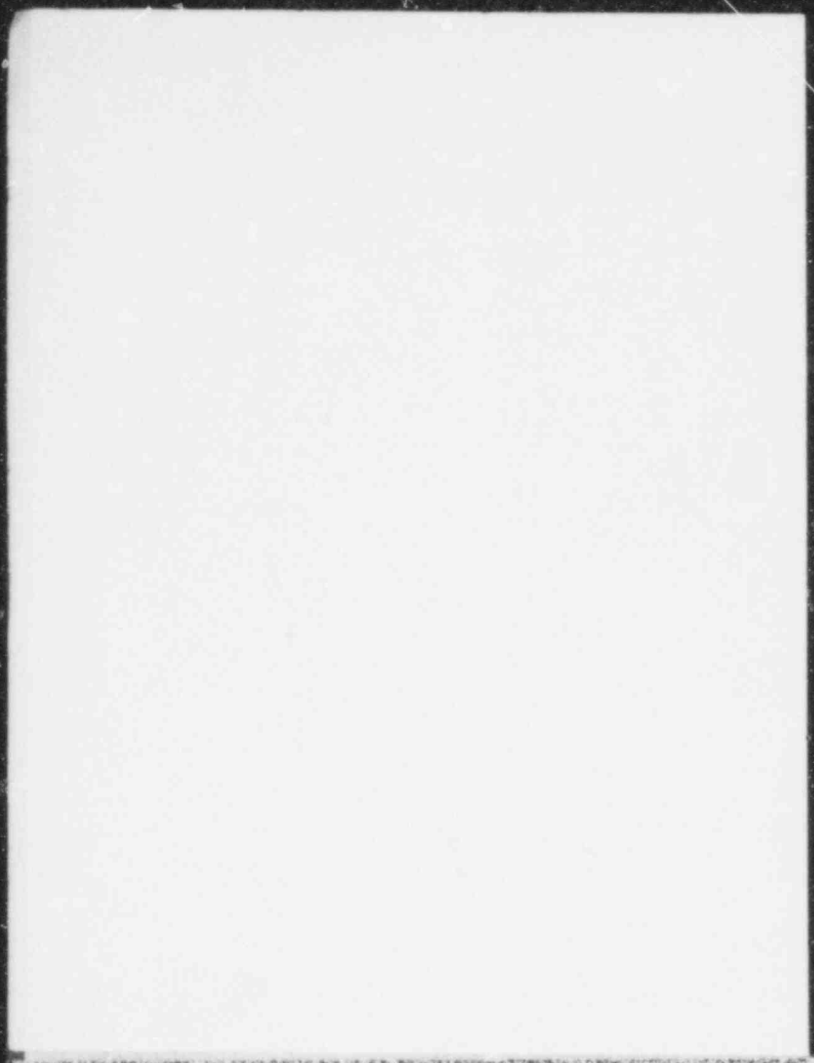
MARSH: Did you take any actions to turn the vent on with the hood or would it normally.....

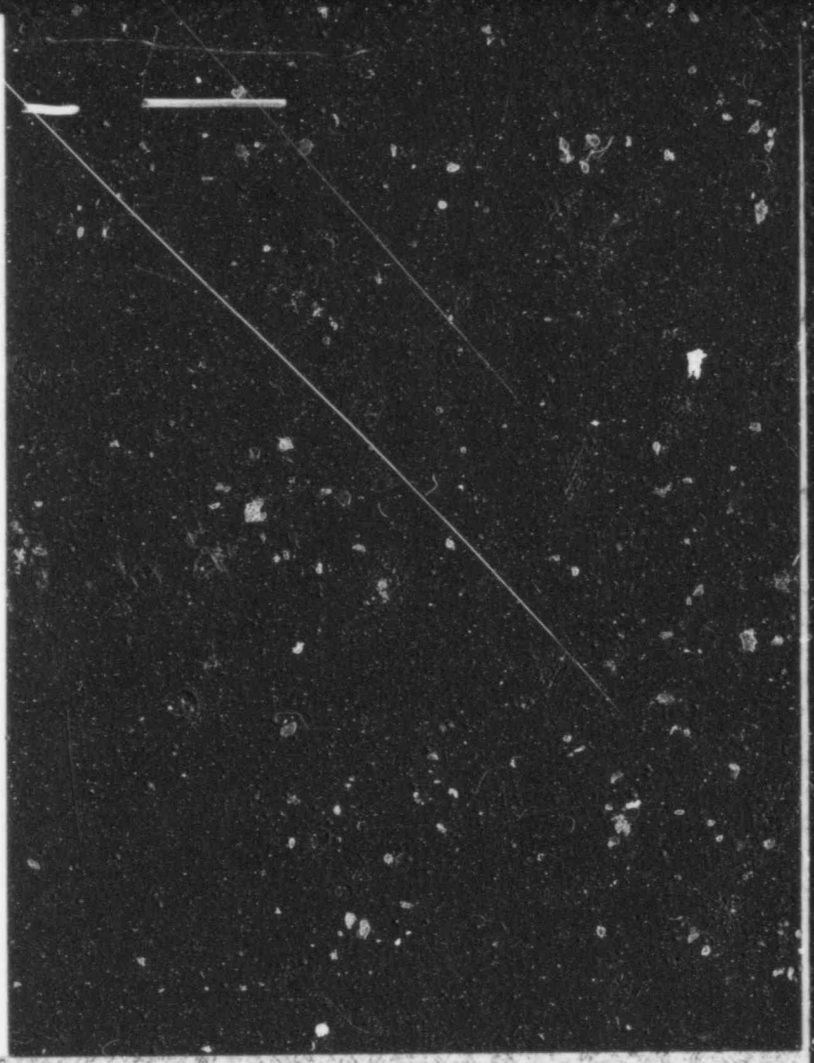
PYKE: We don't have control of that. The operations has control of that.

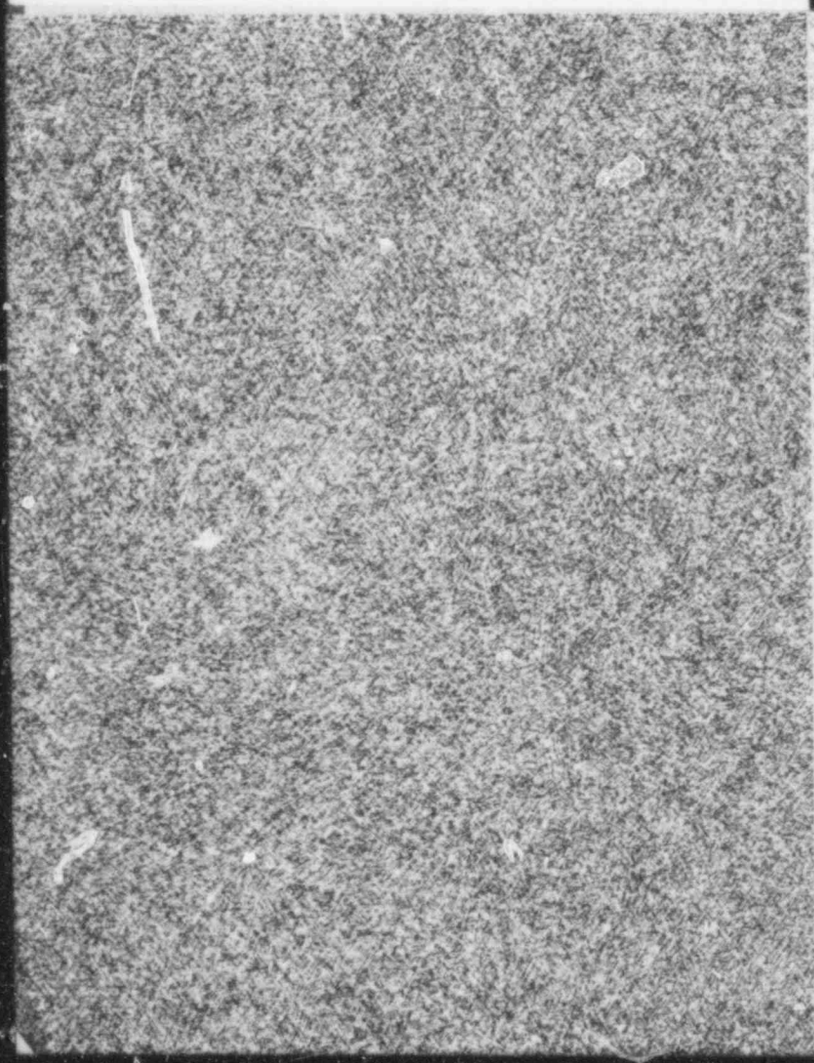
YUHAS: At this point you were wearing full face mask.

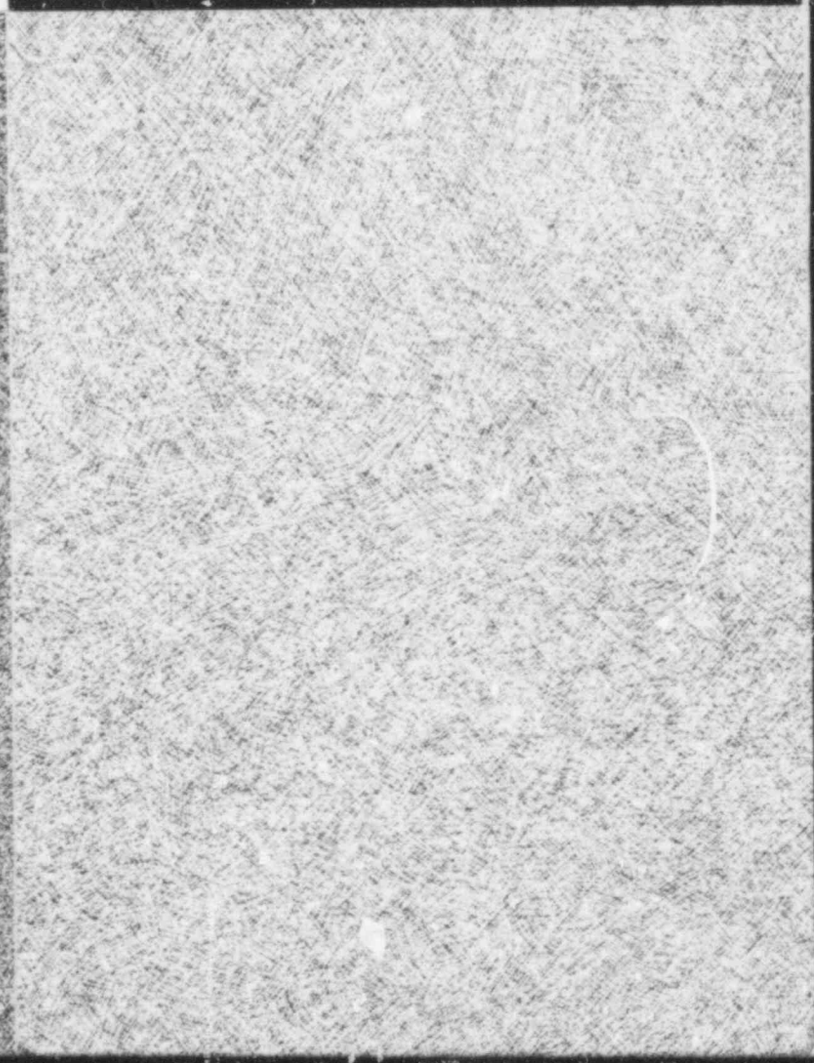
PYKE: Yes.

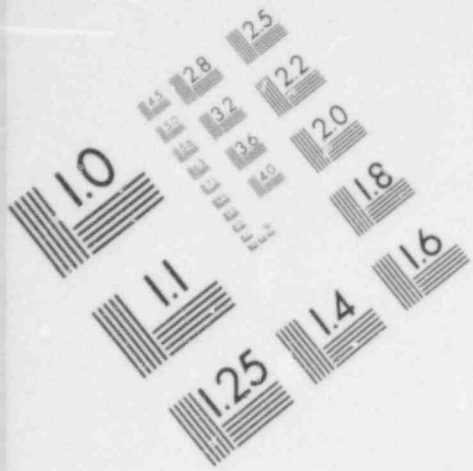
YUHAS: Were they cartridge type respirators?

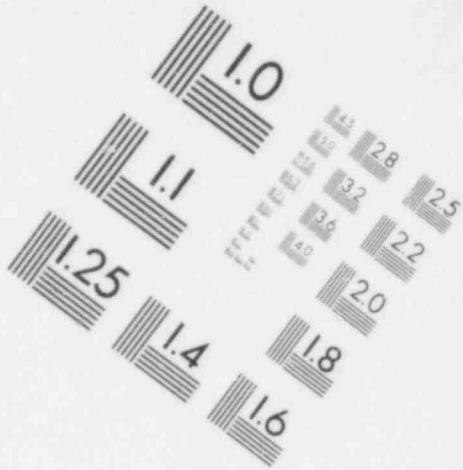












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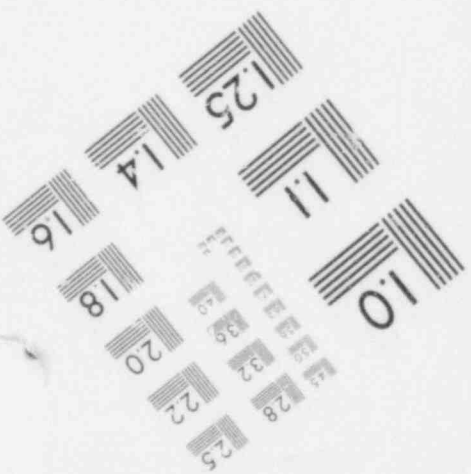

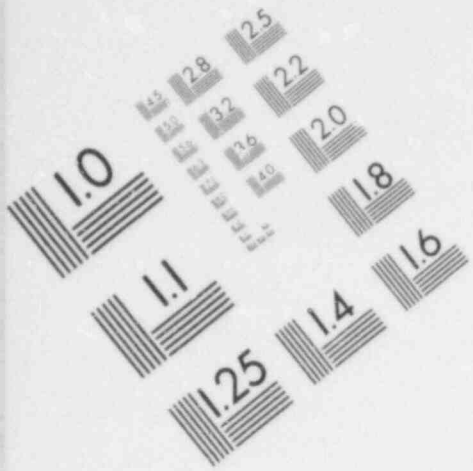

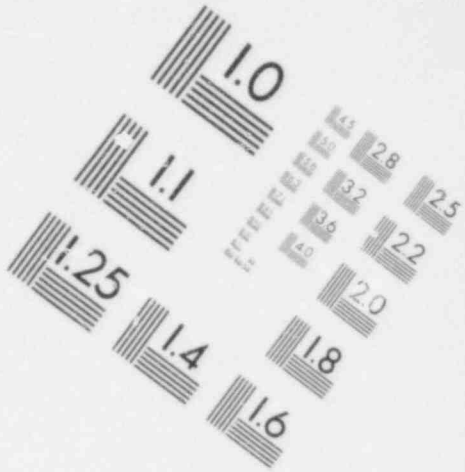

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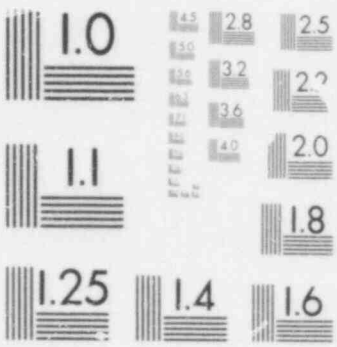

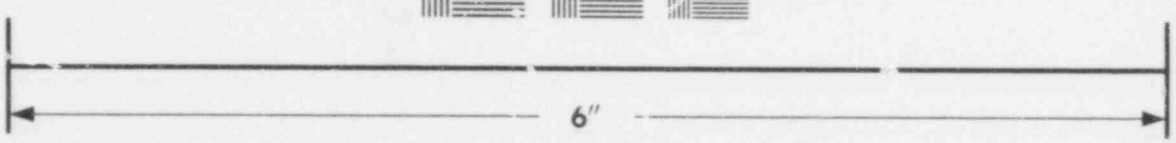

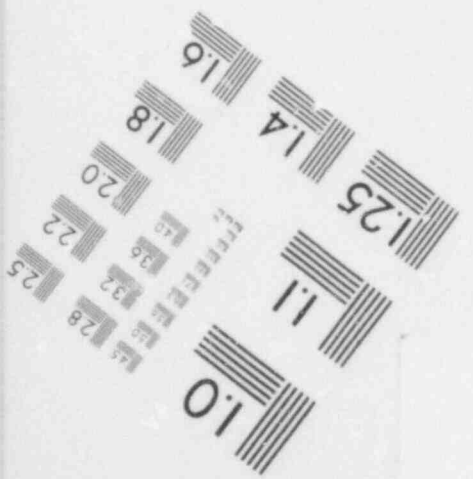

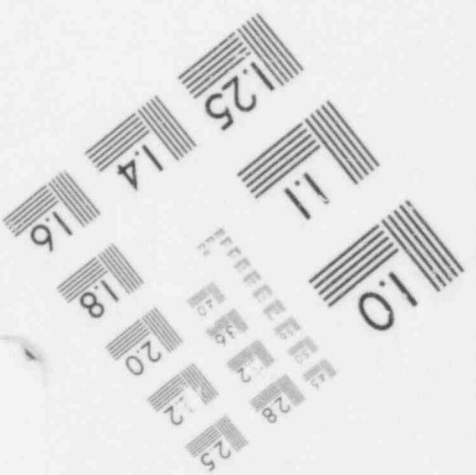

PYKE: No, particulate cartridge.

YUHAS: Sole particulate, no iodine?

PYKE: No iodine.

YUHAS: Now when you carried it over to the hood it was sealed, is that correct?

PYKE: Yes.

YUHAS: A rubber stopper over the top or something like that?

PYKE: Yes.

YUHAS: Now did you hold on to the bottle when you injected the hyperdermic needle?

PYKE: I had to, yes.

YUHAS: And about how long did you hold it before you finally released the original bottle?

PYKE: A couple of seconds.

YUHAS: Five seconds?

PYKE: Five seconds approximately.

YUHAS: So now you have released it with you left hand you have the hypodermic needle with the reactor coolant in the right hand?

PYKE: Right.

YUHAS: About how far is the coolant from the right hand while its in the syringe? Is it between the fingers or below the fingers.

PYKE: Below the fingers, it would be maybe approximately 3 or 4 inches.

YUHAS: And about what volume was in the syringe?

PYKE: In the syringe...1 cc.

YUHAS: So essentially the entire contents of the bottle?

PYKE: Was roughly just slightly over 1 cc.

YUHAS: The logical thing would be then you walked somewhere with this syringe. Where did you walk to with it?

PYKE: I walked no where with it. I put it..I extracted the syringe into a volumetric, 1,000 volumetric flask, and at that point I turned and disposed of the syringe in the trash can.

YUHAS: The trash can being outside the building?

PYKE: The trash can, yes, was outside the hood.

BINION: Excuse me, this is Tracy Binion, we are going to break at this time to change the tape. The time is 10:42 p.m.

BINION: This is Tracy Binion. We are continuing with the interview of Mr. Thomas Pyke, the time is 10:47 p.m.

YUHAS: At this point you've just discarded the syringe tip in the garbage can or the radwaste can outside the hood. This was after depositing the 1 milliliter into a 1 liter volumetric inside the hood, is that correct.

PYKE: That's correct.

YUHAS: Ok. At this point, did Mr. Donnachie take a dose rate on the 1 liter volumetric?

PYKE: I removed that volumetric, proceeded to the HP lab to take the dose rate due the background because I didn't anticipate that I'd have to cut it

any further than 1,000 to 1. I took it over and I sat it on the counter right inside the door on the right and took a dose rate on it and I don't remember what it was, but it was still rather high. I returned back to the lab but we were not worried about crapping up the floor, we were just worried about getting it done in the least amount of time because the lab was the same..wasn't the same. The lab was in shambles as far as clothing and apparatus and so forth laying around so we weren't really worried about the crapping up the floor. I immediately returned to the lab, told Pat that I had to take another dilution on it We discussed the dilution, he said go ah[illegible] on another 1,000. At that point I diluted another 1,000. I removed 1 ml by disposable pipette, injected that into another liter, returned back to the HP lab and took another dose rate. It was still outside the criteria that was dictated by Landry. Pat and I talked it over again, at that point what dulution factor did we want to go. We were getting within the ball park and we decided that we would try 100 to 1 and it worked, and it was just slightly less than 1 mR at that point. We took five composite samples and we placed them into the safe which was located in the count room which housed our jelly equipment and we left the area.

MARSH: When you added your sample to that volumetric flask, is that a glass stopper flask, in the volumetric?

PYKE: Yes it is.

MARSH: How are you ensuring a mix? Are you agitating that flask in any manner? Do you have a mechanical stirer in it?

PYKE: We just apply the glass stopper and agitate it manually.

MARSH: Invert it.

PYKE: Yes. By shaking, manual shake.

YUHAS: Did you wear extremity monitoring on your hands when you did this job?

PYKE: No, we didn't. Once again our hindsight, if our hindsight was as good as our foresight you know we would have done that, but this is one of the little qualms that I have. I think that we should have done that and I think we should have been instructed to do that and we weren't and it was an oversight on our part that we didn't do it. I don't want to point the finger at anybody, I think that we are as responsible for that as anybody. We should have been instructed to do so, and even if we weren't instructed to do so, I think we should have enough experience to do that, but we didn't. I think it was because we were trying to expedite the whole thing as rapidly as possible and it was an oversight.

YUHAS: Recognizing that oversight, has anyone calculated the potential extremity dose to your hands as a result of this evolution?

PYKE: Outside of Form 5 I don't think so. On the Form 5, it came out on the TLD that I got a 880 beta dose.

YUHAS: But that would not be an extremity.

PYKE: That would not be an extremity, no.

YUHAS: Ok, what was the gamma dose as measured by your pocket dosimeters for this evolution?

PYKE: If I remember correctly I think that we got, I got 450 mR.

YUHAS: An I would imagine Mr. Donnachie received substantially less?

PYKE: I think he did.

YUHAS: Ok.

MARSH: Where were you reading...where were you wearing your dosimeter or dosimeters?

PYKE: It was pinned on my left breast.

MARSH: Both high and low range?

PYKE: Yes all three and the TLD.

YUHAS: How did the TLD gamma reading compare with the pocket dosimeter gamma reading?

PYKE: I believe to the best of my recollection it was pretty close, within 50 mR, I believe it was. It was a little hard to read that because my low range was off scale and the high range you know that you have to have a calibrator on.

YUHAS: When you were carrying these samples, about what distance was the sample from your body, or particularly from your TLD badge when you were holding it? Was it at arm's length? Was it at half arm's length?

PYKE: I would say half arm's length.

YUHAS: Would it be fair to estimate about 18 inches?

PYKE: That sounds fair enough.

MARSH: Tom, what's you height? How tall are you?

PYKE: 5'6"

MARSH: Thank you.

YUHAS: So at this point you are not aware that the Health Physics Department in the form of either Mr. Dubeil or any of his representatives have calculated the extremity dose to your fingers and added this information into your Form 5.

PYKE: Not to my knowledge. No, I'm not aware of that.

YUHAS: Let's pick it up when you exited the lab. Could you describe the procedures that you went through for removing the mask, etc.?

PYKE: Well, if I remember correctly I probably removed my hood first, then I stripped off two surgeon gloves, that put me down to my taped element. At that point I removed the tape. I untaped my gloves. I stripped off the coveralls down to my boots and the gloves were the last to leave. At that point then, I removed my respirator. The respirator was the last to be pulled off.

YUHAS: Did anyone....

PYKE: And that was removed outside the old controlled area. We wore the respirators as soon as we entered the area.

YUHAS: During the course of your manipulation with the sample did anyone collect an air sample of your breathing zone air?

PYKE: No.

YUHAS: Did you wear a lapel air samples?

PYKE: No.

YUHAS: Is the lapel air sample available to you?

PYKE: No.

YUHAS: When you removed the mask and began to survey yourself, can you describe where the contamination was and what extent it was?

PYKE: I had contamination on my left wrist and the cuff of my shirt, and somehow I got it on my pants, on the lower leg of...the left lower leg of the pair of Wranglers.

YUHAS: What instrument were you using to survey yourself?

PYKE: RM-14.

YUHAS: What did it read?

PYKE: The wrist, or the clothing.

YUHAS: All the areas that became contaminated?

PYKE: The wrist was approximately 14,000. Then, I returned to decon myself and I got it down. I think it was, if I remember correctly, I got it down to about 8,000 at that..

MARSH: Excuse me, we're talking counts per minute on this instrument?

PYKE: Counts per minute. At that point I couldn't get it any lower. I had scrubbed my arm there and also scrubbed it over at the 500 sub until I couldn't take it anymore and approximately after seven or eight days I cleared. But each day, in twelve hours, it had dropped approximately half until I went off shift. It had dropped down about half.

YUHAS: This contamination when you tried to remove it what technique did you use?

PYKE: I used tape. At first I went through the normal scrubbing procedure with soap and water, and then we tried little tricks of using tape to extract it and went back to scrubbing, and after failing on those parts I wrapped the wrist in plastic and sealed it all hoping to sweat it out. I

left that on for the entire shift until the following day. Then I scrubbed again prior to going home and I returned the next day, well that afternoon of the following day, and it had dropped off approximately half.

MARSH: You initially said we tried tricks was someone assisting you in this decontamination effort?

PYKE: Well I was essentially deconing myself until I went to the 500 sub and then at that point NSS people also assisted me and who they were I don't remember but they too were trying to decon the wrist.

YUHAS: Did anyone document the levels of contamination, either yourself or individuals at the 500 KV?

PYKE: No, because of the fact that, you just don't have the availability under those conditions for all the paperwork and so forth and then it was just, there was so much other things going on I just figured it wasn't really important. I had been contaminated before and it came clean. It wasn't some new parameter for myself.

YUHAS: Had you ever been contaminated before where it took you that long to get it off?

PYKE: One time.

YUHAS: Did anyone gamma ID the contamination on your arm?

PYKE: No.

YUHAS: Did you have the capability of a whole body counter that you could have gone over and had them assess the number of microcuries per unit area in contamination on your arm?

PYKE: Possibly, but I didn't.

YUHAS: Did you inform your supervisor or Senior Tech that your arm was contaminated and you were having difficulity removing it.

PYKE: Pat Donnachie was aware of that and also the foreman, and I can't remember who that was.

YUHAS: The Health Physics foreman?

Yes, they were. I could find out who it was, but at this point I just can't remembe who it was.

YUHAS: Do you consider the amount of contamination present on your arm for the duration it was there to be a significant skin dose to your arm?

PYKE: Yes.

YUHAS: How would you go about estimating the amount of rad deposited by that contamination?

PYKE: Well, you could take it on a... I'm not sure.

YUHAS: Do you know if anyone has calculated this dose to the skin of the arm as a result of the contamination being there for eight days?

PYKE: Not to my knowledge.

MARSH: You indicated the bottom of your Wranglers also was contaminated?

PYKE: Yes.

MARSH: Did you pick up any on the skin of your leg?

PYKE: No, no I didn't.

YUHAS: Was Mr. Donnachie contaminated in anyway?

PYKE: He was clothing wise. I don't think he was contaminated to the skin.

YUHAS: Did you receive a whole body count in the ensuing days?

PYKE: Yes.

YUHAS: What did that whole body count show? On what date was it performed?

PYKE: I don't remember what day it was and I asked the man that who performed it and he said it didn't show any significant peaks.

YUHAS: Was this an RMC count?

PYKE: No.

BINION: Would you explain RMC?

YUHAS: RMC is Radiation Management Corporation, Denver, supplied to the licensee under contract as is Helvison. That's another vendor who provides the same services for the contract.

MARSH: One point before we get too far away. Initially you made a comment that addressing hindsight that you would have dressed differently and prepared differently had you known the significance in the strength of this sample. What way, what changes would you have made looking back now had you realized what you were getting into?

PYKE: Oh, I probably would have dressed up in at least two, two sets of PCs and a wet suit, but our normal dress, we thought we were handling it properly. Our normal dress to handle letdown consisted of nothing more than a lab coat, and a pair of gloves, cotton gloves and surgeon gloves under normal conditions, so it was a completely new ball game for us.

MARSH: Thank you.

YUHAS: The evening of the 29th when you went home with your arm wrapped in plastic.

PYKE: No, I removed the plastic at the 500 sub, the plastic was not contaminated. Nothing had leached out on the plastic, and I continued once more to scrub my wrist and I proceeded home.

YUHAS: What was your wrist reading when you went home?

PYKE: I don't quite remember exactly what it was.

YUHAS: Round numbers?

PYKE: 8,000.

YUHAS: Did you tell your family that your wrist was contaminated when you went home?

PYKE: No.

YUHAS: Did you tell them anytime during the eight day period that it was still contaminated?

PYKE: I may have mentioned it.

YUHAS: Did that generate any concern among your family?

PYKE: My wife is always concerned.

YUHAS: I assumed that you explained to her the significance of the contamination, the fact that it was not removable?

PYKE: I explained it to her, and I also explained to her that I was confident that it would be..it would either be removed or it would decay off. If it would not do either, then I would take measures to get to the bottom of it and find out what particular isotope it was and so forth. I was going on past experience that I had been contaminated before at different points and I'd always, it had always decayed off before, it just wasn't, it didn't seem that big a problem to me.

YUHAS: The remainder of the evening that pretty much took care of the first day for you I assume.

PYKE: Yes.

YUHAS: On Friday, Friday night till Saturday morning, this is the night that there was some confusion and you were shifted about from offsite to onsite teams.

PYKE: That's right.

YUHAS: Were there any particular readings that stood out in your mind that evening?

PYKE: No, in fact I was impressed that we wern't getting readings even onsite. Now we could track the wind drift when we were monitoring onsite but offsite I didn't, the only time we got any significant reading at all was during a period, I don't remember what the evolution was but we anticipated a release. I was downwind of that release and at that point I was east of Foulmouth the only time that it, I really, stood out in my mind was when the helicopter was overhead and he had a 300 mR reading approximately 700 feet and I was right underneath him when he gave that reading and I had 6 mR on the ground, 6 mR beta.

YUHAS: So you probably had like .6 or less than 1 gamma...

PYKE: I had approximately 1 mR of beta gamma.

YUHAS: You've answered most of the specific questions that I'm concerned about and now I'm interested in hearing if you have any general comments about the Health Physics Program here at Three Mile Island.

PYKE: Well, my estimation of the Health Physics Program at Three Mile Island should have been, there's been a continual deterrent in the operation ever since the corporate ran into financial difficulty back in 74, right after going commercial. I came to Three Mile Island one month after going commercial and at that point I felt...I worked for Mechanical Maintenance in the Utility Department and they had what I felt was a pretty decent Health Physics Program as far as what I knew of what HP was all about. From that point on over the years, it just seemed to me like the people were becoming complacent with evolutions that at one point they always had treated them very seriously and after a period of time they decided rather than to clean up spills they would just rope them off. They used to call out people to get them in, get it cleaned up, and they lived with the fact, oh, we'll wait for the next shift or the daylight people to come in and take care and we'll rope them them off. That was allright, I guess, but from that point then it just kept building to the point where we as HP had no control as far as assuring any clout in relation to the violations and I got concerned at different points and confronted my foreman. I didn't get an adequate satisfaction from them, so I proceeded then to my supervisors and they assured me that they felt they did have an adequate program and essentially the program was good. But, whenever we had what I felt were serious parameters that should be corrected so that we wouldn't have this

deterrent factor, they were not corrected and even after assuming the paperwork and so forth and trying to make some sort of a stand on it, where we would assume some kind of policing action against basically various departments, mainly the operations deparment, to correct these people, it was ignored.

A couple weeks before the incident...no, it wasn't a couple weeks before the incident, it was just prior to the, you know when refueling we had an incident in the spent fuel pool, you know one where a shift supervisor, engineer, and various other people entered that area under the pretenses of an RWP that they were going to operate the fuel handling bridge and on that RWP they had clothing requirements of the lab coat, cotton gloves, and boots, which seemed adequate, if all they were going to do was walk across the floor, climb on to the transfer bridge and operate and push buttons. Just before going off a shift, the engineer approached the HP office to come in to frisk and set the frisker off before he ever got to it. I asked him at that point where he had been. He said "the spent fuel pool." I said, "what were you doing" and being a white hat, I said, "apparently you had your fingers somewhere they weren't suppose to be," because they are not supposed to be handling tools or equipment or so forth. He gave a smart answer and at that point, I said, "what RWP are you working under?" He told me what it was and Mike Genoski pulled the RWP and it had on there they were going to operate the bridge. Well I couldn't conceive how this man could be this crapped up, contaminated by operating the bridge. So I said, "well apparently you've been, how did you get crapped up or contam-

inated to this point?" He said, "it was easy." I said, "that's not what I asked you. I asked you how did you do this?" He said, "we lowered the camera into the pool." I said, "well your RWP didn't have anything on it in relation to lowering the camera into the pool and common sense would tell you you wouldn't put the camera into the pool with a pair of cotton gloves on, then string the cables back out through your cotton gloves." Well I was going off shift, so I turned it over to Mike Genoski and he wrote up the paperwork and so forth, an HP violation paperwork on that individual and the other individuals.

A few days later, some of that same group were contaminated again from the same area. To my recollection it happened three times. So I got a little concerned about it because apparently there wasn't any action taken from our supervisors to correct this problem, so I went to Fred Hoovy and I started to complain to him. He was at that time the Unit 2 foreman and he agreed with me that we weren't getting the kind of satisfaction that we should be getting and I, at that point, said well I think we should take some sort of action against these people, not to fire them or not to do anything drastic like that but just to educate them that we do have power here to stop these stupid acts because these people were not people that wouldn't know what they were doing. They were people that would know what they were doing, but that didn't apparently care. I said if we can't do anything more we should remove everyone of their RWPs from their badge and make them attend RWP training again, which consequently would stop the job for two days and they said we can't, and Fred said, "you'll never get that to fly."

At that point, Dick Dubiel walked into the office and I approached Dick about it and I told him what I felt should be done in relation to this matter and he as much as told me that the politics that revolve between the HP operations and upper level management would not permit us to stop that job for two days to slap these people's fingers so to speak. After Dick left, I talked to Fred again and he at that point told me about the only satisfaction that I'm gonna get is if I approach the NRC. Then we got in outage and so forth and I just never did, but I was definitely thinking about making a report about this because we as Techs were definitely becoming more and more concerned about the lackadaisical attitudes of not so much of the working man as much as the management element in relation to HP protection.

YUHAS: Specifically, give us some names of who was involved in that?

PYKE: Davy Janes was the foreman. I can't think of what the engineer's name is. It just slips my mind at this time.

YUHAS: Ok, Janes being Jains or Jamnes?

PYKE: I'm not sure how he spells his name.

MARSH: I have a roster, I'll take a look.

YUHAS: As a result of these, this apparent lack of support from the supervisor of Radiation Protection Chemistry, is it infrequent for Rad Chem Techs to write up health physics violations because there's no action done on it?

PYKE: Well we never wrote up every little violation that was performed. We didn't think that was we always thought that a verbal reprimand or a verbal correction was enough. The only time we got excited was when it looked like they were defying us, then we would definitely write them up. We did look for direction from our supervisors to enforce this and we did not have it. We didn't get it.

MARSH: I look at a station roster and I do see listed a D. C. Janes, listed as a Shift Foreman Nuclear. Does that appear to be the individual you were making reference to.

PYKE: Yes.

YUHAS: Based on your experience and your rapport with other personnel within Unit 2 within the plant, does this same somewhat flagrant disregard for procedures exist in other than the Health Physics area?

PYKE: I don't know if I can answer that, I think the QC Program has fallen off quite a bit from the beginning. In the beginning, they had real stringent rules as far as QC was concerned because I worked with Mechanical

Maintenance at that time and I can recollect that I, at that point I thought it was a little awesome you know that QC was looking over your shoulder everytime you packed a vial or so forth on the RC side and then over the years it just seemed like QC was taking somewhat of a lesser role into that. Now whether that was initially generated to start a plant off to see that you get in line, I don't know. I don't know what the criteria for that was, but it didn't have the QC support I know for outages after the first one like they did in the, well the first one was the most stringent, and then after that...I was a little disenchanted with the Commission. In 1976 was our first refueling outage. We went commercial in 74 and we had a full load and we went longer than a year. In Spring of 76, we had our first shutdown. At that point I figured that I would see NRC people crawling all over the reactor building monitoring the removal of the head, the extraction of the fuel and the transfer of that fuel. We didn't see this. It sort of bothered me because NRC people at that time were making appearances at the Island but they were more involved into checking paperwork and things of that nature than they were the actual operation of the reactor building itself, and whether that was their function I didn't know, but I really..

BINION: Excuse me Mr. Pyke, I'm sorry to interrupt but we are gonna have to change the tape, the time is 11:17 pm.

BINION: This is Tracy Binion and we're continuing with the interview of Mr. Pyke, and the time is 11:18 p.m.

PYKE: We had a serious problem in 1976 which looked serious. We had a specimen tube problem in 76. They tried to pull the chains specimen and it wound up we pulled the whole shroud out and the outage, our first outage went thirteen weeks so we all got a real belly full of overtime and outage. After that there was another incident that or another problem that developed that, in my own mind, I watched carefully. We had a leak in DHV-1 and the company sold NRC the idea that they wanted to ferminite the valve, they brought an expert in that manufactured the valve and he told us that if the valve would possibly blow that the valve stem might make it all the way to the top of the reactor dome. It bothered me because this valve was coming off, right off the core. There was no isolation valves for this. DHV-1 is the first valve coming off the leg, and all I could think was right there is the potential of our first LOCA of a serious type. I can't tell you, I can only go on what rumor was that the company got permission from the Commission to operate one year with this ferminited valve, which did hold and did stop the leak. One year came and one year passed and apparently they got permission to run without replacing this valve. To this date, that valve is not replaced and its still ferminited, but still holding.

YUHAS: Could you describe verbally the DVH-1? Is this a decay heat valve?

PYKE: Yes, its a decay heat valve 1 and its electrically operated valve.

YUHAS: This is on Unit 1?

PYKE: This is on Unit 1.

YUHAS: Do you know what loop?

PYKE: I can't tell you what loop it is.

YUHAS: And to the best of your knowledge the valve is still ferminited and has not been replaced since 1976?

PYKE: Right, because there was such a lead time on that valve that they were going, the rumor had that they would have to... if they were going to replace that valve in the near future from that point they were going to have to go to another Nuclear Plant under construction and borrow that valve and then put a lead time on it to put it back in the plant under construction. That bothered me, you know from a layman's standpoint you know, that they would gamble at that point. In my estimation that's gambling you know on a ferminited valve which is nothing more than basic like a Bar's LEAK or something. Its a material that they used, I was told, its a material that was developed from a substance they used when they did a lot of riveting on ships years ago and sort of a byproduct of that. They use it to inject in the valves under pressure and so forth and I just felt a little concerned about it. Whether or not the NRC felt concerned about it, I don't know.

YUHAS: When was the last time you saw an NRC inspector dressed down in the controlled area making an inspection?

PYKE: Just a couple of weeks ago in Unit 2.

YUHAS: That would be prior to the incident?

PYKE: No, that would have been after the incident.

YUHAS: Let me rephase that. On a routine inspection when was the last time you saw an inspector dressed out either training the reactor building during your last Unit 1 outage or inspecting controlled areas?

PYKE: I've never seen, I've never seen an NRC man in the reactor building. I've never seen and NRC man dressed down in PCs in the aux building. I have seen them in the aux building in the various levels outside of cubicals. I'm sure they have but to my experience, no, I have not.

YUHAS: Is there any pressure from the company for workers not to bring concerns forward to the NRC representatives when their onsite?

PYKE: No, the company has never made that.

MARSH: If you had wanted to contact us, how would you have gone about doing it?

PYKE: 10 CFR 19 says that we have that right, I would have went to that Reg and followed that.

MARSH: You would have known then how to get a phone number or address?

PYKE: Either that or I would have called King of Prussia myself and directly called them and talked to them. It has been done in the past, people in our department have contacted the NRC before, you know if I would have needed any track record of that, I would have went to those people to find out.

YUHAS: Getting back to health physics how much training and what sort of training have you been provided in the health physics area in the last two years?

PYKE: That's a real sore subject because the company has provided us with a six week rotating shift whereby we rotate three shifts across daylight, second trick, and third trick. After which, then at that time we go on to what they call the relief week where we relieve anybody that is off on vacation, sick leave or whatever. If no one is off, we essentially work a daylight shift from Monday through Friday. We are off Saturday and Sunday. The following week of, that is another daylight week, Monday through Friday, which is titled training week. We have received very little training. The only real training that amounted to anything was the training I received from Ralph Jacobs and B&W and questions that I asked and learned from

inhouse procedures and just cornering a foreman and educating myself so to speak.

YUHAS: Did you receive twenty-four hours of health physics training prior to the startup of Unit 2 in December of 1978?

PYKE: No, to my knowledge.

YUHAS: Have you received any formal classroom training on operations of TLD reader?

PYKE: No, I haven't.

YUHAS: Do you operate the TLD reader?

PYKE: Yes, I do.

YUHAS: How did you figure out how to operate the TLD reader?

PYKE: I went along with the Senior Tech several times, I never operated that TLD reader until I felt confident to do so and there were times when I was asked to go operate it. I was told, I told the foreman that I wasn't, that I didn't feel I was qualified to run it without his supervision and he did come along with me and we went over it and he stayed with me until he was confident that I knew how to do it.

YUHAS: Have you ever been tested in the operation?

PYKE: No.

YUHAS: Have you ever been asked to read blind TLDs? In other words, TLDs that have been exposed to some known value, and then you're asked to read them and they compare your results to the known exposure to see if you are operating the machine properly?

PYKE: Yes, I have.

YUHAS: Okay, how often is that done?

PYKE: That's done... Prior to the accident it was done every month.

YUHAS: Okay, who spiked the badges?

PYKE: We expose some and Harshawk exposed some, we swapped them.

YUHAS: Do you know what levels you exposed yours to?

PYKE: 100 mR.

YUHAS: You know what the level Harshawk exposed theirs to?

PYKE: Supposedly 100 mR. I'm pretty sure it was 100 mR.

YUHAS: Could you give us a few words as to the availability of appropriate health physics instrumentation? I'm thinking primarily of portable dose rate instruments. Are there enough instruments available during this present crisis? Were there during the first couple of days?

PYKE: Yes, during the first couple of days there were. I was not here the first day. I'm sure there wasn't at that point. When I arrived on site I was amazed to see the number of instruments that were here. They scrambled those instruments from, a lot of them came from Peach Bottom. Peach Bottom apparently had a problem a year ago or something and they really bolstered their instrument department, or their instrumentation for that particular department and consequently it paid off because they had the available instruments to lend us. But that is always a problem. Right now we have Rad Services onsite that are taking care of what they can as far as repair and its not like I would like to see it but we're functioning.

YUHAS: Prior to the incident were there enough dose rate instruments available to conduct routine operations?

PYKE: Routine operations, yes. Only because we were borrowing from Unit 2 and Unit 1. We were swapping them back and forth. Originally it wasn't set up that way, it was supposed to be that Unit 2 instruments were going to be Unit 2's and Unit 1's would be isolated to Unit 1. Well, we found

out we couldn't live with that, because the lag time to have them repaired. These instruments for some reason or other they are very finicky. Teletectors, in my estimation, I like a teletector but then again I feel that I know how to take care of a teletector and I respect it. I know that if I take care of it its gonna take care of me and I don't feel that I would break a teletector. I think I could keep a teletector from one calibration to the next without breaking it unless you know for some reason it did, but I feel that giving these instruments out on RWPs to everybody, they are just not holding up because these people are not respecting them. They throw them around, they drop them, or whatever they do, they are falling apart for us and I can't really pinpoint any particular model, it just seems that the instruments, the life of a good instrument isn't much more than a couple of months.

YUHAS: Have you been trained on your Technical Specifications for high radiation area control entry?

PYKE: Control entry, yes.

YUHAS: Are all individuals required to have the continuously indicating dose rate instrument when they enter the high radiation area?

PYKE: Yes.

YUHAS: How are you informed of changes in procedures or license conditions?

PYKE: Well changes and procedures are made and they are filed in the cabinet and if you go to that procedure you might find a TCM attached to it whereby it may get completely rewritten at a later date. That's a turnover item or an item that has sort of been a little lax also.

YUHAS: How are you informed of changes in regulations like 10 CFR Part 19 or 10 CFR 20?

PYKE: Word of mouth.

YUHAS: There's been no formal classroom or bulletin issued informing you of the change of the regulations?

PYKE: No.

YUHAS: Do you calibrate teletectors?

PYKE: Yes.

YUHAS: Can you describe the type of detector used and its limitations in the teletector?

PYKE: It'll go to 1,000 R, that's it high range capacity and go down to .1.

YUHAS: What type of detector does you use?

PYKE: It has a little peanut detector in it and... on the high range, and the low range has a little GM tube.

YUHAS: Could you describe the high range tube in a little more detail, I'm not quite sure I know what a peanut detector is.

PYKE: That's what we call it, a peanut detector. It's a little black detector that is essentially about the size of a half, well it's about the size of a pea that's right on the very end of it. It has a little pot on it and for high range, we have to tweak that in to calibrate it.

YUHAS: What type of detector is that?

PYKE: Its a GM.

YUHAS: Okay. Do you know what Xenon-133 decays by?

PYKE: I'm not sure. I could decay it.

YUHAS: What the specific question I'm asking you, do you know if it decays by alpha, beta, or gamma?

PYKE: It decays by beta and gamma.

YUHAS: Okay. Do you know the energy of the gamma?

PYKE: No.

YUHAS: The energy of the gamma is 81 KEV. Now, the teletector is the most commonly used instrument during this incident, is that right?

PYKE: Yes.

YUHAS: Okay, the majority of the dose rate in the auxiliary building was due to Xenon-133, in the first several weeks of this incident. Do you know how the teletector responds, whether it under responds or over responds to Xenon-133?

PYKE: I can't tell you that.

YUHAS: Have you ever been trained in the limitations associated with different types of detectors?

PYKE: Basically, Ralph Jacobs went over it with us, but that was awhile back.

YUHAS: Several years ago?

PYKE: Yes.

YUHAS: Can you describe what breathing zone air sample means to you?

PYKE: Breathing zone air sample..., that would be air taken from a zone where a person is mostly likely to be breathing that zone..., of air.

YUHAS: When an individual comes to your organization for an RWP that involves let's say opening up a waste concentrate pump..., down in the cubical, a man goes down there, you dress him appropriately, he opens up this pump and begins to work on it. Do you collect a breathing zone air sample for him to perform the test?

PYKE: Yes we would, as soon as he opens up, we would be there taking an air sample.

YUHAS: About..., do you run a radiation survey for virtually every maintenance job?

PYKE: Virtually every maintenance job? That's too broad. No, we don't.

YUHAS: Okay. Could you describe, let's say we have a guy that's gonna go down and in the cubical and remove a valve, would you run a specific survey for that cubical for that job removal or would go off the routine survey?

PYKE: We would go off a routine survey. We would give that man instructions that he is to take a dose rate instrument with him and he would take his own contact reading and if there is any problem in relation in that reading versus the RWP, he would at that point give us a page and we would make any corrections to the RWP or corrections to his protective equipment that may have to be done.

YUHAS: Do you have any other comments that you want to bring forward at this time?

PYKE: I don't think so.

YUHAS: I have one additional question. That question is, is there any reason that your feel an individual may have either precipitated or aggravated the incidents that occurred on March 28 at TMI Unit 2?

PYKE: No, I can't conceive that, but I guess it could be possible.

YUHAS: The question was do you for any reason to believe that any individual did this?

PYKE: No, no.

YUHAS: I would like to conclude this interview and thank you very much for coming out here in the middle of the night and working a long shift and giving us some time and some candid comments.

PYKE: Okay, thank you.

MARSH: Same thing, we appreciate your time recognizing that you've worked a full shift and still find time to come in. We appreciate it.

PYKE: Okay. Thank you.

BINION: Okay, now thank you, Mr. Pyke, the time is 11:36 p.m.