UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:

IE TMI INVESTIGATION INTERVIEW

of Mr. David W. Ethridge, Radiation Chemistry Technician
Mr. Karl L. Myers, Radiation Chemistry Technician

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

May 9, 1979
(Date of Interview)

July 3, 1979
(Date Transcript Typed)

190 and 191
(Tape Number(s))

NRC PERSONNEL:

Mr. Thomas H. Essig
Mr. Gregory P. Yuhas
Mr. Mark E. Resner

RESNER: The following is an interview of Mr. David W. Ethridge. ETHRIDGE. Mr. Ethridge is a Radiation Chemistry Technician employed with the Metropolitan Edison Company at the Three Mile Island Nuclear facility. Also being interviewed at this time is Mr. Karl L. Myers. MYERS. Mr. Myers is a Radiation Chemistry Technician employed with Metropolitan Edison Company at the Three Mile Island Nuclear facility. The present time is 3:30 p.m. Eastern Daylight Time. Today's date is May 9, 1979. This interview is being conducted in Trailer 203 just located just outside of the South entrance to the Three Mile Island facility. NRC individuals present Nuclear Regulatory Commission individuals are Mr. Thomas H. Essig. Mr. Essig is the Chief, Environmental and Special Projects Section, Region III, the U.S. Nuclear Regulatory Commission. Also present Mr. Gregory P. Yuhas. Mr. Yuhas is a Radiation Specialist employed with the Nuclear Regulatory Commission in Region I. Moderating this interview is Mark E. Resner. I am an investigator with the Office of Inspector and Auditor, the U.S. Nuclear Regulatory Commission in Headquarters. Prior to taping this interview Mr. Ethridge and also Mr. Myers were given a two page document which advised them of the purpose, scope and the authority that Congress has given the U.S. Nuclear Regulatory Commission to conduct this investigation. It also apprised them of the fact that they are entitled to a representative of their choosing should they desire one. And additionally that they are not compelled to talk to us should they not desire to. On the second page of this document both Mr. Myers and Ethridge have answered three question which I will state for the record. No. 1 do you understand

the above? And Mr. Ethridge has indicated yes he does. Is that correct Mr. Ethridge?

ETHRIDGE: Yes.

RESNER: Question No. 2 do we have your permission to tape the interview Mr. Ethridge has also checked yes. Is that correct?

ETHRIDGE: Yes.

RESNER: Question No. 3 do you want a copy of the tape. Mr. Ethridge has checked yes he does. Is that correct Mr. Ethridge?

ETHRIDGE: Yes.

RESNER: Ok we will provide him with a copy of the tape. I will ask the same three questions of Mr. Myers at this time. Question No. 1 do you understand the above?

RESNER: And he has checked yes. Is that correct Mr. Ethridge?

MEYERS: Yes, Mr. Myers.

RESNER: Excuse me, Mr. Myers. Ok. Question 2, do we have your permission to tape the interview? Mr. Myers has checked yes. Is that correct Mr. Myers?

MYERS: Yes.

RESNER: Question No. 3 do you want a copy of the tape. Mr. Myers has checked yes. Is that correct Mr. Myers?

MYERS: Yes.

RESNER: Ok we will provide you with a copy of the tape. At this time I will ask Mr. Myers and Mr. Ethridge, Mr. Ethridge first, if they would briefly state their experience, educationally and job experience in the nuclear industry.

ETHRIDGE: Job experience, I started with Met Ed in 1973, November 14, 1973. And educational background bachelor of science degree in biology with a minor in chemistry. I started as an analyst and...

RESNER: Excuse me, Resner speaking, what type of analyst?

ETHRIDGE: Chemistry analyst and about a year later my job was combined with radiation protection department and so we became rad chem techs at that point.

RESNER: That's radiation chemistry technician?

ETHRIDGE: Right. And as far as previous experience in the nuclear industry I have no previous experience. And everything I've learned has been as far as the health physics standpoint has been on the job, you know or otherwise training.

RESNER: How long have you been employed at the Three Mile Island facility?

ETHRIDGE: Since 1973, November 14, 1973.

RESNER: Thank you Mr. Ethridge, now I'll ask Mr. Myers if he would state his experience for the record.

MYERS: I graduated from high school in 1962. I spent 8 years in the Navy, in the Naval Nuclear Power program. Upon leaving the navy I worked for Virginia Electric and Power at Surry Nuclear Power plant for a year and a half. In 1974 I came to work for Metropolitan Edison at Three Mile Island as a rad chem tech. That's it.

RESNER: Thank you Mr. Myers. I will now turn the questioning over to Mr. Yuhas.

YUHAS: Thank you, this is Yuhas. Since there are two people in this interview, prior to answering the question please state your last name, so that the typist has little amount of difficulty in transcribing

the tape. What I'd like to do is have you Mr. Ethridge, go through the scenario of your involvement in the TMI incident of March 28th. I'd like you start off by telling us how you heard the incident, when you came to work and then for the next three days briefly your job assignments. At the conclusion of the three day period Mr. Essig and myself will ask you more specific questions about your involvement and then we'll give both of you the opportunity to talk about some comments you might have of the basic health physics program here at TMI. Mr. Ethridge go ahead and begin...

ETHRIDGE: The first day, March 28th, I reported to work about five of seven and at that point we were back the people were backed up at the processing center and that's when we were told about the radiation emergency. So they immediately pulled us out and we reported back to the ECS Unit 1 HP Lab and from there I was dispensed on the onsite monitoring team Alpha. And I was on that team till approximately 4 p.m. And that's was about it for that day. The second day I spent in the Unit 2 Control Room HP support. And from there did surveys in the aux building.

RESNEK: Auxiliary Building?

ETHRIDGE: Auxiliary Building.

RESNER: And the second day being March 29th.

ETHRIDGE: Right.

RESNER: Thank you.

ETHRIDGE: The third day I was stationed in the Unit 1 control room and in brief I took air samples and checked air samples air quality throughout the turbine building and the control tower. And that day we were having problem with the airborne activity coming back into the building from Unit 2.

YUHAS: Thank you, you indicated that at 0655 you were backed up to the process center, was this standing in line, waiting to get in?

ETHRIDGE: Yes, we were waiting to be issued our, our badge.

YUHAS: Did you hear an announcement that there was a site radiation emergency, or were you told by guards, or how did you hear about it?

ETHRIDGE: I was, out HP Foreman came out to the Processing Center and told us to report back to the ECS.

YUHAS: Which HP foreman?

ETHRIDGE: I believe it was Beletz.

YUHAS: The next thing you indicated was that youe were assigned to the onsite monitoring team Alpha.

ETHRIDGE: Yes.

YUHAS: And was Mr. Burkholder the other individual on that team?

ETHRIDGE: Yes.

YUHAS: Ok, what kit did you pick up or did you pick up an emergency kit?

ETHRIDGE: We picked up our radiation emergency kit and SAM II kit and also one of the radiation emergency kits that has all the necessary things... dosimeters, TLDs, maps, and so forth, procedures.

YUHAS: Did you put this in a company vehicle or did you have to use your own car?

ETHRIDGE: We used the company van.

YUHAS: Was this van available for your use when you were dispatched?

ETHRIDGE: Yes.

YUHAS: Ok, how many vehicles were normally available for emergency response teams?

ETHRIDGE: We normally have one van available for the HP department which isn't necessarily always there. Because other departments might run short. So we do have a vehicle problem as far as that's concerned. But we were advised that if we ever were in a situation of this nature to use our own vehicle if we needed it.

YUHAS: About what time were you and Mr. Burkholder dispatched to start your onsite monitoring function?

ETHRIDGE: I'd say approximately seven thirty quarter to eight in that time frame. It wasn't very long.

YUHAS: Ok, after you got the kit had the kit previously been checked out by someone else prior to you picking it up?

ETHRIDGE: There are seals on the kit, everytime we do an inventory and a check on it. And we broke the seals to check everything right there before we left the processing center.

YUHAS: Then you put it in a van and you came up on the radio, was someone else on the radio already?

ETHRIDGE: Yes, the...I reported to the ECS and then they responded. They told us to standby wait for further orders.

RESNER: For the record ECS is...

ETHRIDGE: Emergency Control Station. At the time it was located in the Unit 1 HP Lab.

RESNER: Thank you Mr. Ethridge.

YUHAS: Did you know who you were talking to on the radio from ECS?

ETHRIDGE: Not at that time.

YUHAS: About how long did you wait in front of the processing center before you proceeded to do anything?

ETHRIDGE: I can't really say, it was...I would say approximately a half hour.

YUHAS: Ok, then what direction did you receive.

ETHRIDGE: We checked, we took dose rate levels west of the Unit 2 reactor building. And we took iodine and particulate samples in the area around the intake buildings between the Unit 1 and Unit 2 intake water intake and below the mechanical draft cooling towers.

YUHAS: Did you attempt to count the airborne activity for iodine using the SAM II the filters?

ETHRIDGE: Yes we proceeded down. I think we at that time we came down to the south end down here around the guard shack. And we counted them down to here. At this point.

YUHAS: Did you have any difficulty counting them with the SAM II?

ETHRIDGE: No not at that time. We found significant readings at that time.

YUHAS: About when in the day did you start to get detectable external radiation reading?

ETHRIDGE: I would say somewhere right around noontime, we started picking up levels. ARound the site boundary. And then we also started seeing some levels in our SAM II counts.

YUHAS: Was there one area at the site that had more or higher readings than other areas?

ETHRIDGE: Well, we were checking...we were told to report to the intake air intake around the Unit 1 air intake and that didn't seem to have any significant readings at that time. Then we went out to the north weather station. We stayed inside the site fence and we were getting somewhere... it was around six mR to 10 mR in that range out in that area at that time.

YUHAS: What type of instrument were you using?

ETHRIDGE: We were using a PIC-6 A.

YUHAS: Was that an open window or closed when your reading?

ETHRIDGE: That was a closed window reading.

YUHAS: Did you take any open window readings?

ETHRIDGE: Not that I'm aware of.

YUHAS: About what time in the day did you get the 6 mR at the north weather station?

ETHRIDGE: I...late morning or early afternoon. In that time frame.

YUHAS: Did you keep a log of the raw data that you were calling into the control room?

ETHRIDGE: Yes, we did. I was to make a correction we were calling this data to the ECS and also for some reason the ECS was sending their information over to the Observation Center so then Pete Velez was manning that point over there and he was collecting it. As far as the logs...I had logged everything. All our dose rates, the times and everything they were turned over to the next shift that relieved us.

YUHAS: Would you say that the six mRs the most significant reading that you had on the first day of the incident?

ETHRIDGE: No, we found 10 mR around the gate going to the north gate going to the boat dock along the west side of the island and also at the entrance to the north bridge right before you go across the north bridge and we found these readings right around mid-afternoon I'd say two, three o'clock in that time frame. It was right before we were relie

YUHAS: Were...during the course of the day were you ever informed as to what the problem was with Unit 2 and what to expect?

ETHRIDGE: No, I can't recall of being informed of what was going on. They moved the ECS while we were monitoring to the Unit 2 control room and that indicated to me that there was major problem. They had to evacuate one ECS and the ECS the people at the ECS were also in respirators so that's the only indication the severity of the problem that we had.

ESSIG: While they were in respirators were they able to communicate with you and tell you where to make additional surveys at that time?

ETHRIDGE: Yes.

ESSIG: Were from the moment that you started making surveys on the island were you pretty much in constant contact with the ECS in terms of you making you may come in at a certain point like say GE9 for example and then you'd relay that dose rate back to the ECS and they'd tell you to go to GE10 or did they give you a point by point instruction as where they'd like to see it next or did they tell you to go in a certain pattern and check in with them periodically, what kind of instruction were they giving you?

ETHRIDGE: We were given periodic pinpoint instructions for example go to GE9 or you know a specific location. The only time we were given any general instructions for taking dose rates was to check the west side at the plant boundary at the security fence. We were just told to check in that area and around the Unit 1 intake for dose rates. But other than that we were given specific points to go to.

ESSIG: You used the PIC-6 then the entire day?

ETHRIDGE: Yes.

ESSIG: As far as your particular team was concerned.

ETHRIDGE: That's right.

ESSIG: The air samples that you mentioned that you took and you indicated that you didn't have any problem counting them did you attempt to, well, first were you instructed to collect an air sample at the at a specific point or to drive until you actually found an increase on the meter and then take the air sample there?

ETHRIDGE: We were told to...the instructions were very specific go to...for example GE9 take a particulate and iodine sample there and we would take the sample and if for instance later on in the day when the dose rates were high while they were increasing we weren't able to count, just sit there and count the sample because of the background so we had to that's when we came down here to the lower end of the island. We came down here to the south end of this parking lot and we were able to count them down there. And then we relayed our results back to the ECS.

RESNER: That was Mr. Ethridge speaking.

ESSIG: At any time during the day were you given any instructions from the ECS with regard to making adjustments on the SAM II, was it indicated to you for example that there was mostly Xenon 133 on the charcoal and that you should make some adjustments to the SAM II?

ETHRIDGE: We weren't given any type of instructions like that.

ESSIG: The instructions then that you had for the use of the SAM II were basically what was contained in the procedure then...I should make a specific reference to this procedure...it's health physics procedure 1670.6, Offsite Radiological Monitoring and has a section 2.1 of that procedure it gives instructions as to how to use the SAM II, is that basically what you were following without it it had not been modified then by the ECS on that first day, you hadn't been given an instruction which updated this?

ETHRIDGE: No, it was calibrated and we followed the efficiencies and that label on the calibration sticker. And as far as the windows having thresholds we weren't instructed to adjust them at all.

ESSIG: Ok, as far as you were concerned then what you were measuring was in fact iodine 131?

ETHRIDGE: Yes, we weren't told otherwise.

ESSIG: Ok.

YUHAS: Let's move on to the next day then. What time did you come in on the 29th? This would have been Thursday.

ETHRIDGE: At 0700.

YUHAS: Ok, can you describe what was going on at the North gate?

ETHRIDGE: At the North gate I was...I reported to the Observation Center and we were shuttled over here by bus. And then I can't recall what was going on at the North gate at that time. It took us awhile till we got on the island.

YUHAS: Did you have your pocket dosimeter and your TLD badge with you when you came on?

ETHRIDGE: Yes.

YUHAS: And did you change buses at the North gate?

ETHRIDGE: I believe that I can't recall one of those days there wasn't...I don't think they had that bus going at that time now that I

recall correctly. I think we had...we hopped a ride down with one of the other Met Ed vehicles and we tried to get over as quickly as possible but one of the days I myself and some other fellows walked across the bridge to get into work.

YUHAS: When you came in through the process center what was going in the process center on the second day?

ETHRIDGE: There we picked up a respirator and there was some...trying to think... its been awhile...all I can recall is picking up a respirator there and I was previously informed to go to the Unit 2 Control Room. So I picked up a respirator there and I believe I wore it over through the Unit 1 turbine building and over to Unit 2 Control Room.

YUHAS: What type of cartridge did that respirator have on?

ETHRIDGE: I can't really can't say. I know at that time we had several different type masks that were new to us, in fact. I can't really say what type of cartridge.

YUHAS: About what time did you get to the Unit 2 Control Room?

ETHRIDGE: Approximately seven thirty.

YUHAS: Can you describe what was going on in the Unit 2 Control Room?

ETHRIDGE: I went in and there's...I can just remember going in and a lot of people up there...and there were men...our group was sitting in the corner, we had...they were setting up a desk at that time.

YUHAS: Was there an HP foreman in charge in the HP, rad chem techs up there?

ETHRIDGE: I didn't see any HP foreman or supervisor there at that time.

YUHAS: Ok, you said you were setting up a table, could you describe just what equipment was there and what you were setting up on the table?

ETHRIDGE: There was a table approximately the size of this and a fold-out table type and they were...it wasn't...can't really say that they were trying...it was going to be any type of HP control there. We did have RM 14 there to monitor people coming in and out of the door right there, but as far as HP control I can't say that I...you know all our equipment was downstairs in the lab most of it was down there...it hadn't been recovered yet.

YUHAS: When you came up to the stairway to the control room was there a secondary control point in the hallway that restricting access to the auxiliary building?

ETHRIDGE: Unit 2 auxiliary?

YUHAS: Right.

ETHRIDGE: The step-off pad which I saw later I didn't see it when I came in that morning...later on I entered the aux building and at that time the step-off pad was right...there was only one step-off pad. And it was right there at the entrance from the control building into the HP Laboratory.

YUHAS: Was a person stationed there at that time?

ETHRIDGE: No.

YUHAS: Was there a guard at Door 11, this is the door just as you're coming from the hallway from Unit 1 coming into Unit 2 control tower area? Is there a security guard there at that door?

ETHRIDGE: I don't recall.

YUHAS: bout how long were you in the Unit 2 control room before you were asked to escort someone to the auxiliary building?

ETHRIDGE: All I can say is it was sometime that morning. I can't really say exactly what time it was.

YUHAS: Can you describe the activities of the chem HP techs in the Unit 2 control room that morning, what were you fellows doing?

ETHRIDGE: I was the only one. I was there by myself.

YUHAS: Can you describe your activities?

ETHRIDGE: I was confused. There was no...I really didn't know what was going on. There was no one there to tell me or to advise me what was going on.

YUHAS: Was Dubiel there?

ETHRIDGE: Not that I'm aware of.

YUHAS: Was Mulleavy there.

ETHRIDGE: Not that I was aware of.

YUHAS: Was either McCann, Velez, or Hoovey, and Deman were any of those people in the control room at that time?

ETHRIDGE: I don't recall any of those.

YUHAS: Who was issuing you orders or requests?

ETHRIDGE: I can't...no one no one was there...so I can't really say that I took any orders from anybody or anything like that.

YUHAS: Were there survey forms filled out and available to you from the previous day's entries in the auxiliary building?

ETHRIDGE: I can't recall seeing any...I don't remember looking on the table there seeing anything like that.

YUHAS: What instrumentation did you have available to you besides the Ludlum and the HP210 program?

ETHRIDGE: The only other instrument I can recall was the one that I used later on that day was...it was not our normal teletector...it was Zetex, is that the detector that you fellows have? It was on an extension type probe you know just like a teletector is.

YUHAS: Was that one of your instruments or did that show up from someplace else?

ETHRIDGE: That showed up...I had never seen it before. We never had anything like that before.

YUHAS: Were you in masks this period in the morning? Were you on respiratory protection in the Control Room?

ETHRIDGE: Not at that time, we weren't in any type of respiratory protection.

YUHAS: Was there any sort of log book being maintained as to who was going in to the auxiliary building, the time they went in, dose on their dosimeters, and the time they came out and how much dose they had acquired and the contamination levels or this sort of thing?

ETHRIDGE: Not that I'm aware of.

YUHAS: Can you describe to us how it came about that you were going to escort someone in the auxiliary building and make a survey or whatever?

ETHRIDGE: I was...I can't recall the shift supervisor or shift foreman who came over and asked us, you know, asked the aux operator to go in

and I don't exactly know what he was going to do he had to go back to the rad waste panel, but I escorted him in and they informed me to also check dose rates in the makeup filter cubicle.

YUHAS: Let me get this clear now, you had an auxiliary operator, right.

ETHRIDGE: Yes.

YUHAS: Do you remember who that was?

ETHRIDGE: I know I'll think of it later on if I come across it. Joe Manoskey That's it.

YUHAS: Can you spell Manoskey? MANOUSKI, is that....

ETHRIDGE: Yes, that sounds good. I really don't know.

YUHAS: That's an approximation. Ok, now you said the control room operator or the control room foreman asked this auxiliary operator to go in and operate pumps or valves from the rad waste panel?

ETHRIDGE: Yes, he...I don't know exactly what he was going to do in there. He just...we went back to the rad waste panel, high, I believe he operated the aux building sump pump and we went over to the while

that was being operated we went to the low radiation level over in the model room and waited and then he went back and turned it off.

YUHAS: Is that the extent of your travels then?

ETHRIDGE: No, well, he was at the rad waste panel, while he was making the adjustment on the while he was turning his valves or whatever. I stayed with... I went over and measured the dose rate there, and then I went back to check the levels in the makeup filter area, and ah, the door was locked at that time and I went around the other side and there were two portholes there about head high and I stuck the, I inserted the teletector in those portholes. And that's when I got that reading, well it pegged the, that detector.

YUHAS: Do you know the upper range on that Zetec?

ETHRIDGE: 999R.

YUHAS: So the dose rate, about how far inside the portholes did you push the detector?

ETHRIDGE: Approximately 3-4 feet.

YUHAS: At 3-4 feet inside tht cubicle, would that be representative of a whole body dose or a contact dose on filters?

ETHRIDGE: The filters are below that, so that wouldn't be a contact on the filters, so it would be somewhere up about the filter. I did, the probe did hit a pipe or some object and I didn't try to insert it any further than that, so there was a pipe right there that, that possibly call that a contact reading on that pipe.

YUHAS: Did you check the dose rate at the door to the makeup filter room?

ETHRIDGE: I can't recall...I did check it...but I can't recall what the dose rate level was. It was I know that at that time it was reading somewhere in the range that I did go back and get a key and I went back in...into that area. This was later on. I think it was reading somewhere around two or five R at that door to the its called the makeup tank room or cubicle, gas analyzer room.

RESNER: For the record would you repeat that last phrase I believe....

ETHRIDGE: The door that leads into the makeup tank area which is also... its in another cubicle and it also goes back...there's a failed fuel monitor and the makeup filters of them are also back there.

RESNER: Thank you.

YUHAS: Prior to going down this trip to the auxiliary operator did you have any idea what the dose rates would be in the area to which you were going?

ETHRIDGE: Now that you ask I didn't, I did recall looking at some map if you'd ask before if I had seen you know if I saw any dose rates written down anywhere. I did recall looking at some amount looking at the dose rate levels a survey map. And they were...that's the only thing that I could go by.

YUHAS: Did anybody tell you how much exposure that you should take on this trip?

ETHRIDGE: No.

YUHAS: Operations supervisor that ask for the job didn't come over and say this job should take you not more than 1 R it looks like its going to take you more than 1 R come out or something like that.

ETHRIDGE: No, no.

YUHAS: How much exposure would you have permitted the auxiliary operator and yourself to receive in the course of this job?

ETHRIDGE: I myself I...as far as exposure to us I tried to limit it for instance we went in and he operated the valve and I found low background you know, low radiation level over in the model room and so we went over there and we waited until his operation was done. At that time I can't say that I was I just tried to keep it as low as possible.

RESNER: For the record you say "we" the other person you're refering to would be...

ETHRIDGE: Joe Manoskey.

RESNER: Thank you.

YUHAS: About what was the dose rate at the rad waste counter, do you remember?

ETHRIDGE: No, I don't recall.

YUHAS: Do you remember what the dose rate was in the model room?

ETHRIDGE: No, I don't, I know it was significantly less. It was the only area around there that had a you know that was conservatively less than the aux building itself.

YUHAS: Was this entry made in the RWP?

ETHRIDGE: No.

YUHAS: When you came out did you log the survey data that you had accumulated?

ETHRIDGE: Yes.

YUHAS: And where did you log it?

ETHRIDGE: Two...well, for that entry I logged it on the aux building about the 305 level one of those forms.

YUHAS: Was this on a grease pencil or on a overlay or did you write actual pen and ink survey sheet?

ETHRIDGE: I used pen to write on an actual survey sheet.

RESNER: At this time we'll take a break to change the tape. It is now 4:14 p.m. EDT.

RESNER: This is a continuation of the interview of Mr. Karl Myers and Mr. David Ethridge. The time now is 4:15 p.m.

YUHAS: Mr. Ethridge, do you remember how much exposure you or Mr. Manoskey accumulated on this first trip into the auxiliary building?

ETHRIDGE: I don't recall.

YUHAS: Did you write your dose down into that first trip anywhere?

ETHRIDGE: No, I didn't.

YUHAS: Do you know if Mr. Manoskey logged his exposures somewhere in a log book coming out or anything like that?

ETHRIDGE: I don't recall.

YUHAS: Ok, fine. When you came out did you get involved in any discussions with the operations people about the dose rates on the makeup filters?

ETHRIDGE: Yes, I did. I can't recall who the supervisor or foreman or shift foreman was. But there was an engineer who was, who wanted to get that makeup filter changed.

YUHAS: Do you know the name of this engineer?

ETHRIDGE: Yes, I do. It was Earl Showalter.

RESNER: For the record, could we have a spelling on Showalter?

ETHRIDGE: SHOWALTER.

RESNER: Thank you.

YUHAS: Go ahead and pick it up Mr. Showalter requesting that the filters be changed. Makeup filters right.

ETHRIDGE: Yes, I informed him of the dose rate that I took while I was in the first time and that was about it. He walked away. So I you know, in the mean time there were about four I'd say approximately four men who came from maintenance personnel sitting there and I could tell that they were in quite a hurry to change this makeup filter, so that's...then he...Showalter went over and I think he discussed it with someone else and they came back and said that we need a dose rate up on top of the makeup filter cubicle thats where they go up on top and they stand there you know with their lead lined pig to change the take the plug out of the ceiling of the cubicle and that's they remotely remove it. So I was informed to go in there and take a dose rate up on top of this cubicle.

RESNER: Who informed you to go in there?

ETHRIDGE: I don't recall. I don't recall who it was. But they were really pushing me to go in there and get this dose rate. They said we got to change this filter. I didn't understand at that time that it was just a matter of bypassing it. There was no big deal I don't think you know now that I look back on it. There was no big deal in changing that filter. So I was given the key. I was given the key and I went back. I made a second entry in the aux building. I went into the makeup tank area back to this makeup filter area and I checked dose rate on top of this approximately 2 R and that would have been the dose rate the person changing the filter would have received. Of course, that's just before they would have opened the hole or anything so and also recall checking the dose rate on the fail fuel monitor which was 90 R contact on that. And then I came back out and I informed them of the dose rate up on top and I tried to impress upon on them the fact that you know I got a dose rate of a side of greater than 1000 R. And it wasn't I didn't feel that it was anywhere near the filter and also the fact that the meter only went up to 1000 R can't really tell where you can't really tell what the dose rate actually was. But they still seem to be anxious to get that filter changed in fact I heard the engineer, Showalter, he called some individual and asked about getting a thicker cask to change the filter. And at that time I called Bob McCann who's stationed in the Unit 1 control room, and I informed him of the situation and he told me definitely

don't let him change the filter. So I went back and I told the mechanical maintenance personnel that they weren't changing the filter but its just I told Showalter and I forget who the shift supervisor was at the time but I told him also and they still seemed you know quite anxious to change that filter so I tried to impress upon them what they were getting into. They didn't know what they were getting into. But at that time I wasn't aware of the fact like I said before that they could just bypass that filter. There was no big deal. But my entry into that area I received 1.4 R that day. I had my TLD read that evening.

YUHAS: A couple questions. The dose rate of 2 R prior working dose rate, was that measured with the Xetex?

ETHRIDGE: Yes, it was.

YUHAS: Ok, now, was that dose rate originating from the makeup tank or from the dose penetrating through the makeup filter shield?

ETHRIDGE: I can't really say where they dose rate was coming from because the hallway going into there, if I can recall correctly was there was quite bit of dose rate coming from the general area was high because of the failed fuel monitor. And I possibly that could be that could have been given the dose rate up on top. I don't really know.

YUHAS: When the shield plug is pulled for the people to work the removal of the makeup filter what do they have a remote four foot long tools to unbolt the filter cap how is that normally done?

ETHRIDGE: They use a chain hoist to pull the plug and then they slide this cast over top and I can't recall whether they unhook the bolt first before they slide the cask over or after they slide it over. But then the lid is lifted and after the cask is over then they lower a hook assembly down in and they pull it up and pull it in to the cask. And another person stands by and there is a drawer upon the cask and he slides it in. And they put cap on top then they have a lead cap that they put on top of the cask.

YUHAS: How much do the makeup filters normally read before they're changed out?

ETHRIDGE: I was never involved in changing the Unit 2 makeup filters so I can't say.

YUHAS: Do either one of you have an idea what makeup filters normally read?

YUHAS: Mr. Myers, by shaking your head, does that indicate no?

MYERS: That's correct. I was involved in changing the makeup filters very early in the operation of the plant and at that time the radiation level was real low. Maybe 500 mR at the most so later in the life of the plant I couldn't wager an intelligent guess.

YUHAS: Mr. Ethridge, had these individuals been permitted to go down and do this job? In your opinion about how much exposure would have been required for each man?

ETHRIDGE: I can't really say because once the plug would have been pulled and the cap on that filter I couldn't really give an educated guess as to what they would have received. I told them that that with those kind of dose rates we just didn't know what it was reading. And I told them at that time that I don't care what your foreman says or the supervisor say I would not change that filter.

YUHAS: Your speaking directly to the maintenance workers who had to do the work?

ETHRIDGE: Yes.

YUHAS: After you called Mr. McCann were you contacted again by Showalter or by the shift supervisor about changing the filters?

ETHRIDGE: It seemed to it just seemed to die off later in that day. But for awhile there I even after I told them that they couldn't change it they still insisted upon getting a heavier lined peg and still seemed as though they wanted to change that filter.

YUHAS: Do you know if these four mechanical operators were volunteers, had they volunteered to go down and do this job knowing the amount of radiation they might receive?

ETHRIDGE: I would assume they weren't volunteering for that job.

YUHAS: Did you volunteer to go down and make these surveys inside the makeup room and of the makeup filter?

ETHRIDGE: I was the only HP personnel there at the time. And no one had done the survey inside that room that I could recall. And they had the men waiting to change the filter and they insisted on a dose rate in that area which is a good idea if they're thinking about changing the filter. And so I you know I took it myself I thought that it was the best idea for me to go down and check the dose rates first before we suited up four men and went in there and found out that it was...

YUHAS: When you made this entry to run the survey previous undocumented cubicle what...how were you dressed?

ETHRIDGE: I put on two pairs of coveralls and a wet suit for my body and two pairs of boots for my feet and a pair of cotton gloves, two pairs of rubber gloves and also a hood and plastic hood for my head and a Scott air pack.

YUHAS: Ok, what type of dosimetry did you wear?

ETHRIDGE: I had my TLD and I had I don't know if I had a normal dosimeter, I think I did...yes, I did...I had a low range...0 to 200 mR dosimeter and also a high range.

YUHAS: On the Scott airpack were you in the man mode or in the pressure demand mode.

ETHRIDGE: I was in the pressure demand.

YUHAS: Pressure demand. Did anyone go in the auxiliary building with you on this survey?

ETHRIDGE: I escorted two men to the...they were going to fix a leak on a flange and I went with them and checked the dose rate in that area and from there while they were doing that I went over did my dose rate and my survey and I came back to those men.

YUHAS: Were these men mechanical operators?

ETHRIDGE: Yes, they were.

YUHAS: What pump were they working on do you know or flange?

ETHRIDGE: They're the pumps down in 281 level right up from the decay heat pumps.

YUHAS: Were those river water cooling pumps from the closed cooling water system?

ETHRIDGE: They are closed cooling pumps...

MYERS: You said those men were mechanical operators, you meant they....

ETHRIDGE: Mechanical maintenance.

YUHAS: What was the dose rate down there by the close coolant water pumps that they were working on?

ETHRIDGE: I don't recall.

YUHAS: Were these people all on Scott airpacks?

ETHRIDGE: Yes, they were.

YUHAS: What was the air activity in either area either the makeup cubicle or the area where the 281 where the fellows were working on the pumps?

ETHRIDGE: I don't know.

YUHAS: Did you collect an air sample in anticipation of changing the makeup filter job while you were down there?

ETHRIDGE: No.

YUHAS: Did you have the capability to collect air samples?

ETHRIDGE: There were air samplers back in the lab that I could have used.

YUHAS: You mentioned that you had a 1000 R per hour greater than 1000 R per hour on the side, is this the reading that you had taken the previous trip or are you talking about one now that you took on the side of the shields.

ETHRIDGE: That was a previous trip and there were portholes on the other side when I made the entry into the cubicle. There were portholes

in that side and ther I inserted the probe and then it gave me the same indication.

YUHAS: Ok, when these fellows came back out did you log your exposures anywhere, from your pencil dosimeter readings?

ETHRIDGE: I don't recall.

YUHAS: How were people keeping track of the cumulative exposure obviously there was quite a number of entries being made right?

ETHRIDGE: Right.

YUHAS: How did folks know how much exposure they were accumulating?

ETHRIDGE: I can't really answer that.

YUHAS: So there was no...no one was keeping track really of these individual's exposure or the fact that who was going into the aux building and when they came out and how much exposure they took and what the air activity was or anything like that?

ETHRIDGE: There...every entry made was that I knew of that day I was escorted. I escorted them personally.

RESNER: Excuse me for the record when you said I cannot answer that do you mean that you don't know..or?

ETHRIDGE: I don't know.

RESNER: Thank you.

YUHAS: But as far as you're concerned on the ones that you escorted you guys you did not log the time that you left the Unit 2 Control Room to go down and make the entry and didn't log that you came back out and you didn't log what your dose was that's what I'm getting at, in other words you were not using RWP system?

ETHRIDGE: That's correct.

YUHAS: So as an alternative one would think that kept some track of who went in and how much dose they took by what means for retrospective analysis for instance if the dosimetry system was not adequate for measuring dose from the Xenon 133 gas someone would have had to kept track of how long you're in there so that later on you could go back and make appropriate corrections based on time and area. So for the entries you made these people that you escorted you didn't log the time that you were in there, right?

ETHRIDGE: That's correct.

YUHAS: Ok, now you didn't log it for them.

ETHRIDGE: That's correct.

YUHAS: Apparently they didn't log there was no provisions it was no for instance control point watch set up in the control room who was dispatching these people to go in?

ETHRIDGE: No, I don't recall of any.

YUHAS: There was no control point watch set up down at the double doors to get in the auxiliary room is that right?

ETHRIDGE: That's right.

YUHAS: Ok, who controlled access to the auxiliary building, who made the decisions as to who was going to go in?

ETHRIDGE: At that time as far as I know it was operations.

YUHAS: Operations being the department or being a single individual?

ETHRIDGE: I don't understand...

YUHAS: Well, you were operating in an emergency mode I assume. Ok, under those situations any entry into the auxiliary building would have been considered to be a repair party activity. Right.

ETHRIDGE: I see.

YUHAS: Ok, the repair party normal organization would be Dubiel or his alternative would personally issue the word for a team to go down and make an entry to do something Ok, and it would say how much exposure you were allowed to get to do this and what actions to be taken. So that there would be a cohesive control over entries into these very high radiation areas and that a management level decision would be made for the need. For instance the idea of changing the makeup filters has resulted in a life threatening dose. Right. Who was making decisions whether that life threatening dose was worthwhile?

ETHRIDGE: I see. The...I don't recall of anybody you know of making saying to me now you're limited to X number of mrem for this entry and the other question as to the severity of the you know getting the job done I was never...no one ever told me from what I could see it was the shift supervisor saying that ok, we have to go down and fix this flange, for instance on that one job that I was escorted those men, so from there we just we went down and got dressed and I went in with them and they tried to stop the leak.

YUHAS: Did the shift supervisor say I need two volunteers to go down to the 281 because the dose rates are 30 R per hour and its necessary for us to repack this pump and it's going to take between two and five R between five and seven R to do it. Who's going to do it.

ETHRIDGE: The...he didn't ask for volunteers. The dose rates were not that high. They at that time I you know for that specific job I don't think there's any problem with the 300 mrem per week the administrative level that we had at that time.

YUHAS: Who authorized you to go over the 1 R let alone the 300. Normally you have to get authorization am I correct to go over 1 R?

ETHRIDGE: That's correct. No one authorized me to go over 1 R.

YUHAS: Did the HP foreman or the HP supervisor was he cognizant of the fact that you were accuring this much radiation on these circuits?

ETHRIDGE: No. I had...after the survey I informed them what you know what levels were in there. As far as my personal dose I didn't I remember having a high range but I don't remember what I don't recall what that was reading. And I knew it was somewhere above 1 R so I had my TLD read that evening.

YUHAS: What I'm trying to establish though, even in an emergency its necessary to do dose planning. Ok, and from what you're telling me I don't see any indication of dose planning or dose allocation except for the good judgement of the individual tech involved. In other words before each entry there was no gathering together in briefing by a representative of the emergency organization to say this is the pump this is an important job you guys are authorized to exceed the 300 but you're not authorized to take more than 2 R based on changing conditions because its our impression we talking to all of you that the conditions were changing throughout the auxiliary building in the first three days they were going up and down dramatically is that not true.

ETHRIDGE: That's right and I don't recall of any you know of any person saying OK you can exceed the 300 but no more than 2 R no limits I can recall were set.

YUHAS: Simply then the objective list for operations department to accomplish a task.

ETHRIDGE: That's right.

YUHAS: Ok, when you returned from this particular job did you log the... make any log entries either to the..as to the exposures exposure rates or anything findings.

ETHRIDGE: I recall writing down now the dose rate levels in that area. And as far as the dose of the individuals I don't recall writing those down anywhere.

YUHAS: This entry would have taken place in the afternoon then of the 29th? Is that true?

ETHRIDGE: That entry was later that morning.

YUHAS: Ok, late morning then.

ETHRIDGE: Yes.

YUHAS: Ok, after you got the situation straightened out by calling Mr. McCann and clearly stating to Mr. Showalter and the shift supervisor that you did not feel its in the best interest of the individuals involved to change the makeup filter. You said that died later in the day. Is that right?

ETHRIDGE: It seemed to me that you know the issue wasn't pushed anymore as far as getting at the time that I took the survey the guys were sitting there waiting for me to come with the survey so they could go down and get dressed and change the filter right away. And I brought back the survey and they just sat there...the only thing that I could recall was Showalter trying to get a larger pig, you know, so

I tried to explain to them there was a possiblity of a lethal dose and so I think that sort of took the I don't know what you'd say but they didn't press the issue as much after that.

YUHAS: Ok, fine. After this fiasco was under control, what did you do for the rest of the day, rest of the afternoon?

ETHRIDGE: I don't recall what...I know I was up there...I don't recall what I was...what I had done the rest of that afternoon. I remember being relieved I don't know who by but I returned to the Observation Center later on in the day.

YUHAS: Did Tom Thompson relieve you that afternoon?

ETHRIDGE: I don't recall who relieved me.

YUHAS: Ok, but you did not make another entry in the auxiliary building on the 29th?

ETHRIDGE: No, those were the only two.

YUHAS: Ok, when you got to the Observation Center what did you do out there?

ETHRIDGE: At that time I should correct myself...we went to the 500KV Substation and checked ourselves over there and then we went up to the Observation Center and I think at that time I were you?... Is that when you were operating the TLS's.

MYERS: Yes.

ETHRIDGE: At that time you know I was concerned about my dose and I went up and had my TLD read right away.

RESNER: Is that Mr. Myers responding yes.

YUHAS: Who read your thermaluminesant dosimeter?

ETHRIDGE: I put it in with you. I guess I maybe I did.

MYERS: Myself and Dick Benner were counting TLDs at the time. I don't remember which one of the three, Dick Benner, myself or Dave Ethridge counted it's hard to say anyone of us could have counted. We're all qualified.

YUHAS: Ok, so the three of you sitting there reading them out?

ETHRIDGE: Yes.

YUHAS: And then you helped, Ethridge, you helped to read the rest of the afternoon?

ETHRIDGE: Yes, I was up there.

YUHAS: Ok. You returned to work the morning of the 30th and you went to the Unit 1 Control Room and assumed your duties in that area, is that true?

ETHRIDGE: Yes, I did.

YUHAS: Who was directing your activities there?

ETHRIDGE: I...it was an HP foreman present I don't recall who it was. Sid Porter. Porter-Gertz consultant was...he was the one giving most of my instructions as to taking air samples in the Control Room and such. And we had a SAM 2 set up there to count the iodine and we also sent all the samples out to be counted out at the Observation Center.

YUHAS: Were you familiar with the Unit 1 control tower air monitoring system?

ETHRIDGE: I'm not that familiar...as far as the control room is on a closed ventilation system and I can't say that I'm not familiar with them.

YUHAS: Either of you been trained in interpreting the results of the Control Room air monitors for either unit?

MYERS: I don't think I've had any formal training, no.

ETHRIDGE: Same here.

YUHAS: Did either one of you I know the Control Rooms are on air...are on mass for various reasons early on, did either one of you think to consult either Control Rooms's air monitors and try to interpret the iodine activity as measured by those detectors?

ETHRIDGE: When I saw the increase which was on an RM 14 HP 210 program, I...we were constantly monitoring the air and so at the desk we had this HP 210 probe set up and when we saw the levels increasing that's you know we would draw our samples and we would try to count them.

YUHAS: You say try to count them, you're trying to count them on SAM 2, what was happening?

ETHRIDGE: I would say that the background interference was too high to really say whether or not it was Xenon or iodione.

YUHAS: What type of activities in terms of microcuries for cc were you getting off the SAM 2 readings in the Control Room?

ETHRIDGE: I don't recall.

YUHAS: Were they above MPC for iodine?

ETHRIDGE: I don't recall.

YUHAS: Did anyone do a half-life determination on the gross particulates or on the charcoal filters?

ETHRIDGE: Not that I am aware of.

YUHAS: What type of advice was Mr. Porter of Porter Gertz given you people in the Control Room?

ETHRIDGE: He was telling us where we should monitor the air and I know the one... well, when the activity was going up on our HP 210 probe maybe he tried to come over and console us we did get a little excited and we told everybody to put the respirators on so he came over and tried to get the information out you know, directed us, gave us a little direction on what to do next and so on.

YUHAS: Ok, Tom do you have any questions?

ESSIG: Yes, I'd like to go back to the first day for a minute. As specifically talked about the surveys that were made around the island.

Were these most of these were made in a vehicle you drove from point to point or were some of them made on foot?

ETHRIDGE: All of them were made in a vehicle we drove from point to point.

ESSIG: Did you get out of the vehicle when the survey was made?

ETHRIDGE: Yes, we did. If we were driving from one point to another I kept the PIC-6 outside the window.

ESSIG: Ok, you just had the window rolled down and the instrument...

ETHRIDGE: Hanging out the window, and we could tell any significant changes if we were going from one point to another.

ESSIG: Ok, I have in front of me the survey sheets which were these were all the data that were taken...copied down at ECS as you were radioing it in and I just wanted to ask you about a couple of the measurements here. One made at 1545 in the afternoon of 150 mR per hour at the front of the service building outside. And another one made at 1720 of 210 mR per hour between GE1 and GE10. Were these measurements made both of them made by your survey team by you. Were you on the island making surveys as late as 1720?

ETHRIDGE: I don't recall of any measurements that high.

ESSIG: Either the 210 or the 150.

ETHRIDGE: That's correct.

ESSIG: You recall what the highest survey result was that you had made, while you were...that first day?

ETHRIDGE: I recall the 10 mR at the 10 mR Beta-gamma at the gate going to the boat dock and also the this end of the North bridge where it comes on to the island. They were both 10 mR.

ESSIG: Ok. During your shift which I'll define for talking purposes here as being 8 to 4 because I want to make a comparison between what was done on the 8 to 4 and then 4 to 12 in terms of air samples. It seems in looking at these sheets that were taken where the data were recorded in the ECS tha there were approximately 20 air samples collected during the 8 to 4 shift on the 28th. And on the 4 to 12 there were something like 4 and to your knowledge were there either one of you gentlemen because Mr. Myers you indicated you were involved later on in the day sometime during the 4 to 12 shift. Were you aware of any changes in instructions as far as that you were told not get so ma[illegible] air samples or was there some reason or did you even perceive any change in instructions?

MYERS: I was on as I said before I think from around 8 to 12 that evening of the first day, the 28th. During that period of time I, there was another tech with me and I think it was Dean Keesler, but I'm not certain of that. But anyways the other tech with me we were more or less running errands during that period of time. I know we ran out to the Main gate for some things and as far as actual air samples taken during that period of time the only one I remember taken was one of behind the warehouse. It seemed to me that well during that period of time also for a matter of hours Dean Keesler or the other tech was pulled off of the survey team and it was just me and the truck at that time. It seemed to me during that period of time we were kind of in limbo and we weren't making any thorough surveys we were more or less in a standby status.

ESSIG: Were you the only survey team on the island to your knowledge at that time?

MYERS: There was another team in the area cycling off and on the island I think, now I can't remember if they were stationed on the island or they were just making trips from the North gate into the security building. But they were cycling through. What their function was I'm not certain.

ESSIG: Ok. Question for, Essig again, a question for both of you gentlemen, first Mr. Ethridge, do you recall who was giving you instructions

over the radio during the time you were on the making surveys on the island?

ETHRIDGE: The only person I can recall by name would be Jim Seelinger from...I remember him being ...at that time the ECS was in the Unit 2 Control Room and they were in respirators.

ESSIG: He had given you an instruction with respect to where he wanted a particular survey made?

ETHRIDGE: Yes.

ESSIG: And after the ECS was moved to the Unit 1 Control Room, you don't recall then who might have been giving him instructions from that point?

ETHRIDGE: You said the Unit 1, during my shift the ECS was in the Unit 1 HP Lab and then moved to the Unit 2 Control Room and those were the only two points for that I was that I could recall, you know, that theres were the only two points from where the ECS was run during a mock shift.

ESSIG: Ok, I was under the impression that the ECS had been moved around noon on the 28th from the Unit 2 to Unit 1 Control Room.

ETHRIDGE: Well, if it was we weren't informed.

ESSIG: Ok. With respect to the instructions that you were given we touched on this earlier and I just like to come back to it a little bit again. Specifically with regard to the air samples that you were asked to collect were you given either an instruction to collect one every so often like every say every hour or were you given an instruction to collect it when the ECS told you to?

ETHRIDGE: They were giving us specific instructions earlier in the day to go to .....

RESNER: This is a continuation of the interview of Karl L. Myers and David W. Etheridge. The last tape cut off at 4:55 p.m., the time now is 5:00 p.m.

ESSIG: Mr. Etheridge, I'd just like to ask you one additional question on the on the collection of the air samples, what the, more on the line of the technique that you used as far as determining when you were the appropriate point in time as to when to collect the sample. I think you had said earlier that you were given an instruction from the ECS to go to a specific point out on the island GE9 or GE1 or some other point on the island. Did you attempt to, as you were driving toward that point, confirm that you were actually, in the plume by reading your survey meter at that point? Did you note that you did have an increase and that you were in fact in the plume?

ETHERIDGE: I, as I was saying before I did have the survey meter out at all times and we, when they did instruct us to go to a specific point, I, we would take dose rate readings along the way, and any significant reading that I found I would radio back. And I know one specific instance where I did get a reading of 10 or more at that boat dock. I radioed back and asked if they would like, if they wanted an air sample taken at that point. And he said go to wherever he had sent me previously. I was on my way to that point, and at that time ten or more was the highest reading we had discovered, so I, you know, I took upon myself I thought it would be a good idea to get an air sample there. You know, if I had, what I'm getting if, I'm just saying that if I found a place where I thought it would be a good idea to take an air sample, and I was instructed to continue on. That was the only problem I found during my, during that day.

ESSIG: Then you did continue on against your better judgement you didn't take an air sample at that location of the maximum dose rate there, you continued on per instruction of the ECS.

ETHERIDGE: I was told emphatically, continue on to whatever location it was.

RESNER: Who instructed you do to that?

ETHERIDGE: That was ah Jim Seelinger.

RESNER: Thank you.

ESSIG: When you arrived at the location which Mr. Seelinger instructed you to continue on, do you recall what the, what the dose rate was at that location?

ETHERIDGE: I don't, it was less that the ten mark which I had seen at the boat dock that gate to the boat dock, and I don t know exactly what it was, I had gotten some readings 6, 8 mR, and that could have been out there where I was instructed to go.

ESSIG: Along this same line where there any times when you felt that you were collecting an air sample and you didn't really have a measurable dose rate, I mean you were going, you were going to a point in which you were instructed to go and lets say for example you know its the dose rate drop off to you're using the PIC 6 lets say it dropped from some say 6 or 8 mR per hour down to less than measureable which is one mR per hour with the PIC 6. Where there any times when you noted that to be the case that you went to a point where you were instructed to go and the dose rate fell off to something not measurable before you got there? And if so, did you take the air sample anyway or did you report that back to the ECS or did that not occur?

ETHERIDGE: In the beginning the air samples were taken in areas that really didn't have any measurable dose rates, but then during the course of the day the dose rates we could finally see some measurable type of dose rate on the PIC 6. And as far as taking any air sample in an area less than one mR I don't recall of any.

ESSIG: When you say in the beginning are you refering now to 8 or 9 in the morning?

ETHERIDGE: Yea, the morning hours. Because I don't recall seeing any significant readings until around noon time in that area.

ESSIG: Was there another team on the island at the time you were making the survey?

ETHERIDGE: I don't think so, I wasn't aware of any.

ESSIG: You indicated that you were on the alpha team, is that correct?

ETHERIDGE: That's correct.

ESSIG: And Mr. Myers, what team are you on?

MYERS: I don't remember the number, but I'm sure it was probably the same team that Dave was on since we were using the HP truck.

ESSIG: Ok, Mr. Myers, what I'd like to do now is go to Friday the 30th, we had from our previous interview with you, we had established that you were on the team that day that was performing a number of the helicopter surveys. That is correct?

MYERS: That is correct.

ESSIG: The one particular survey that was made at around 8:00 that morning I think we had previously discussed with you and you had indicated that it was you were the individual who performed the survey of which found the 1.2 R/hour which caused a lot of, a lot of people were, that sort of stirred up a hornet's nest that particular number. I believe that we previously established that that was in fact made by an RO2 was it not and that was an open window measurement, as you recall. I don't want to put words in your mouth.

MYERS: To the best of my memory, that's correct.

ESSIG: OK. And you had been instructed to take all measurements in the helicopter were to be open window RO2 measurements?

MYERS: They didn't specifically say to take open window RO2 measurements, we just took open window RO2 measurements and like I stated in the previous day, when we found a high, a high or a area in a specific grid location we would at that point try and get a closed window reading.

ESSIG: O.K. but you did not on this particular one, I gather.

MYERS: No, as we had talked before on that 1.2 R reading, upon finding that reading above the reactor building we decended in elevation to try and establish that it was a cloud of gas up there and not a streaming from the reactor building which is what we were over at the time, Unit 2 reactor building. So we dropped down in elevation and the reading dropped off and then we increased elevation again to get back in that cloud and as I remember we never did find that particular reading again.

ESSIG: I think one thing that we may have touched on last time I'd just like to review it a little bit again, do you recall of being given any instructions, any precautions lets say with regard to actually making these surveys, you should put a statement before that, that you were I think it said that the door from the helicopter had been removed and that you were hanging the instrument out at arm's length out the door. The question is, were you given any instructions as to any precautions that should be taken with regard to - if you did make an open window reading about the air currents hitting the milar window on the RO2? For example had you been told to avoid that?

Myers: No, we were given no instructions as to which instruments to use or how to use the instruments, is I think I stated before we used the instrument of our choice and as I remember we used the RO2 predominantly

earlier in the day and then later in that day I think we used the E520 almost exclusively.

ESSIG: The E 520 was that used in the open window fashion also?

MYERS: Yes, I believe that when we were looking for the readings we were using it in the open window and then when we found a high spot we would take a closed window reading.

ESSIG: O.K. I think one other question on one of the surveys made by the helicopter, I think I have it right here.

RESNER: For the record that's Mr. Essig that's questioning at this time.

ESSIG: I can't seem to find it, oh here it is. In the afternoon about 13:30, or so, between 13:28 and 13:35 as recorded on these summary sheets from the ECS, you were making surveys which varied in altitude from 700 feet to 1150 feet over Hill Island and the dose rate varied from 7 mR per hour to 6, 10, 7½ and then down to 2.3 at the highest elevation. What, do you recall what that the purpose of that particular survey was? Were you attempting to find the plume, was this something that you, the pilot was doing on his own or had you been instructed by the ECS to make that type of survey?

MYERS: The ECS, when they gave us an assignment, normally told us to survey like the north to, to northwest quadrant of the island. So, what we did, and that's all he would tell us, and then we would go out and fly though that location looking for the highest reading and we would normally phone back the high readings to the ECS. At which time then we were kind of standing by for more instructions and then we'd circle back while we were waiting for new instructions and pick up the plume. During those times both on the pilot's initiative or possibly on the techs initiative, we would vary altitude and also attempt to follow the plume across the river just to see where it went and to get the highest readings and to see how it did vary with altitude change. So, I think that the change in altitude within the plume was more on the part of the helicopter operators than on the ECS.

ESSIG: O. K. One last question at this time and I'll turn it back over to Mr. Yuhas. You, I think, both of you gentlemen indicated earlier that the surveys that you performed either in the helicopter or by vehicle were recorded. You were taking down the data as it was going, in addition to radioing it back to the ECS. What specific sheets of paper were you using? Were they full sheets of paper like this? Were they 8½ by 11? Or were they smaller narrower strips of paper, and do you know what happened to those? Did you turn them into some specific individual at the end of your shift? What was the disposition of those sheets?

MYERS: When I was on the survey teams, both the on ground survey teams and the helicopter survey teams, we used tablet paper to record our readings with location and time then the team designation and at the end of a period of runs, or at the end of a day, we turned the sheets into the observations center.

RESNER: Who did you turn those sheets into at the observation center?

MYERS: I really don't remember, I wouldn't, it was just the people at the desk in the observation center.

ESSIG: Do you recall recording the type of instrument on that sheet that you would record the fact that you had used an RO2 earlier in the day and then an E520 later in the day?

MYERS: No, I did not record when we changed instruments.

ETHERIDGE: I recorded everything on the tablet provided in the emergency kit. And the when we were relieved we drove over to the observation center, all our samples and that sheet was in the van and I turned it over to the next shift. And they took the van and headed back on the island.

ESSIG: O.K. then the survey sheets may have stayed with the vehicle then?

ETHERIDGE: I didn't remove them, I left them in the vehicle and I showed them to the next shift and just to give them an idea that it was mostly on the north end of the island and what to expect. And so, I turned it over to them and they proceded on to the island.

ESSIG: O.K. I think that concludes my questions for the moment.

YUHAS: I want to address general questions to both of you now. To start off with has the licensee requested to hear these tapes and would he provide them to you?

ETHERIDGE: This morning, our supervisor, Tom Mulleavy, had a meeting with us to give us more or less a plan of the day and at that time he asked, he told us that Met Ed has requested to hear our tapes, but that we didn't have to let them hear it. He wanted to know who was going to allow them to listen to their tapes and who wasn't.

RESNER: Would you spell Mulleavy for the record please?

ETHERIDGE: I'll try, it's Mulleavy.

RESNER: Thank you.

YUHAS: Mr. Myers were you present at that meeting?

MYERS: Yes, I was.

YUHAS: OK, fine. Let me ask you generally to each make a comment of your observations as to the degree of control, and I'm speaking specifically in the health physics area that was excercised throughout the incident.

MYERS: I, throughout the initial three days of the incident, I felt that for the situation we had confronting us and for the amount of people and the and the sophistication and the amount of equipment we had to try and control the problem, I felt that, in my impression of the situation was that things went smoothly and I felt that at most times we had a pretty good handle on what was occuring. We were able to monitor and control the areas as much as possible. I feel that most of this control or the results of the control were on a major portion due to the judgement of the techs and the operators, the auxilliary operators and the C operators and such , and also the mechanical maintenance people who were involved, as and possibly that we did lack some good judgement from the control medias as to, to control of the personnel in the field during the work.

ETHERIDGE: I also, I agree with Karl Myers in the fact that with the instrumentation that was available the, that we did the best job as possible. And I felt as though we had the situation as far as the area monitoring under control. The problem that, this is my personal view, that the problem that I could see was that we weren't aware of the total situation and as we were on the monitoring teams and and I can't really say that it's anybody's fault cause maybe they weren't aware of what was, I'm sure they weren't aware of what was actually going on. So, I, I agree with what Karl says and I don't have much else to add to that.

RESNER: Could you be a little more specific when you say you weren't aware of the total situation.

ETHERIDGE: I, At no time during our communications with the ECS were we told exactly what had happened or what was going on. The only thing that I knew was that they moved the ECS from one point to another and that was the only indication that it might be a severe problem. I thought that at any time they were going to call us in and say O.K. fellows good job, time to go home. We really didn't have a feel for things. But I don't know, maybe this caused the confusion in there and also its kind of hard with an on site team and all the off site teams to communicate with everybody on one of those walkie talkies. We did have problems with communications.

RESNER: Could you be a little more specific.

ETHERIDGE: The problems weren't with us, but sometimes we had to call a team over on the west shore to talk to them and maybe relay the information to the ECS.

RESNER: Is that because the radios wouldn't transmit that far to the ECS?

ETHERIDGE: I assume so. Or, maybe there was a blockage somewhere that the ECS was not in the right direction to receive the transmission from the from the team on the west shore.

YUHAS: Let me ask you a few questions about instrumentation. You give us the impression that there may not have been an ample supply of high dose rate instrumentation available. Can you make a comment on that?

ETHERIDGE: The ample supply of high dose rate instruments, I think, was not just, well because of the accident it came about but before this I, I feel as though out teletactor supplies as such, things like that, were not adequate. And and it just came to light during this accident.

MYERS: Prior to the accident, we always had a shortage of dose rate instruments and the shelf where we placed em to be repaired was always full of dose rate instruments that needed to be repaired. There was no pressure, or it seemed that no one took the initiative to, to push the instrument shop to put the people on repairing the instruments, which should have been a very simple job. I think they were considering at that time farming out the repair of the instruments to an outside concern and I don't know from the, from the lack of interest shown by supervision both in HP and Instrument it almost looked like they wanted to get rid of our repairing our own instruments, which it seems to me was a very simple job for the highly trained technicians in the instrument department to handle. That's my opinion.

YUHAS: Let me make an observation, I've audited the records of availability of instrument, these are the calibration sheets that you fellows put out, that's the date calibrated, date due for calibration, O.K. And as of the 28th my review indicates that of 16 teletectors that you have, only 4 teletectors were in service and within calibration. Is that, would you confirm that? In other words are those the right forms to look at to make that kind of a decision?

ETHERIDGE: I, I would assume that's the best form to look at, you know, for the operation of an instrument, if its in service, out of service, calibrated and such.

RESNER: Question to both of you. Was anybody specifically assigned with the responsibility of getting these instruments repaired?

ETHERIDGE: The, every once in a while it seemed like they would be on a push so they would assign one instrument tech to, to repair these instruments and they would do so you know, when they had the time, but as we stated before the shelf was always full, well not necessarily full, but always had instruments on it that needed repair.

RESNER: Who would do the assigning?

ETHERIDGE: Of what?

RESNER: Of the particular instrument tech to do the repairing job.

ETHERIDGE: That would come from the instrument foreman or supervisor.

YUHAS: Let's move on to training. Could you fellows describe the formal health physics training you've had in the last two years?

ETHERIDGE: The last two years, I can recall having an emergency drill training, which was last fall, and as far as any other formal training, we were-no other formal type of training, that's all I can say right now.

YUHAS: Mr. Myers?

MYERS: As Dave stated other than emergency drill training which concentrated on the monitoring teams only, or mainly on the monitoring teams with very little emphasis shown toward repair parties, other than that training for drill purposes I can recall having no formal HP training in the last two years.

YUHAS: Before me I have both of your training records and we will see that it indicates that in December of this year you received 24 hours of health physics training. Could you explain what that training is?

YUHAS: Excuse me, correction, it is December of '78, I think of last year.

MYERS: Unless its possible that I could have forgot this training, I would wager a guess that, that some foreman might have, I don't know, took us on a tour or something and then went back and documented a couple of hours of training for it, I have no idea. I don't remember having the training to tell you the truth.

YUHAS: Mr. Etheridge, do you remember spending 24 hours of training in health physics in December? Etheridge: I can't say as though I've had 24 hours in the past two years, as you asked before.

RESNER: Mr. Myers, you said that, you hypothesized that some foreman may have taken you on a tour and then come back and logged it in as training. Have you heard of that practice at this facility?

MYERS: If I, I think possibly I have heard rumors that this has occurred but that's strictly what it would have been - a rumor. I can't say that I've heard anything concrete, in regards to that.

ETHERIDGE: Maybe you'll remember when, now this involves, this is involving chemistry which is the other half of our job, our training as such, for Unit 2 was, our training week they would hand us a diagram:blueprint of the plant and say here trace out systems. So, I, you know, that was training, as such.

YUHAS: I wonder if you would both of you, perhaps Mr. Myers first, just, read off from your training record the training that you supposedly attended recently and could you describe what the training was as you read it off and whether or not you attended it?

MYERS: Ok, 2-2, no I'm sorr I'll start at 8/24/79. Commick (phonetic) time sheet training - 2.5 hours.

YUHAS: Is that health physics or not?

MYERS: This is not health physics related and I do remember having training on the time sheets. 9/14/78, what is that accountability access training G-2 1670.93 hours? I'm not familiar with that procedure. It's possible we were briefed on it. I don't remember it. 9/25/79, We had five hours first aide, I did have first aid training, half a day in the not too distant past. Unit 2 HP in start up training 24 hours 12-1-78. Now if, if this is 12-1-78 he documented 24 hours HP training, I don't know what time span he might have been refering to. We couldn't have had it all on 12-1.

RESNER: For the record, you're refering he to who?

MYERS: To a foreman, some foreman logged this I guess. Which one I have no idea. But I don't feel that I've had 24 hours worth of HP training for Unit 2 and startup, no, 2-2-79 I, according to this I have 1 hour training safety meeting that's probable true, we probably did have a safety meeting. 7-20-78 health physics TLD's, I'm sorry, health physics training, one hour. 4-4-78 2 hours TLD issuing, 2-10-78 unit 2 AA unit, one hour, I think I remember having lecture on the AA unit in chemistry, yes, OK.

RESNER: So that's a chemistry training that's not a health physics training.

MYERS: No, that's not HP.

YUHAS: Mr. Myers, is this form accurate to the best of your knowledge? As far as the health physics training.

MYERS: No, to the best of my knowledge, I feel, that its not accurate, it's probably grossly exagerated at the least.

YUHAS: Mr. Ethenrider, could you comment on your training forms, excuse me, Mr. Etheridge?

ETHERIDGE: Do you want me to stick strickly to the HP?

YUHAS: Yes, I want you to comment on the HP training as shown on that form for the last year.

ETHERIDGE: O.K. the Unit 2 HP and startup 24 hours 12-1-78, I don't remember any training there. The Rad Chem Tech tests, yes I did take that. Radiation emergency drill, yes, that was at 10-30-78. Health physics, .5 hours, 7-13-78, I really can't say. Weekly HP instruction 1-27-78, I don't know what that refers to. TLD system, 4 hours 11-7-77, I did have training on the TLD system, that was just operating the machine itself. Radiation emergency drill 3 hours, 9-21-77, I would say yes, I probably did have that training. Operation of Radeco, that's radeco inverter operations that's the, I'm sorry, the radeco

was a lecture .5 hours, 9-20-77, and the inverter operations .5 hours 9-19-77, to the best of my knowledge that was probably in with that radiation emergency drill.

YUHAS: I think that's far enough back. Let me ask you a question, when you receive health physics training is there a sheet, documentation sheet of your attendance. For instance, 24 hours of health physics training that seems to me like someone would document that in terms of an sheet or a test or quiz. Do you remember anything like that for that for that 24 hours of health physics training?

ETHERIDGE: No, I don't recall any sheet being passed around.

YUHAS: Do you recall the training?

ETHERIDGE: I don't recall the training.

YUHAS: Do you know of any requirement for startup to get the operating license that all of you were supposed receive some training in health physics as it pertained to the startup of Unit 2?

MYERS: No, I don't.

ETHERIDGE: Same here, I don't recall of any training or any requirements.

YUHAS: Based on your comments then do you question the credibility of these two training records?

ETHERIDGE: Yes, I, my overall judgement of this whole sheet is that every time they talked to us about something, it was logged, and I wasn't aware of it.

RESNER: You weren't aware of this as being logged or...

ETHERIDGE: I wasn't aware that it was being logged as training. I, some of these things I recognize as formal training, but a lot of it I, I can't agree with this as being a formal training schedule of any type.

RESNER: Is there any information on there that is documented on your training record that you have never come in contact with before not at all familiar with . Resner?

ETHERIDGE: Looking down over this I can't see anything offhand that I hadn't come in contact with at one time or another.

RESNER: By contact through conversation with one of your superiors or through some formal training?

ETHERIDGE: That's correct.

YUHAS: O.K. Let's move on to another topic. Generally, do you document either one of you, instances where individuals do not follow or adhere to health physics procedures and practices?

ETHERIDGE: We do have a form, HP violation notice, that we, if we see anybody who isn't following procedure we can write him up for that.

YUHAS: Do you do that?

ETHERIDGE: No. It seems like to me that if it is done, it's never followed through with.

RESNER: Let me break here to change the tape, the time is now 5:40 p.m.

RESNER: This is a continuation of the interview of Mr. Myers and Mr. Etheridge.

YUHAS: We were just talking to Mr. Etheridge, you were saying why you don't fill out the health physics violations forms.

ETHERIDGE: Well I think from the management level they don't enforce things strict enough. Where as, if we fill one out we know, well I

have the general attitude that it won't be rectified. And that's, basically it's an apathetic problem.

YUHAS: Mr. Myers, have you ever witnessed any violation of health physics procedures and filled out a form? Had any experience with that?

MYERS: No, I've never filled out a HP violation.

YUHAS: Is that because you've never seen HP violations?

MYERS: No, I'm familiar with it, and, and if I ran into the situation where the other person involved just flatly refused to take my advice, then I would have filled one out. But I never felt the situation justified it.

YUHAS: Are either of you aware of any instances where operation especially licensed operation personnel, and auxilliary operators did not adhere to high radiation area control procedures?

ETHERIDGE: I'm aware of one incident it, which occured recently. It involved a shift supervisor. I don't recall which shift we were on at the time. But, I worked, the other Rad Chem tech on our shift is Ken Burkholder. So, the specifics of this, I don't, I'm not that familiar with, but, in general what happened, this shift supervisor entered an

area, did not, he entered a high radiation area which was locked. A locked area is greater than 1 R. He came back out and went through the monitors, he was contaminated, the teletector which he took was contaminated and Ken Burkholder, the other HP tech asked him where he was. He said, "I don't have to tell you." So, from what I understand there was a little dispute there, and finally he got it out of him, tht he was, I don't recall the area, but he was in this area, it was a locked area. Permission to be in there had to be granted by the HP department and the shift supervisor, which is what he was. So, you know, that, it was total neglect of any HP rules.

RESNER: Do you recall this gentleman's name?

ETHERIDGE: Yes, it was Ken Brian.

YUHAS: I know Mr. Myers is anxious to leave. If you'd like to leave you can pick up your copy of the tape tommorrow. What shift do you work tommorrow?

MYERS: I'll be off tommorrow.

YUHAS: You'll be off tommorrow.

MYERS: I'll be here Friday.

YUHAS: O.K. Friday we won't be here, we won't be back till the following Tuesday. So, if you drop by that Tuesday.

MYERS: How soon will we be...

YUHAS: Well, just about to offer review the op change and add any further comments and then I will have one more question.

MYERS: I'll just wait.

YUHAS: Do either of you have any further comments about that health physics department?

ETHERIDGE: I feel that our department has, doesn't have enough control over a lot of situations. Operations, Maintenance, they sort of dictate what's to be done. Many times, well I shouldn't say many times, but, I know of instances where you inform someone that they can't do a job for, this is general I can't really recall any incident either, but you can't do a job and then they'll go back and tell their foreman and all of a sudden a call comes back from our foreman or supervisor saying that yes they can go in, you know, whatever the case might be. It seems like the Operations and Maintenance has too much control over the HP Department from that standpoint. And it seems like they want to get a job done at all cost. The only time we've, well 300 mR/week was the only limit, you know, adminstrational limit

that we ever had. I think alot of jobs throughout could have been, you know a lot of exposures, I, maybe they could have been avoided by sitting down and discussing the importance of the job to begin with. I feel as though in general our HP Department needs something to give it a little more backbone so that we have more control over situations and from my viewpoint the apathy runs from the management level down. We haven't been trained in alot of cases and we're not on top of things. We're the, seems like we're the last to know and we're the first to hold up a job. They never tell us anything, and then it always comes back on our shoulders, this HP is holding up the job. So, in general that's my summation of the HP Department. It just needs a little more backbone. I think the training stinks, well lack of.

YUHAS: Ok, fine thank you. I'd like to ask you a question on a very basic plane, and that is, do either of you have any reason to suspect that an individual may have deliberately, precipated or aggrevated the event that happened on March 28, 1979. You two.

MYERS: No, I have no reason to suspect or feel, and I would find it hard to believe that anyone caused or aggrevated the situation or accident. No, I don't.

ETHERIDGE: I don't feel as though any one individual acted to cause the situation, but getting back to the training, the lack of training

is not, I don't feel as though it s just in our department, I think it's widespread. There was a general push to get Unit 2 on the line. The operators were being shuffled between Units, primary operators. They're called auxiliary A operators. They were shuffled back and forth between units. Both units have different valve designations and I can see where possibly that, it was difficult for them to keep up with everything. I know that in our job it was difficult for us to keep up with everything because there wasn't any proper training. Getting back to my point, I think that the overall lack of the training might have caused the situation. I think that the company brought it on upon themselves.

YUHAS: O.K. On behalf of the Nuclear Regulatory Commission, we want to thank you for taking 3 or 4 hours of your time to come in and talk with us. We appreciate your candid response and we would advise you that the tapes that we will provide are your personal property and it's up to you to do with those as you please.

RESNER: Thank you gentlemen. The time now is 5:50 p.m. Eastern daylight time and this concludes the interview of Mr. Myers and Mr. Etheridge.