HR-13

HOUSE OF REPRESENTATIVES
COMMONWEALTH OF PENNSYLVANIA

MEMO

May 22, 1979

SUBJECT:

TO: Members, Select Committee - TMI

FROM: Representative James L. Wright, Jr.
Chairman

Public Hearings will be held on June 7, 1979 and June 8, 1979 by the Select Committee - TMI, as follows:

June 7, 1979 10 A. M. Minority Caucus Room

Thomas M. Gerusky, Bureau of Radiological Health, D. E. R.

William P. Dornsife, Nuclear Engineer, Division of Nuclear Reactor Review and Environmental Surveillance, D. E. R.

June 8, 1979 10 A. M. Minority Caucus Room

Robert Reid, Mayor of Middletown

Please note that both meetings will be held in the Minority Caucus Room.

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COMMONWEALTH OF PENNSYLVANIA
HOUSE OF REPRESENTATIVES
HOUSE SELECT COMMITTEE - THREE MILE ISLAND

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Verbatim record of hearing
held in the Minority Caucus
Room, Main Capitol Building,
Harrisburg, Pennsylvania,
on Thursday,

June 7, 1979

10:00 A. M.

HON. JAMES L. WRIGHT, JR., Chairman
Hon. Bernard F. O'Brien, Vice Chairman
Hon. Nicholas B. Moehlmann, Vice Chairman
Hon. Eugene Geesey, Secretary

MEMBERS HOUSE SELECT COMMITTEE - THREE MILE ISLAND

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Reported by:
Cherie Haddock

Dorothy M. Malone
Registered Professional Reporter
135 S. Landis Street
Hummelstown, Pennsylvania 17036

ALSO PRESENT :

Fred Taylor, Counsel
Marshall Rock, Asst. Director of Research
Bob Hollis, Staff

Margaret A. Reilly, Chief, Division of Nuclear Reactor Review and Environmental Surveillance

William P. Dornsife, Nuclear Engineer
Thomas M. Gerusky, Director, Bureau of Radiation Protection

CHAIRMAN [illegible]: The June 7th meeting of the Select committee on Three Mile Island is now in session.

We have with us today Thomas Gerusky from the Bureau of Radiological Health; William Cornsilk, Nuclear Engineer from the Division of Nuclear Reactor Review and Environmental Surveillance; and Margaret Reilly, also from DER. Your title is what, Margaret?

MRS. REILLY: Nuclear Division of Environmental Resources, which is the new name for the division name for Bill..

[illegible] WRIGHT: Thank you. At this point I would like to swear all three witnesses in. I will read the statement and you can then say I do. Raise your hand I am told.

(The witnesses were sworn.)

[illegible], WILLIAM CORNSILK, and MARGARET REILLY, called as witnesses having been duly sworn, testified as follows:

CHAIRMAN [illegible]: I guess, Tom, you could probably lead off. Maybe you would like to give us a brief statement in regards to, at least, in your responsibility what happened.

at TMI, and some comments in regards to the radiological effects.

MR. GERUSKY: Okay, under the emergency plans which were in existence at the time for Three Mile Island and that those plans as related to the Three Mile Island plans, the notification of problems at the plant was made through the Civil Defense duty officer.

That call was made from the plant at about 7:02 in the morning on the 28th. The next step is to--is for the duty officer to contact our duty officer. We maintain a rotating duty officer roster with the people changing every month, and Bill Dornsife was our duty officer.

He was contacted at his home about 7:03 to 7:04, and was notified that there was a problem at the plant. And the normal sequence is that the plant contacts the Civil Defense, tells them their problem, and requests that they contact us and have them call us back.

There is a two-fold reason for that. One is to assure that the person calling is indeed calling from the plant, because anyone could pick up a telephone and say there was an accident at a nuclear power plant and response would move if we didn't have that call-back feature.

And when Bill attempted to call back the plant at about 7:04 he could not get through the switchboard to the unit control room, and they said that they would call him back. At about 7:06 they called him back. Bill, you could

fill them in on what happened on that telephone call, if you wish.

MR. DORNSIFE: At about 7:06, like Tom said, someone from the plant, it was not the supervisor, someone on the call sequence called me back at home. And in general they told me that they declared a site emergency. In fact, Clarence Zeller who was the PEMA duty officer told me that they had site emergency, and I was to call back at the plant unit control room.

So with the high radiation levels in the plant they may have had a small loss of coolant accident. They said the leakage was stopped, the plant was stable and being cooled normally. In addition they told me that the on-site surveys found no detectable radiation levels off-site, or on-site above background.

Now, I also asked other questions like status of safeguards. Had the high pressure injection operated as designed, had the reactor tripped? And they told me affirmitive in all cases. They also made no recommendations as far as protective action for off-site individuals at this point.

On-site surveys had confirmed that there was no radiation being released from the plant. I was told that no protective action was required at that point.

Prior to calling the plant back I called Margaret. Also part of the procedure we try to get somebody into the office as soon as possible to open a direct line with t

unit 2 control room. So I called Margaret before I called the plant back and told her to call ahead to other people to get into the office as soon as possible, and in fact, I guess, about 7:25, or earlier, you arrived and established an open line with the unit two control room.

MR. GERUSKY: Okay, at that time it was 7:25. I did establish an open line to the unit two control room and Margaret and Bill arrived within ten minutes, and I probably a couple minutes behind you.

A summary of the information from that is taken from our notes at the time that there was a site emergency at unit two. A steam generator barrier had a primary to secondary leak, and that the loop was isolated. And while we were on the phone they notified us that at 7:30 a general emergency was declared because of high readings in the reactor containment building, and in other locations.

The unit had been shut down, there was some fail fuel. High pressure injection system had been initiated. Some primary coolant was lost, some fail fuel in high radiation areas in the auxiliary building.

Sometime after that they reported to us that they had a reading in the reactor containment building of 800 R per hour. We're not sure exactly when that occurred. In recreating--in looking at other logs we assume that that was relatively soon after that first call back at 7:25, but apparently it was a little bit later than that, before 9:00

o'clock, at least.

The dome monitor was reading 800 R per hour, and the procedure under the plan is to estimate off-site doses in the event of a leak from the containment building. Containment building was under slightly positive pressure, but nowhere near the pressure that would have been required for a significant leak.

The design leak rate is two-tenths of a percent per day, and the wind was out of 30 degrees, the estimated exposure on the west side of the river was 10 R per hour from a reference containment atmospheric mix.

At that time a state police helicopter was at the site. There were no--the on-site readings were still at or right around background. But we wanted to verify that indeed there was no problem across the river, and we requested that they utilize the state police helicopter, and that they go over and survey the survey teams we sent across the river to establish the exposure rate.

In the meantime we were in contact with FEMA through this time and had notified them of the reactor condition and that an evacuation of an area southwest of the plant in York County, between Goldsboro and York Haven was a possibility, and that York County should be notified.

A few minutes later we received notification that no radiation levels above background levels were detected and FEMA was then notified that--to stay in a holding pattern

on the evacuation. No evacuation was necessary at that time.

Following that we informed other staff members and the department administration of the accident, and updated everybody on the present conditions. We alerted the Pennsylvania Department of Agriculture Division of Milk Sanitation of the event because of milk. Well, we were assuming if there was going to be release from the plant that iodine 131 would be a major component at the release.

We also learned during the Chinese fallout episode in 1976 that telephones would be tied up, that the press would be contacting us, and communications would be a problem. We maintained the open line with the site and contacted our public information officer to handle press reports.

Our regular clerical staff was experienced in responding to public inquiries because of the '76 episode, and had all press calls referred to the public information officer. At about 9:00 o'clock in the morning on the 28th, Charlie Minehole, the director of the Health and Safety Bureau Division at Brookhaven National Laboratory on Long Island, and who is the head of the Federal Emergency Interagency Radiation Assistance Program team for this area, contacted us by telephone to inform us that he was ready with a team to assist us at our request.

They had contacted--the procedure is to contact the Coast Guard for a helicopter if weather conditions were right, and that they could be here in two to three hours.

We told them to sit tight but continue to get the helicopter, that at that point we had no indication of any off-site problems, and from the indications we had at the plant, the plant was in a relatively stable condition. At 11:00 o'clock we requested their assistance and they came in, in the afternoon. They came in also--they also contacted the Air Force Base outside of Washington where they had an arms helicopter, an aerial radiation helicopter, the same helicopter that was used to find the Chinese--the Russian satellite up in Canada. And that apparently was in early--in early, or late afternoon and up making surveys.

The DOE team, by the way, was set up at Harrisburg-York state airport because of one availability of helicopter landing area. There were a lot of other helicopters down at the site, in fact, three or four at one time, and we wanted to keep that group separate, and set up a communications system with them.

At 9:00 o'clock Bill was requested by the deputy secretary to go to Lieutenant Governor Scranton's office to brief him on the situation and to participate in a press conference at 10:00 a.m. Bill contacted Gary Miller, the station superintendent to be updated on what had occurred.

And Bill maybe you can recreate. We are putting together--this docket we're using is a draft document that we're trying to put together to respond to a letter request from the Presidential Commission as to the activities that

occurred from our--from the re-creation for the first three or four days during the event. And this is still in draft form, but this is as far as we've gotten in recreating the events that occurred. I think it summarizes pretty well what happened, and we only got a few more pages of real activity.

MR. DORNSIFE: At 9:00 o'clock I was--someone--the deputy secretary came down and asked who knew what was going on and I being the first to contact the plant I felt I probably knew more about what was going on in plant and conditions than anybody, so I volunteered to go over the Lieutenant Governor's office and then go to a press conference scheduled for 10:00 a.m.

REPRESENTATIVE WARNER: Excuse me, this is still 9:00 a.m. Wednesday?

MR. DORNSIFE: This is still Wednesday morning. I called the plant--well, we had an open line with the plant, but we weren't necessarily being fed information all the time. When they had some off-site information they would pick up the phone there would be somebody listening on the other end and they would give us the information over the phone.

So I contacted the department to tell somebody to pick up on the line. I needed a real good rundown on what had happened at the plant, because I was going to go over and brief the Governor in a press conference.

So Gary Miller, the station superintendent came on the phone and told me to the best of his knowledge what had gone on at the plant. And this is probably the only--early that morning the only detailed notes that I took, because we were too concerned about what was going on to sit down and actually recreate in our notes some of the information that we actually were getting.

He told me that about 4:00 a.m. they had a turbine trip from 98 percent power. He said as designed the reactor trip and all safeguard systems including high pressure injections actuated automatic when it was required. There was a violation of tech specs in that the auxiliary speed system lock valves were initially closed.

The electromatic leak valves on the pressurizer lifted but did not recede, however, the indication was let the operators believe that it had reclosed. The block valve downstream at a relief valve is now closed. Pressurizer may have gone solid and low pressure in the reactor cooling system probably caused some flashing of steam bubbles in the reactor cooling system.

This may have led to a temporary loss of main cooling--reactor cooling circulation. There was a possible primary to secondary leak in the B steam generator which has now been isolated. The concentration of primer has been diluted to about 100 PPM. This may have been caused by secondary to primary feedback through the leaking steam

generator when the system was pressurized--when the system was depressurized, I'm sorry.

There has been a slight amount of failed fuel, the exact amount is not certain, it may have only been some gap activity. The reactor building dome monitor is reading 600 R per hour, and the reactor building pressure is about one pound gauge, one pound above atmospheric. The fencepost doses are less than one millirem per hour. The wind is currently blowing to the west at about one to two miles per hour, and they are sending monitoring teams to Goldsboro.

MR. GERUSKY: Bill then went to brief the Lieutenant Governor and to get ready for a press conference. At about 10:45 a.m. the Utility notified us that radiation had been detected off-site and that the exposure rates were three milirem per hour or less.

A bureau radiation monitoring team was sent out to verify the TMI readings. Similar levels were observed. At that--at about 10:00 o'clock the NRC first team arrived at the site with survey equipment also, and they also verified the readings.

We were concerned about the possible presence of radioiodine in the plume of radio-gases from the plant. We were not equipped to do mobile in the field airborne iodine estimates. We did have a fixed monitor at the observation building, which we chose to leave in place to obtain a sample over the course of the event, a historical sample.

We did not pull that right away.

The TMI field teams were out making these measurements, according to the plan. Several of their field samples were suggesting iodine one concentrations of tens of thousands of hypocuries per cubic inch. Unconfirmed this concentration range would suggest an eventual, in days, within days, need for protective action against inhalation with plant deterioration and a significant impact on the fresh fluid milk production in use.

Since the background at the facility had understandably increased, Mr. Debeal, the plant health physicist asked if we could recount the samples in our lab at Harrisburg. We agreed and the samples were transported by helicopter to the health lab at Holy Spirit Hospital and then to the lab out at Bureau of Radiation Protection staff

Spectroanalysis using the jelly detector indicated no iodine 131 with the sensitivity down to about ten hypocuries per cubic meter. We began to suspect that the current direct exposure mode to be noble gases with little, if any, iodine 131. This was consistent with analogy at that time, but the dominant source was water on the auxiliary building floor, and that the gases were being released through the existing charcoal filters on the auxiliary building vent.

We advised the Department of Agriculture that milk sampling should begin with farm sampling of milkings on

Wednesday evening and Thursday morning. The results of those samples showed no foreign iodine 131 to be in the range of ten hypocuries per liter. It was hardly an accute contaminating episode. Sampling of fresh milk still continues.

For the remainder of the first day ground surveys formed by teams of our Bureau, DOE, DOE team had arrived and DOE had equipment to do field measurements of iodine 131. NRC and Utility confirmed that off-site levels of radioactivity were in the range of one to ten milirem per hour beta- gamma. Occasionally higher levels were observed on site. In the plume and in relatively stagnant pockets due to meteorological conditions.

The meteorological conditions during the first few days were such that the wind speed was very low and direction was variable, therefore, very little dispersion was occurring. And pockets of noble gases were higher than the average radiation levels were not uncommon near the site.

One could drive in a car with a survey meter through an area get a very high reading and then almost instantaneously that number would drop down to natural background again. It was a real weird survey situation.

Reports from this site and from the NRC, IE teams which had arrived after 10:00 confirm that the primary source of radioactivity were noble gases which were being off gas from the reactor coolant water which had been pumped

from the reactor building sump to the auxiliary building sump tank and the sump then overflowed onto the floor.

Prior to this it has been suspected that the main source of the release had been the venting of steam to the B steam generator directly into the atmosphere, which had occurred most of the morning. During that morning the Peach Bottom Atomic Power Plant had called us to offer assistance as did the state of New Jersey, and the Pennsylvania State University.

Levels of radioactivity in the environment remained at or below three MR per hour during the next day with some occasional high readings found on-site and in the plume. Helicopter surveys were being performed by the Arms aircraft which came with the DOE teams.

Levels detected in the plume right over the release stack ranged up to 3,000 MR per hour. On Friday morning, March 30th, I think everybody is calling it Black Friday now, releases from the plant increased through the venting of gases from the makeup tank, the date on which tank it came from. Levels as high as 20 to 25 MR per hour were observed for a short period of time just off-site.

One helicopter reading of 1200 MR per hour beta-gamma was found at 600 feet , 300 feet above the reactor building in the plume. DOE teams and bureau teams were measuring ground levels of radiation, ground radiation levels off-site, as was the NRC and the Utility.

The Bureau received a call from the Pennsylvania Emergency Management Agency saying--stating that Doc Collins, by the way, Doc is a nickname,NRC, Bethesda had called recommending evacuation after ten miles downwind because of the 1200 MR per hour reading. We advised PEMA that off-site readings did not indicate a need for evacuation and the plant stated that the venting would be over shortly.

Miss Reilly and Mr. Dornsife contacted Mr. Collins at NRC Bethesda to ask why the recommendation was made. He stated that the top brass had recommended it and he was only following orders. By that time telephone lines were tied up and we couldn't contact anyone.

Mr. Dornsife went to PEMA headquarters directly and I went to the Governor's office directly. Miss Reilly stayed in contact with TMI and the survey teams. By that time we had radio communications with our survey teams and with the survey teams from DOE.

We both--Bill and I both recommended against evacuation due to the current conditions. Radiation levels off-site steadily decreased to one MR per hour less during the day. Some intermittent readings were higher in the immediate vicinity of the site and on-site. Levels remained at that point until they declined to background much later in the episode.

Effective on March the 28th, '79 the Bureau of Radiation Protection office went on a 24 hour schedule.

The Bureau has a full time Harrisburg staff of nineteen including four laboratory persons. Good working relations had long-- had been long established with the NRC region one office the DOE emergency teams and with the Utility Radiation Protection Organization.

Following the March 30th episode an additional EPA, HEW, DOE, NRC helped in this, personnel were involved in the environmental radiation surveillance activity. The operation of the Bureau became one of collecting and analyzing data and making recommendations based upon that data.

Assistance in operation was gained from other p programs personnel in the department and in the laboratory. We stayed on a 24 hour schedule for approximately two weeks, a twelve hour schedule for the third week, and back to normal for the remaining time. On Friday, May 30th, '79, Bill Cornelius, our Nuclear Engineer was assigned to Three Mile Island site on a twelve hour a day basis, to keep the Governor's office and this bureau informed of any activity which could cause off-site problems.

Dedicated telephone lines were installed in our office with the NRC region one trailer, NRC headquarters, DOE operations in the Harrisburg-York state airport, FDA bureau of Radiological Health. On about April 1, '79 the representatives from NRC, DOE, and FDA, were located in our Harrisburg office as liaison personnel to collect and relay information from their respective organizations.

Water releases were also a problem, and additional monitoring was required. The Department Bureau of Water Quality Management, Bureau of Radiation Protection, and US EPA combined resources to provide a water sampling analysis program.

Activities wound down slowly until the reactor was placed in a natural circulation cooling loader, the crisis over the Bureau continues a long term operation to monitor the environment during the recovery stage.

I think that tells you what, in general, in a very short summary, of what we did during that time frame.

CHAIRMAN WRIGHT: Anybody want to ask any questions at this time?

BY REPRESENTATIVE O'BRIEN: (To Mr. Gerusky)

Q I do. Before they go into questions I'd like you to roll back and explain to the committee your operation with civil defense, you're supposed to have an office over in civil defense, maybe I'm not right, but I was told you did.

Are new officials like Governor, Lieutenant Governor briefed before they take office in case of emergency? Are they told who to contact in case of an emergency? Who's the one in charge? And who do you take orders from? I'd like you to cover, if you can, the whole operation of civil defense and where you play in with civil defense, and et cetera.

A In the emergency plan that was drawn up, our agency provides the PEMA with technical advice, and is the go-between, between the technical staff at the reactor facility, and PEMA.

We do our jobs, our normal jobs that are routinely carried out by our people. We evaluate radiation levels, make recommendations based upon preset guidelines which civil defense and PEMA have copies. And PEMA in the plan is to do their job and that is to notify the public, notify the Governor, Lieutenant Governor, notify the state council of civil defense, or wherever they call now, I think--

Q Tom, let's start in the beginning. An accident happened on Three Mile Island. Who is to be notified from the state first? Your department of civil defense?

A Civil defense, because they have a 24 hour duty officer, and we do not have the 24 hour system that they have.

Q Who was notified?

A At the contact point, that was Clarence Deller. The procedure is for them, for him, the first call he makes is to us for us to contact the plant. And then we're supposed to get back to the civil defense with information in laymen's terms.

CHAIRMAN WRIGHT: The first call was from TMI to PEMA, to the duty officer?

MR. HENDRIE: To the PEMA emergency number, 24 hour

number, that gets automatically transfered to the duty officer at home. And we had previously listed in plan our home phone numbers, the reactor would have to go down the list to find out who was available, who was home, and that seemed like it was a waste of time so we wanted to go to this system.

CHAIRMAN WRIGHT: I'm still a little lost. The first call was from the plant to civil defense duty officer?

MR. GERUSKY: Right.

REPRESENTATIVE O'BRIEN: What time was that?

MR. GERUSKY: 7:01.

CHAIRMAN WRIGHT: Then the duty officer at PEMA called who?

MR. GERUSKY: Bill Dornsife at 7:02, 7:03, something like that.

BY REPRESENTATIVE O'BRIEN:

Q Where was Colonel Henderson in this time who is the head of--

A I have no idea.

Q You have no idea?

A The plan does not require anyone to be there. Action can be taken immediately. Based upon the information we have received from the plant or that we have received from field surveys.

Q Did you attend any meetings previous to Lieutenant Governor and the Governor being sworn into office to brief the Governor in case of an emergency, any type of emergency in

Pennsylvania?

A No, we had inquiries that came to our office as to who is responsible if there was a reactor accident, and we replied back to them--to whoever it was that was inquiring, that we were responsible to keep civil defense informed as to the technical nature of the accident.

Q You don't know who was inquiring?

A No, it was someone from the team, the transition team.

Q But you never notified the governor of your involvement, or the governor's personnel?

A No.

Q Have you had a plan or any other way to proceed in Pennsylvania?

A No--

Q To your knowledge?

A We did not.

Q Your first call went out and they notified you, civil defense, and then you took over from that time on?

A No, only our portion of it. There is a lot on the other side of the civil defense side that is carried out. We weren't involved with that, but there's an awful lot of call outs and getting people in civil defense, notifying the counties, and so forth.

That is their responsibility under the plan. Our responsibility is to evaluate what's going on at the plant,

make recommendations to civil defense as to actions that should be taken.

Q Well, the point I'm trying to get is chain of commands. You're actually an advisor to civil defense?

A That's right.

Q You then must work with civil defense. Did you work with civil defense, or did you work with the Governor's personnel?

A Both.

Q You reported at all times to the civil defense?

A We tried to keep civil defense filled in on the knowledge that we had. At times, well, the information varied, and the times we received that information we then went to another location where we couldn't immediately notify civil defense.

In most cases if we were in the Governor's--if I was in the Governor's office the next step would be to go to a press conference. By that time we had assumed that the information had been filtered down to civil defense, if they weren't available at that meeting.

In some meetings the civil defense people were there, and other meetings they weren't there, and there were meetings held that we weren't there. On evacuation, we were never in meetings concerning evacuation.

Q Well, the part that I can't understand, I attended the 10:00 o'clock briefing with the Lieutenant Governor, and

the chain of command I didn't think that Colonel Henderson knew what was going on, he might have been there, I'm not belittling him, but being in charge and have you people advising him--who is in charge, there's got to be one in command. And to me--being under oath--

A The Governor is in charge.

Q You know you're under oath. Do you think that everything was handled right in a disaster such as that?

A One of the--I can't give you a straight yes or no answer, because I don't know, I really don't know. The situation as it occurred at Three Mile Island was not a typical reactor accident in our--the way we had thought of a reactor accident. And I can give you copies of our emergency plan and the annex to the Three Mile Island Annex.

None of the accidents scenarios which we had put in that were ones that related to this type of accident. We anticipated that if an accident would have occurred a significant releast of radioactive material would have occurred almost simultaneously, or right after.

And our recommendation, or the Utility's recommendatin recommendation for civil defense to evacuate a certain sector would be--would be carried out by civil defense. And then when the accident had occurred from that point on it was recovery and evaluation, and so forth. It was determining what the exposures were to the people. We didn't--this accident slowly built up to one where everyone was involved.

We had to write a plan assuming that the people at the top were not involved, because we couldn't have to wait until we got to the President, which is in this case happening, or to the Governor before action would be taken. And so the plan was devised so that action could be taken immediately. And not have to wait for someone to say, yes, it's okay to do this.

Q Can you legally do that?

A Yes.

Q You don't have to wait for the Governor to make a decision on evacuation?

A As far as I know you don't.

Q Can the three of you tell this committee what education you--the three of you have in radiation or radiology, or whatever you call it?

A Yes, I graduated in general science from Union College in Schenectady in 1956, attended an AEC radiological physics fellowship program at the University of Rochester from '56 to '57, worked at Brookhaven National Laboratory in health physics radiation protection.

From 1957 to 1959 I was in charge of--I was at the--a reactor at Brookhaven in charge of their hot laboratory facilities, and in charge of their--of the cosmotron, a big accelerator. It's interesting, I was also the health physicist responsible for Dr. Joe Henry's program at Brookhaven, and I hadn't seen him since then, but we were always having

trouble with Dr. Henry in getting his exposure down and making him wear his badge, that's beside the fact, nothing important in this case.

After that I joined SWIFT Institute to do medical research in New Jersey as their health physicist, and joined Pennsylvania in September, 1961, heading up their program. I've been in charge of the program since '61. I'm a certified health physicist and been involved in a lot of committee action, and so forth.

CHAIRMAN ANDERS: How do you get certified? Certified by who?

DR. [illegible]: Certified by the American Board of Health Physics. You have to take a written examination, an all day written examination. That happened in 1962. Since that time I've been a member of the American Board of Health Physics, and have indeed sat on the panel and certified individuals.

One must have a certain numbers of years of experience and certain educational background before they can be accepted in to take the test.

DR. [illegible]: I am not a radiation physicist, I am an engineer, and a registered engineer in the State of Pennsylvania, and the State of New York.

I received my BS in chemistry from the Naval Academy in 1956, and I then went into what we called the nuclear power program which consisted of six months intensive

classroom training and six months at an operating reactor prototype submarine. During this time I had extensive health physics radiation protection training during the Admiral Rickover's training for all the officers, the engineering officers that go through the program.

After that I spent three years on an operating nuclear submarine, atomic powered nuclear submarine in the Navy operating that reactor. After I got out of the Navy I went to Ohio State and got a Master's Degree in nuclear engineering, then I worked for Burns and Rowe, an architectural engineering firm in New Jersey for three years. And I've been with the Commonwealth for the last three years.

MRS. REILLY: I have a BS in chemistry from College Misericordia in Dallas, PA. I graduated in 1963. I've worked for the Commonwealth since '63, but I came into the radiation program in late '64 I was a chemist in the radiological laboratory. I left there in '66 to attend graduate school at Rutgers University. From which I got a Master's of Science degree in radiation science in 1967. And I've been working in my current capacity as chief of the division of the environmental radiation since then.

I'm certified by the American Board of Health Physics and I'm currently on the panel of the examiners of the Board.

BY REPRESENTATIVE O'BRIEN: (To Mr. Gerusky)

Q The reason I asked, Dr. Fred Rapp, who is director of specialized cancer research at Hershey Medical

Center recently appeared before this committee in response to a question on evacuation Dr. Rapp stated that he himself had a difficult time in trying to determine whether or not to evacuate the patients at Hershey Hospital. Which is within 20 miles of the plant.

He told us quite frankly that because of the lack of knowledge on this subject he had a difficult time in coming to grips with this problem. There hasn't been any study conducted which shows conclusively how dangerous radiation really is.

If the medical experts aren't certain about this issue how can a layperson be able to make a decision whether an evacuation should be ordered. Also, how can anyone say that radiation was released from the plant but was not dangerous to the public's health when no one, not even the experts know for sure what dangerous dose is.

With the knowledge and the training that you three people have, do you feel that you have enough knowledge to determine what an overdose is to the body? Would you want to stick your necks out and say, I really do know?

A No. There is no such thing in the terminology anymore of an overdose. An overdose means, well, an overdose means in excess of a prescribed dose. And that isn't used in radiation protection.

The exposures that were received by the public have been estimated by us and by a select group in Bethesda

to be less than a hundred millirem over the course of the accident. Our guideline which came from EPA, and is in our emergency plan for a reactor accident, indicates that if the exposures appear to exceed one rem whole body exposure some protective actions should be taken.

In excess of five rem whole body exposure evacuation should take place. Like 5000 millirem versus 100 millirem over the course of the accident. We--for almost every--each day during the first three or four days, the information that we were getting was that the--no more radioactivity was going to be released from the plant.

And in evaluating those levels and the levels that we were seeing off-site, and in estimating what the exposures would be to the people we do not believe there was a need to evacuate.

Q Was that including the Black Friday or the Wednesday?

A Yes.

Q Did you know that that was going to happen?

A No. We knew after the read--when we were told the readings were going up from the plant and our people were out monitoring we were also told that the venting would be over very shortly. And the reading--the maximum reading we got off-site was around 24 millirem per hour. And when they went back to find a level that high they couldn't find it.

The range was in tens of millirem per hour for a few hours in spots as you drove around the island, and on both sides

of the river, and then decreased to less than one MR during the day. Just kept decreasing during the day.

Q Bill, wasn't it confusion in the plant and they didn't know and they didn't tell you outside like Bill said he knew what was going on in the plant, did you know that--

A That was on Monday.

MR. DORNSIFE: I was aware after the venting operation occurred.

REPRESENTATIVE O'BRIEN: You mean after it occurred, but not before?

MR. DORNSIFE: After it started we were told they were venting the makeup tank.

REPRESENTATIVE O'BRIEN: Not before?

MR. DORNSIFE: Not before--well, they say that this is--their telling us that they notified off-site agents that we have no recollection of that occurrence.

REPRESENTATIVE O'BRIEN: Did you say to testify in here that at all times you knew what was going on in the plant?

MR. DORNSIFE: We have no recollection of being informed. They say they did, but we don't have recollection of it.

MR. GELLER: No, I'm sorry, Bill, but I think you misunderstood the question. Could you repeat the question, please?

BY REPRESENTATIVE O'BRIEN: (To Mr. Dornsife)

Q The question is, when Bill was testifying he said,

I knew what was going on at all times in the plant.

A I didn't say that. I said I knew the most of anyone on site that morning when I was asked to go to the press conference.

Q But you did not state that you knew at all times what was happening in the plant?

A No, I didn't.

Q Do you feel that--wipe that one out. In other words you did not know what was happening in the plant?

A No, I didn't say that either.

Q I want to know now though. My question is now, do you feel you knew what was happening in the plant at all times?

A I believe the Utility was honest with us in evaluating what they thought was going on, as things were occurring what they thought was going on. In addition we were getting information not only from the Utility, but also from the NRC people who are also in the control room as a backup source of information.

Now, I'm not saying we knew everything because I don't think the Utility knew everything that was going on, especially on Wednesday. But, I think we knew as much as they did--

Q That's what I want on the record. In other words, you say the Utility themself did not know what was going on?

A Not to the full extent what had occurred, no.

Q How do you feel that the employees who were giving you the information was being honest with you when the press says that they couldn't get the honest information?

A They were not talking to the same people. We were talking to the technicians at the plant, they were talking to the--

Q Were you giving releases to the press?

A No, we were not.

Q Were you ever contacted by the press?

A We had experienced a flood of calls during the Chinese fallout episode, and we were referring all of the press calls to the--to our PIO office in the department.

Q And you were giving the information?

A We were updating periodically the public information.

Q Well, couldn't the press get the honest information there?

A I'm not--I don't know what the press was being told.

MR. [illegible]: The information that was given out during the Governor's press conference was the information that we had obtained from our surveys, or from the plant surveys, or from the NRC surveys, which we trusted.

REPRESENTATIVE O'BRIEN: (To Mr. Dornsife)

Q Okay, back up then, in other words, you stated here, and you agree that employees themself in the plant did not know what was going on, at some time?

A Not to full extent.

Q Not to full extent. If they didn't know what was going on, and they're not sure what type of a radiation leak would come out, don't you feel that you two were being--not being fair by saying to the Governor I think you ought to evacuate at least five miles away from the plant, because things are uncertain?

A Well, the information we were given was the reactor--the system was stable.

Q I hear that word stable all the time, but you also testified that they themself did not know what was going on.

MR. GERUSKY: There's a difference between what was happening on Friday morning and the venting of the makeup tank which we knew was going on and how long it would last, and why it was being done, and what was happening inside the reactor itself.

The venting tank was outside in the auxiliary building, and we knew that that could be turned off at any time although it was pretty necessary, at least it was told to us it was pretty necessary at the time. It was done on purpose by the plant--by the shift supervisor. In any case, it was done on purpose.

The information we had was that it would be over shortly. And we were getting radiation levels which did not indicate that there was any need to move people. If we expected those numbers to be continuing for any extensive

period of time we may have in evaluating what the would have done, may have requested an evacuation. But we did not anticipate them to continue for any extensive period of time, in fact, by the time people were moved the exposures would have been down to less than one MR per hour, from the information that we had, any by the time they had moved out there wouldn't have been any reason to move them out.

Q Did you tell Mr. Collins he was wrong in recommending --

MR. GERUSKY: Yes.Apparently though, from other information we have, he recontacted civil defense and told them that the Chairman of the Commission declared an evacuation.

REPRESENTATIVE O'BRIEN: Mr. Chairman, I'll have other questions later. I'll let somebody else go.

CHAIRMAN WRIGHT: Fred Taylor.

MR. TAYLOR: Yes, just one quick thing I think just for clarification purposes before the committee gets into asking more questions.

I think we understand the procedure as to the first three phone calls, phone call to FEMA, phone call to you. But throughout the testimony as you start out you said you contacted the duty officer, and then you used the word they when you were contacting the plant. And you said that there was a station superintendent that you talked to

and then there were questions you had reports from the site.

Can I ask you who these people were that you were contacting for your information? What was their status? If you don't know personally who they were by name?

MR. DORNSIFE: I don't know, they didn't tell us what their title was.

MR. GILBERT: We were on mainly with the health physics staff either the senior health physicists at the site, or someone right immediately below who was given a responsibility of providing us with the data as it came in from the field, and all they would do is call us at a certain location and say this is the reading from open window beta-gamma, closed window gamma.

And we had sheets about that thick (indicating) of radiation levels, some which were showing very high levels on-site. And plus our teams, the DOE teams and the NRC teams which were out there doing the same thing. Off-site numbers were right on the button, I mean, within a few MR's of one another depending upon the type of survey.

MR. DAMON: Were you at this time talking to the same person?

MR. GILBERT: Not all the time, because it was a 24 hour notification and they were changing shifts as we were changing shifts.

MR. DAMON: But the person you were talking to

was on the same line of authority, or responsibility.

MR. GERUSKY: Right. Someone was assigned by the plant, and I don't know who that was to keep us informed as to the radiation levels that they were finding in their surveys.

MR. TAYLOR: And you had confidence in the reports you were getting?

MR. GERUSKY: Yes.

MR. DENNISS: We were also talking--confirming practically every so often with the NRC people in the King of Prussia office who were also in the control room.

MR. TAYLOR: You were confirming the reports you were getting from the health physicists?

MR. DENNISS: Yes, we were talking to the NRC people and getting their assessment of what was going on.

MR. GERUSKY: In our off-site teams and the DOE teams which have been called in, and the arms aircraft were confirming. If we were getting data that was--that varied all over the place I think we would have had a real problem. And that happened later in the episode where one of the off-site teams was reporting high iodine levels and the DOE team was reporting high iodine levels.

The NRC and Utility teams were measuring radiation--iodine levels, but right at maximum permissible concentration, or right around there on Easter Sunday. It took about 16 hours of recampling and clarification to determine that there

was a--and to have samplings brought up to our laboratory, all the samples brought up and analyzed, they all came out exactly the same at the low level at the maximum permissible concentration,which I didn't consider extremely low when compared to 60 times higher what DOE was reporting to us, that caused us considerable concern.

That number was off by a factor of 60 because of a calculations error, and someone who came in the next morning recalculated--just looked at the days and he forgot to divide by 60 seconds.

And so, if there was a time where we got data that indicated that two separate organizations were not--were seeing something different. And that was the only time that that happened. We would have been extremely concerned. And everything we had received over the phone and by radio, and by the data that came back into us indicated that everybody's numbers were about the same.

CHAIRMAN WRIGHT: Representative Bennett.

BY REPRESENTATIVE BENNETT:

Q Mr. Gerusky, see I'm looking at an attachment that explains to me the action that had been taken by state, county, and local agencies in event of a radiation emergency in area off-site nuclear generator stations, and I'm told that this information is taken from the Bureau of Radiological

Health plan for nuclear power generating stations.

And I look at this document that I have in front of me and as I listened to your explanation of what happened that morning I--I'm seeing two different pictures. I would appreciate it tremendously if you would just sort of review with me as we go through this.

A What pages do you have there?

Q Well, I'm looking at a document that says responsibilities of government agencies for class three incidents.

And it goes on to state that a class three incident is an event that threatens to leak the release of radioactive materials, and et cetera.

In the state council of civil defense, this tells me that the duty officer will receive the facility notifications and transmit immediately to the Bureau of Radiological Health, that's you. Did that happen?

A Yes.

Q The duty officer would like to make the state emergency operations center and subsequently notify other state departments and agencies. And I assume that, that happened?

A I assume it happened too, I didn't call and ask if they had done this. This is our plan, in-house plan,

which incorporates the civil defense plan. So that we--this is--so that we have a complete package when we're looking at a plan, not just what we're going to do, but what everybody else is going to do.

This was done in cooperation with civil defense. These portions were written in effect with civil defense based upon their plan.

Q So then, you really don't know whether the duty officer did activate the state emergency operation center. It's an assumption that he did?

A It was, but we didn't call and ask if this had been carried out.

Q Can you tell me, sir, under Item three,who council staff would be? It says council staff will relate pertinent information and instructions to the appropriate counties. Would that be someone in civil defense?

A That's civil defense. The council refers to the state council of civil defense.

Q Under Item four it indicates that the Bureau of Radiological Health, that's you, in concert with the facility representative will prepare emergency information for public broadcast?

A Council staff with our advice,if needed.

Q Yes, with your advice. Did you advise the council

on emergency information as it pertains in this plan?

A No, there are--that there was--

Q What I'm trying to find out,sir, is if under the terms of some prearranged agreement that your department had with the council of civil defense, I'd just like to know for the record whether that was followed during this procedure.

And I'm asking you did you advise the council staff to prepare emergency information for a nuclear fall out?

A No, because there was no fall out at that time.

Q Perhaps I'm using the wrong phrase there when I'm saying fall out,if I understand--

A There was no radioactivity off-site at the time we first notified--got back to civil defense, to the point of where the state is.

Q How soon after that then was there--am I using the proper word when I'm using fall out, will you accept that?

A That's okay.

Q How soon after you notified civil defense was there then fall out?

A Well, civil defense was notified at 7:00 o'clock, and at 7:30 we got back to them and told them that there was

no problems off-site. And at 10:45 we first got indications of levels of radioactivity. Civil defense was notified of that.

Q At 10:45?

A Right.

Q Under the plan it says, and I'm quoting it,"this information will be disseminated through the emergency broadcast system, or local broadcast facilities."

A If needed.

Q Well, it doesn't say if needed.

A Well, it's obvious though that if you don't have anything to say then you don't say it.

Q Okay, but what I'm trying to get to, Mr. Gerusky, I'm not picking at you, I'm not trying to find fault. So much has been said--

A About lack of communication.

Q --about lack of communication at Three Mile Island and in the plan that I'm looking at, if I'm looking at the correct thing, that you have said was agreed to with council of civil defense and others, the plan says that this information would be disseminated through the emergency broadcast system.

A Right.

Q To the best of my knowledge it wasn't, and no one

really seems to know what was happening over at the Three Mile Island, hence, all the confusion.

A Well, in our opinion this was taken care of by the frequent press conferences that were held by the Lieutenant Governor, who is in charge of the state council civil defense.

And, the accident was not one, as I said earlier, where one of a kind of accident we had planned for. We had assumed that a release had occured by that time, and that things had happened, and there was a need immediately to inform the public of radioactivity in their environment, and that they needed to take cover or to evacuate.

And neither were necessary. Now, I'm not saying that there was good communication. I think that the public was not kept informed properly, but I don't know how it could have been done to keep them informed, because we kept--we were trying to keep the Governor's hot line informed. And we would have to make a call every five minutes to update the information. Because it kept changing as we got more and more information in.

And it was--some of the changes were significant and some were not.

REPRESENTATIVE O'BRIEN: Pardon me, but the Lieutenant Governor didn't even know what happened at four. I just want to get that to agree. At that press conference

he didn't know you had informed at the press conference it happened at four.

MR. DORNSIFE: That is not an accurate representation. At that point I told the Lieutenant Governor at the briefing before the press conference everything that the Utility had told us.

The statement I told you that Gary Miller the station superintendent told me. I relayed that information to the Lieutenant Governor. At that point there were no reported releases from the site. There were no off-site levels of radiation. That's what we said at the press conference. In fact, when I was going to the press conference I mentioned about iodine.

Tom had called me at the Lieutenant Governor's office and I wasn't even able to inform the Lieutenant Governor of that situation, that he told me there was an off-site--they found some small levels of iodine off site. And I relayed that to the public at that point through the press conference.

BY REPRESENTATIVE BENNETT: (To Mr. Gerusky)

Q Let me continue then if I might. Again, following in numbers here as we go, Item number five council staff, that is state council, I assume we're saying again, will alert

and advise appropriate neighboring states and federal agencies, and we would assume that's been done.

Then we get to number six where it says, "and council staff will notify the Governor and Lieutenant Governor of the occurrence and the actions taken."

Now, sir, I ask you, and I tell you first that I am confused. In a plan that has been pre-layed out, and I assume that this took place several years ago, I would assume, that this thing was drawn up?

A September '77 it was revised.

Q September, '77 it was revised. It seems strange to me that you have some plan that says that emergency information will be disseminated through the public media in Item number four. And then we get down to Item number six, before the Lieutenant Governor is even notified of it.

I don't understand that.

A These aren't necessarily in order of priority.

Q Oh, they're not?

A Or time sequence.

Q Well, who decides what the priority is if this is not the plan? Who decides when such action should take place? And who decides what priority it is?

A It depends upon the type of accident that had occurred. What civil defense does is civil defense's

responsibility. The plan was that they have a plan, and they have a copy of this plan. What--we were not, at that point, trying to follow the plan word for word. Plans are made to get people aware of what the problems are, and how things should be handled.

But once an incident occurred anywhere in the country, the plan is not--no plans are followed to the 1, and because the event causes changes in that plan. In this case the event was not one which we anticipated where there would be a release of radioactive material out--a significant release where there would be high exposures to people and possible death if action wasn't taken.

At least significantly high exposures. And that's what the class three plan was written for. To get people out, or under cover, if it's appropriate, to keep their exposures to an absolute minimum below the five rem or higher number that could occur in time as a result of a reactor accident.

But, at one or two millirem per hour there was no need to recommend an evacuation. There may have been a need to inform the people what one millirem per hour was, and why we thought that it was not a significant number.

Q In retrospect, would you think now it would have been a good idea to advise the public what really was going on

and tell them what one millirem was?

A I still don't know how to do that. We tried it and we got criticized by talking in terms of chest x-rays.

MR. DORNSIFE: At the press conference when I was-- learned about the iodine release I tried to relate that to the Chinese fall out episode that occurred in '76. So, I tried to put that in perspective with that small level of iodine they found, which later proved to be a less than detectible -- had more sensitivity technical equipment, or more sensitive equipment in our lab.

I tried to put that in perspective of the Chinese fall out episode at the press conference. I believe the people at the press conference tried to put these levels into perspective that the public could understand. Now, whether they were successful or not, I don't know.

BY REPRESENTATIVE BENNETT: (To Mr. Cerusky)

Q Well, it would hardly seem likely that it was successful, in my opinion only, simply because when it came out about a hydrogen bubble there was near panic that there was going to be some kind of a hydrogen explosion, which we all know now could never have taken place.

Let's again go back to this document.

A Well, that had nothing to do with off-site radiation levels.

Q No, no, I know it didn't. I'm just suggesting again that the public really didn't know what was going on, and that's why I asked you, in retrospect you say it may have been a good idea to advise the public what was really happening.

A Yes, and I think we attempted to do that, and I don't think we were very successful in doing that. And I don't know how to remedy it. That's one of the things I hope that the Governor--

Q Well, perhaps this committee can help you do that.

A --and this group can do. One thing we didn't want to do is pull out one of our technical people and have him just up there relaying information, because we needed that technical person. We were really short staffed when we were on the 24 hour basis.

And we wanted technical people available to do technical things. And it was difficult, it was very difficult. We learned from the '76 fall out episode how to handle fall out in the future.

We're learning a lot from this episode as to how to do it better. I think one of the things is communication with the public is something that has to be straightened out. There is no question about it.

I didn't realize that. I hadn't read the papers, I didn't have time to read the papers during the episode

and I started looking at them before I went out to talk to the public about three or four weeks later, and I realized what--why they were so scared. Because of the newspaper accounts of what was going on, and we just didn't have time to think about what the press was writing. We were trying to find out what was happening at the plant and keep everybody informed in government as to what was going on.

Q Item number seven indicates that council staff will exercise general direction and control over state, county, and local emergency operations. It has been suggested that in previous testimony that this committee has heard that there was some question in Governor Thornburgh's mind as to whether or not an evacuation ought to take place, whether it ought not to take place, those kinds of things, and it was suggested at a previous committee meeting that Colonel Henderson might not be as effective as he should have been.

Now, in this prearranged plan in Item number seven council staff, I assume that they are talking again about Colonel Henderson and his people, he would take general directions, he would take general directions.

A They are the only legal entity to handle a major accident situation in this Commonwealth.

Q And tell me then, sir, why the Governor and Lieutenant Governor took over and were, for lack of a better

word, and I don't mean it in any way detrimental, they took the show over and issued the press releases--

A I don't know. I can't give you a reason, but the Lieutenant Governor is the Chairman of the state council civil defense, and the Governor directs the activities of all agencies in the Commonwealth.

They have a legitimate right to take over, but why they took over, I don't know.

Q Well, I'm not sure whether they--I wouldn't argue they have a legitimate right to take over. Again I refer to a plan that you said was changed in 1977, and it says, "under Item seven council staff will exercise general direction and control."

But council staff didn't do it in Three Mile Island, someone else did it. I'd like to know why?

A In control of a state, county, and local emergency operation, they sure did. Over state, county, and local emergency operations. They were responsible for state, county, and local emergency operations.

MR. DORNSIFE: The Governor made the decision and they carried out the operation.

MR. GERUSKY: I don't have any problem with what the state council of civil defense did. I think one of the things that happened during this incident was they were told

to expand evacuation plans on a short notice to areas that no one had ever thought about having to handle before,and they did it fairly well.

I had no--I don't know--I was not involved in any of the discussions on those plans, I have no knowledge of why those plans were carried out. All I know is that I was told where I was supposed to report and my family was told where they were supposed to report. But I wasn't involved at all in those discussions. They sure had a heck of a job to carry out in a very short period of time.

Q Let's go to just a little bit different tactic. In your opinion, do you believe that unit two if put back on line could operate without danger to the public's health?

A Unit two? I have no idea.

Q What about unit one?

A I have no idea on unit one.

Q Do you have any idea how the radioactive water that has accumulated at the plant will be discharged?

A We have a commitment , the Governor has obtained a commitment from the NRC to provide us with all of the information, including environmental statement and procedures, and alternate methods of handling the releases. And that before any decision is made on handling the intermediate

water and the high level water at his semiconcurrence would be obtained from the Commonwealth.

We don't agree with it, we will say so, and if we have to, go to legal meetings to stop it.

Q Well, you say if you don't agree with it?

CHAIRMAN WRIGHT: May I butt in? We're running out of paper over here. Suppose we take a five minute break.

(Brief recess.)

THE CHAIRMAN: Let's all take our seats. Let's go back into session.

Go ahead Representative Bennett.

BY REPRESENTATIVE BENNETT:

Q Thank you Mr. Chairman.

Mr. Gerusky, do you know--do you have any idea what the clean up and decommicsioning of a facility like TMI might include? In terms of the health risk and the cost?

A The health risk to the workers?

Q To workers and generally anyone else that might be in the area there?

A That should be included in the assessment that is being prepared by the Nuclear Regulatory Commission . I don't have it.

Q Okay, when we broke for that brief few moments there, you had indicated to me that the information that you get back from someone else, and if you'll agree with it I'll go ahead with it, and if you don't agree we won't.

Now, I'm just not sure what you mean when you said you'll agree with them or disagree with them, and how would you make a determination on what they're telling you. is accurate?

A No, I think what I meant was, if there is agreement between the two or three groups that are taking measurements then we're pretty sure that the measurements are real. If there is disagreement between two groups the only way to resolve that is to have a third group go to some specific location and have a third group, or all of the groups go to a specific location and have their samples analyzed to determine which one is indeed correct.

Q Any idea what the cost of that is going to be?

A No.

Q How would we find that out? We keep hearing about the tremendous cost this is going to entail, and we keep hearing that someone ought to pay,the taxpayers, the consumers, or whoever, and I'm not going to ask you who, just give me some idea what the cost is going to be.

MR. DORNSIFE: A lot of the cost will be covered by the liability insurance that operator has. As far as damage to the equipment, I don't know how much of that goes in to cover the clean-up operation.

But, even the Utility doesn't know at this point until they actually get into the reactor. That is an unknown quantity at this point by anybody.

REPRESENTATIVE BENNETT: Am I correct in understanding that there is some nine-hundred million gallons of water that is contaminated?

MR. DORNSIFE: I believe it's six to eight hundred thousand. About seven-hundred thousand would be an average.

REPRESENTATIVE BENNETT: Seven-hundred thousand? Well, I heard nine-hundred thousand.

MR. DORNSIFE: There are some higher levels, and lower levels, and intermediate.

CHAIRMAN WRIGHT: Those estimates are guesses, or are they actual measurements?

MR. DORNSIFE: They're actual measurements.

MR. GERUSKY: Those are from the tanks that are in the auxiliary building, and from measuring the water level in the containment.

REPRESENTATIVE BENNETT: Would that be the reactor building? Can they pressurize that?

MR. GERUSKY: Yes, they can.

REPRESENTATIVE BENNETT: And it's going up every day?

MR. DORNSIFE: Yes.

REPRESENTATIVE BENNETT: We're talking about the water?

MR. DORNSIFE: And they have a pressure gauge in between looking at the difference in elevation, and measures readings on the gauge. They then calculate what the level is in the reactor itself, not a particular level indication.

BY REPRESENTATIVE BENNETT: (To Mr. Dornsife)

Q We're talking about--

A About the water that is still remaining in the reactor building. Well, that is not all in the reactor building.

Q How much is out there?

MR. GERUSKY: The estimates are about four-hundred to five-hundred thousand in the reactor building.

BY REPRESENTATIVE BENNETT: (To Mr. Dornsife)

Q How contaminated is that now, do you--do we know?

A Yeah, it's--I have seen measurements of the levels, and I believe in the tanks there hasn't been any measurements of the levels in the reactor building, as far as I know, but there are level measurements taken of the tanks, and I

believe they're in the range of ten microcuries per millimeter of iodine and cesium. Cesium is the --

Q Sir, you are a nuclear engineer, and I am not. Could you, in laymen's language tell me what you just said?

REPRESENTATIVE BRANDT: That was laymen's language.

MR. CORNSIFE: The reactor coolant, under normal operation, probably runs at about eight-hundred microcuries per millimeter. Initially after the accident the levels went up to about eighteen-hundred microcuries per millimeter. Such a large factor above that now they've remained down because it has an eight day half life.

They could come down to almost the levels that the core is normally at, within the same order of magnitude, anyway.

BY REPRESENTATIVE BENNETT:

Q Is there any decontamination going on now of that water?

A No.

Q In other words, it's remaining just the way it was that day?

A The longer it remains, the longer it decays off.

Q Okay, in your opinion, now I'll ask this of Dr. Tornsife, are you able to determine if nuclear power plants proposed for Pennsylvania are designed, constructed, and operated safely, in your opinion?

A In my opinion, if I can determine that personally. Well, I'm the only nuclear engineer in the state, and I personally cannot do everything that it takes to operate it safely. But, what I try to do is look over their shoulders the best I can during the licensing and during the licensing procedures.

Now, I can't begin to do every detail--the detailed things that they do, so, no, I cannot personally be assured that the reactors can be operated safely, as far as my own investigations go, my own licensing procedures, or whatever.

Q Let's go back to that morning again for just a couple of moments so that I can try to get a feel for this. And again, going back to the plan that we talked about earlier, and I'll ask this of Mr. Mroczky.

Did you have conversations that morning with Dr. Kilburn?

A What morning?

Q I guess that would have been on Thursday morning.

A No.

Q Friday morning, I'm sorry?

A I believe Dr. Wilburn was in the Governor's office during the telephone calls from Chairman Hendrie, but I never discussed anything with him.

Q Mr. Dornsife did you have conversations?

A I was not in the Governor's office. I was over in PEMA headquarters during that period.

Q Did you have conversations with the Doctor over there?

A No, I did not.

Q Maggie, did you have conversations?

A No, I was never in the Governor's office.

Q You had no conversations at any time with Dr. Wilburn?

A No.

Q You did not either, Mr. Gerusky?

A Well, he was there. On that--no, not on that day. Maybe later in the episode we talked in general terms. I know I provided him with a copy of our emergency plan, which he had requested late in the episode, like two weeks later, three weeks later.

REPRESENTATIVE BENNETT: Mr. Chairman, I may have some other questions later.

CHAIRMAN WRIGHT: Representative Geesey.

BY REPRESENTATIVE GEESEY: (To Mr. Gerusky)

Q We know, pretty much, that Bill has established his background as far as knowing what a nuclear reactor is, how it's supposed to function, et cetera.

Tom, how about you? Have you had any experience in that kind of thing? Do you know how a reactor works?

A Yes, I was a health physicist at a reactor.

Q So you're familiar with the internal workings of a reactor?

A In general.

Q Why the release on Friday?

A Bill can answer that one.

MR. DORNSIFE: This is not my own, this is knowledge I've gained since the incident occurred. I was privy to the knowledge I have now. Would you like me to relate what I've learned since that?

Q Whatever you can tell me as to why the release actually occurred. Tom started to say something during his testimony and sort of bit his tongue and head out into another direction.

A I know it was after the release occurred we were told they were venting the makeup tank, and that it was during the release that we were told.

Q Could you explain what the makeup tank is and where its location is?

A The makeup tank is a tank that brings--again, I'm going to get into technical terms and I may lose a few of the members.

The tank is essentially a tank that provides any but five couplings for the makeup pumps. And during normal operations a portion of the reactor coolant flow is bypassed from the system itself, a purification type flow. It's bypassed from the system and it goes itself right into this makeup tank where it's the gas and it's available for pumping back into the system again to the reactor coolant pump seals and also to provide the makeup for the water that was let down.

Now, this tank is located in this second floor, not the basement, but the second floor of the auxiliary building, which is the building adjacent to the reactor building, which is where most of the auxiliary equipment is located.

That morning, the way the information I've been able to obtain since that morning, is that the tank was isolated Friday morning because they had suspected a leak.

The tank is normally swept during operations to erase cast headers, where it is then, in turn, continued where its gas is allowed to decay off, and then it's

released within allowable plans.

Q Into the atmosphere?

A Right into the atmosphere. Certain levels of radioactivity to the environment. This is the way it normally operates.

That morning they suspected a leak in that tank, in that header, and the tank was isolated. However, with the tank isolated the pressure was increasing, because they were still sending down reactor coolants which contained a lot of dissolved gases, and it was using the pressures in this tank to increase of a liquid relief valve in that tank.

Of that liquid relief tank it would have possibly generalized the operating mode at that point of the makeup pumps which are being a seal to the reactor coolant pumps at that point. So, to avoid a released valve of different things and possibly generalizing the operation of the makeup pump they decided to vent that makeup tank.

In the venting operation they suspect now a relief valve was leaking, and it caused a release into the auxiliary building, which was carried by the ventilation system to the environment.

Q All right. Did you receive advance knowledge that

the venting was going to occur?

A We have no recollection of that. I've been privy to NRC logs and they had information. NRC people on site had--

Q Prior to?

A Yes, prior to in the NRC logs which I've seen.

REPRESENTATIVE BENNETT: Gene, please excuse me. You've said several times, sir, that you have no recollection. Do you keep logs as such?

MR. DORNSIFE: We have notes, some are obviously incomplete, because we didn't have time to sit down and write down everything, to tell our thoughts at times. Now it would have been very handy because our recollection now is somewhat different in a lot of areas.

REPRESENTATIVE BENNETT: That's the point that bothers me.

MR. DORNSIFE: Our logs don't indicate that we were notified.

REPRESENTATIVE BENNETT: I'm sorry Gene, go ahead.

BY REPRESENTATIVE GEESEY: (To Mr. Dornsife)

Q In your opinion was the release necessary?

A In my opinion, it actually would have occurred anyway if the relief valve would have lifted.

Q That's not my question. At that point in time was

that release necessary?

A Well, it was necessary to preserve the rate they were in at that point. They could have gone back to taking the couplings from the makeup tank, from the borated water tank, which was essentially their emergency supply of water to the system.

They could have done that, but they essentially would have run off water in that tank. Now, the level that caused all the problem was a level in--right at the vent of the plant, and there were higher levels at the plant vent the day before.

And I was down the day before when I saw the levels were occurring at one-hundred millirem at the vent,because I knew they were higher levels the previous day, and they were not causing any problems off site.

Q And the higher levels were--

A Yes, and these are substantiated by logs which I've been able to see, NRC logs.

Q Is there any reason why that water can't be solidified?

A Well, the water itself is very difficult to solidify. The process that is going to occur is a filtration process, and in some cases there is a lot of boron in the system, and it will also have to go through an evaporation process for

burial. But the water in the plant right now, once we've been assured by the NRC--- so, we can't comment on whether it will occur, that all releases from that plant will be within the operating limits for that plant when they actually occur.So, the water will be sewn up until it reaches that level.

Q At least I have a problem with the NRC at this time. I think their credibility is pretty horrendous. I think their record is about at the same level as their credibility.

And I think it bothers people who are downstream from that plant, and I question very seriously whether we, in any kind of good conscience,ought to stand still for water releases into the river.

If it is possible to solidify that water and remove it, why do we not take that route regardless of the expense?

A It's really not possible to solidify the water.

Q It isn't?

A You just don't solidify water. When you do you solidify the residues that are remaining. Okay, it's not a process of solidifying the water, it's filtering out the residue and then solidifying it.

Q Well, can't you then, after running it through

the purification process, put it in a tank and ship it, and bury it out on a desert as opposed to releasing it into the water, into the river?

A That's an alternative, but--

Q Well, Don's shaking his head no.

MR. GERUSKY: Well, you can't. The sites will not accept anything in liquid form.

MR. DORNSIFE: It has to be solidified before they bury it.

MR. GERUSKY: Water itself cannot be solidified, but you can add matter to it, things like concrete, and then it will solidify. But, it would take a tremendous amount, a number of 55 gallon drums to solidify concrete to handle that.

The alternatives must--one of the things that have been promised to us is that alternatives to dumping will be included in this environmental assessment, and including the pros and cons of cost. So, until we can see what some of the alternatives are we aren't going to make a decision as to whether it can be released or not. It's very possible that another alternative may be more expensive, and no more desirable.

BY REPRESENTATIVE HALEY: (To Mr. Dornsife)

Q Don, you testified that the reactor pressure

at one point was one point above atmospheric pressure, what's normal?

A That was containment.

Q Well, containment, okay.

A Normal pressure is probably plus or minus a plume.

Q Okay, so that was normal?

A Yes.

Q What association did you have with the TMI plant prior to the accident?

A What association did I have?

Q Either of the two of you. Were you in the plant? If so, to what extent were you? How closely did you review it? What was your opinion of it? That kind of thing.

A I have a very close association with it. I said I worked for the Burns and Rowe Company, and for about a year prior to working, about a year and a half prior to coming to the state I worked on the design of Three Mile Island with Burns and Rowe.

And I also spent about eight months at the site as liaison between the design and the construction effort. So, I had a very, very deep involvement, and also with the design of that plant.

Q Well, then you were in the plant on many occasions during the course of its general operation?

A Yes, I was. Not during its general operation, during its design I was in the plant. During its operation no, or prior to its operation as a state official.

Q You were never in the plant during its operation after it was licensed--

A Well, after it was licensed, yes, I was in the plant participating in emergency drills.

Q When you were in the plant--

A I did not inspect the plant.

Q Well then, what you are essentially saying is that you can't give us any kind of testimony as to the operation of the plant, the cleanliness of the plant, or general management of the plant. Tom, can you?

MR. GERUSKY: No, I can't. I don't believe I was in the plant after the plant started up.

MR. DORNSIFE: We have no authority in that area to inspect the plant.

BY REPRESENTATIVE GEESEY: (To Mr. Dornsife)

Q Just asking. Were you at any point aware of any problems, either during the course of design, or construction, or after the plant came on line, of problems with that plant?

A We are on the distribution for all the incident

reports. All the reportable occurrences that the plant generates. And there is a very long line history of what the occurrences are the plant has to report, from the very, very minor things to the technical aspects, to surveillance problems during testing, right up to fairly significant occurrences. And we do get copies of all those occurrences.

Q What were some of the most significant occurrences, and when did they occur?

A Off the top of my head I just can't answer that, because we get copies all the time. With all the other duties I have that is not my primary responsibility.

Q Were there occurrences sufficient to cause alarm in your mind about the operation or safety of the plant?

A No.

Q None at all?

A No. I was privy to what was involved itself. I was not involved in the follow-up discussions or what was behind the reports.

Now, some of them, they look fairly damaging now because they were applying what courses to take to what was happening, but at that point all I had was the occurrences by itself.

Q Are you aware of the possibility the NRC having knowledge of problems existing at the plant?

A No.

Q Of a serious nature?

A It depends on what you define as serious.

Q Well, you're the expert.

A Some were serious.

Q Not enough to give anyone any kind of concern about a problem down the road?

A You can look now and say, yeah, in hindsight. But at that point, no, I don't feel anybody thought they were significant that would indicate a problem. I am sure the NRC will be looking more thoroughly in that area, and indeed, they should.

Q Well, looking back on this thing, should you have?

A Very definitely.

Q Do you feel that the NRC did a responsible job throughout this whole operation, prior to the accident? Was their regulatory process sufficiently strong that this could have been averted, or were they lax, and did that precipitate possibly the accident occurring?

A Well, I think, generally, the NRC, in my opinion, does a generally good job licensing nuclear power plants. The documents are voluminous, there is obviously something in that large of a plant that may slip through the cracks.

They probably could have been doing a better job maintaining the plant after it was operating.

You know, there are a lot of other plants. In Ohio essentially the same thing happened and nobody informed the operators at Three Mile Island that this was a possibility.

Q Let me tell you what bothers me here, Bill. In a conversation with a gentleman who has been involved with nuclear facilities since its inception, we were told, I was told that--

I had a conversation with a nuclear contractor and that he told that contractor that he thought some day there would be a nuclear accident, but not in his lifetime. And the contractor told him, no, you're wrong. Not only will it occur in your lifetime, it's going to occur very shortly, and it's going to occur at one of three places.

The one I forgot, the other was [illegible], the third was TMI. And the question was asked why, and the answer was, because of poor management and sloppy housekeeping. And my comment was did the nuclear contractor tell the NRC, and the reply was, it didn't matter, that the NRC had that knowledge anyhow. And that bothers me. It bothers me one hell of a lot that the NRC had knowledge of problems and did absolutely nothing from a regulatory standpoint.

A That's true, it bothers me too. That's indeed the case it bothers me too.

Q Well, that's the way it happened.

MR. GERUSKY: The other plant was not in Pennsylvania.

REPRESENTATIVE GEESEY: No, VEPCO is in Virginia. I really don't know where it was. That's Virginia, but those are the kind of circumstances we were operating under, and that's the kind of knowledge the NRC had and did absolutely nothing about and as a result of that we're into this kind of thing.

MR. GERUSKY: There were reports that were not made substantially available until a request of information was made concerning the inspectors evaluation of individual facilities throughout the country and which one they considered to have good management, good technicians, and so forth.

And they were ranked. I don't recall how Three Mile Island came out, but it wasn't at the bottom of the list.

REPRESENTATIVE GEESEY: Did you have that report prior to public releases?

MR. DORNSIFE: No, not prior to public releases, no. In fact, we requested it through the King of Prussia office.

REPRESENTATIVE GEESEY: Okay, what exactly was released into the water in the form of radioactivity during this whole--

MR. GERUSKY: On Thursday?

REPRESENTATIVE GEESEY: Pick a day.

MR. DORNSIFE: Do you mean remained in the river?

REPRESENTATIVE GEESEY: Throughout the occurrence of the accident.

MR. DORNSIFE: I'm not sure. I believe that the numbers are probably--the release occurred in not a formerly contaminated system, industrial waste treatment system.

MR. GERUSKY: This is Thursday evening.

MR. DORNSIFE: What had happened, some of the water, this is again my conjecture, this has not been confirmed by investigation, but probably of the water that builds into sumps that are normally not contaminated.

From the very first that release was started it was analyzed, and at no time was the discharge into the cooling tower below before it was diluted which has a factor about a couple hundred dilutions. The levels at that point were less than MPC maximum permissible concentrations, and I believe it was hundreds of thousands of gallons actually released.

So, by the time it got to the river there was maybe a factor of a hundred dilutions in the river.

REPRESENTATIVE GEESEY: Do you think the permissible levels that have been utilized, or referred to throughout this discussion, are proper, or do you think they should be reevaluated?

MR. DORNSIFE: Not being a health physicist maybe Tom can answer that.

MR. GERUSKY: I think they have been looked at on the basis as low as this reasonable achievable concentration that is in effect at all nuclear power plants, because of quantities of material that are released.

Instead of concentrations.I think the concentrations are all right. If the concentrations are--if the quantities are small because they can get diluted in the environment pretty rapidly, as low as reasonable achievable approach.

The Utility must show by calculations and by sampling that no one in the vicinity of the plant is going to receive an exposure in excess of one-hundred of what would be normally allowed for a licensed facility.

REPRESENTATIVE GEESEY: Then well, what you're saying is the levels are designed around the plant and what one can reasonably expect from the plant?

MR. GERUSKY: No, the plant must do better

than other licensed radioactive material users in the licensing process. From an exposure point of view to the general public they can't use the number of five-hundred millirem exposure of the general public in the determination of what can be released.

They must keep below that and five and fifteen are the numbers.

MR. DORNSIFE: Three whole body for liquid releases which is low as reasonably achievable to the nuclear plant and it's based on essentially an economic analysis of what improvements you could make, how much those would cost to reduce the levels lower, and they assume a number of a thousand dollars per person to reduce the exposures any further. And if you're above that level you don't need to do any more to improve that level.

Taking this in as a reasonable achievable regulation, but for liquids it's three whole body dose per year and ten to any organ.

REPRESENTATIVE GEIST: How much iodine was actually released into the air?

MR. DORNSIFE: The estimate is about one over the whole duration of the accident.

REPRESENTATIVE GEIST: Which has what effect, rem?

MR. GERUSKY: It will have an insignificant effect, because we didn't find very much in milk supplies, or on surfaces. One of the reasons for that, we believe, is that the iodine was not in its elemental form, but it was an organic iodine form, which does not readily deposit out, and therefore, would not be seen in off-site.

The only problem is breathing it. And estimates of exposure from breathing the iodine are in the range of a few millirem exposure of a few individuals who would have to have been there in the plume.

REPRESENTATIVE GEESEY: I have no further questions at this time.

CHAIRMAN WRIGHT: Representative Mark Cohen.

BY REPRESENTATIVE COHEN: (To Mr. Gerusky)

Q Thank you Mr. Chairman.

Last night we heard testimony from a citizen from Birdsboro, I believe, who said that she had read the statement by Carl Morgan saying that beta rays were not measurable by your instruments, is that a true statement?

A It's a true statement that Carl Morgan said that.

Q Is it a true statement--okay, we established that. Was Carl Morgan accurate?

A No.

Q Why was he not accurate?

A We were also using TLD's that did detect beta exposures, and the way he evaluated the exposures from Inon 133, and it's also a gamma,and if you can determine what the gamma exposures are, you can then determine what the beta exposures are. That report summarizes the additional exposure that would have occurred as a result of beta exposure and it's insignificant when it comes on the gamma.

Q Were you measuring for alpha as well?

A No, any air samples we were measuring for them they didn't find out.

Q How accurate would you say your measurements are?

A Very accurate.

Q One-hundred percent, five percent, one percent?

A It depends on what system we're discussing. The air sample measurements were within 30 or 40 percent. They're accurate to detect whether there are alpha particles present. They are depending upon the count rate and a lot of other self absorbing, and so forth. The accuracy of the measurements of the real quantity of material there will vary.

Q Are small particles measured?

A Yes.

Q Seventy or eighty percent are measurable?

A It depends on how small we're talking about. The filters that are being used to do air analysis will pick up tenths of a micron particles.

Q Is that as small as there is?

A No, but they can be infinitely small, but normally what will happen is that a small particle will be absorbed on to a larger particle and you just don't see small particles floating around.

Q Will you give us a--assume that there are a number of, an X number of total particles, what percentage of the total particles is it reasonable to assume that you've measured. Counting the very small ones?

A I don't know, we haven't done particle sizes. To do that--

Q Isn't that an important thing to do?

A I don't think so. The rest of the particle, if it's too small you're going to breathe it in and breathe it right out again. And anything below a tenth of a micron in size is not usually deposited in the lung.

Q Not usually would mean?

A Not known to be.

Q That would be most of the time?

A Not known to be examined. And it's awful hard to get small particles of anything out into the environment. You have to get into a situation where you almost have individual molecules. Again, it's rare.

Q Did you discuss with the Governor any recommendation for evacuation?

A Yes, on Friday I went to the Governor's office and said we should not evacuate based upon the top's telephone call. By that time he had already received a telephone call which said that they had made a mistake and evacuation was not necessary.

Q You gave the Governor information based on the telephone call from the Nuclear Regulatory Commission?

A No, I gave him information based upon our off-site readings, based upon the information that we had from the Utility and the NRC, as to what was happening at the plant and based upon the fact that this would be over in a short period of time. That there was no need to evacuate.

Q Could you describe how it travels?

A I brought along a copy of the aerial survey on Friday to show you the directions that the plume went in, and with it is a copy of a color graph, and it's not very well done, but you can see what happened on Friday with the plumes. There should be enough copies for everyone.

And these are three different teams during the day when they went up to find the plumes, and they were finding them in different locations. There's almost no wind as you can see it extends from the reactor over to the west side of the river down into York County, and then into Lancaster County, and then back out toward Lebanon in one plume.

At another reading taken at a different time showed a different plume direction. And another one showed it right over Harrisburg, two-tenths of an HMR per hour. They look like plumes from smoke stacks that you can't see. That's really what they--

Q How do plumes work? Do they just go up and come down?

A It depends on the weather conditions. And these estimates have been made by the DOE people who are from the arms aircraft data as to the exposure of individuals in the population. And they took into consideration where the plume was known to hit the ground. And these numbers were a lot lower than what the 3,300 number they came up with was.

Q Do you think you've traced here most of the plume, or all of it?

A The helicopter was not in the air all the time,

but when plumes were there, they found a plume, they would trace it.

Q Based on your expertise, is it reasonable to assume you've located three-quarters of the plumes, two-thirds of them, four-fifths?

A Well, we didn't have any wind that way, and it's pretty obvious that the plume was seen on this is what has come out of the reactor, and maybe at some point continuing to come out of the reactor, and where it was going, and what has happened to it over a period of time--

Q But you have to miss some of it?

A The helicopters got to go down to get refuels. Yeah, the plume will vary, but that's what the HLD's are supposed to be doing in the environment, continuous air samples were also taken.

MR. DONNOLLY: On the ground level.

(To Mr. Gerusky)

Q And with the flow of the plume some people would have gotten more radiation as indicated here?

A That's correct more would have gotten more, some would have gotten less.

Q Now, would it have been possible for you to eliminate any effort?

A I wouldn't say in that occasion for any period of time, but from these numbers they then evaluated what the people below, or in the plume would have received.

Q Suppose a plume would have came down on top of one of the farmers in their farms, what would the effect have been on the people and the families?

A Nothing more. They would have gotten some beta exposure. Beta exposure is about--it would have given them some skin doses and lung doses. But, those doses would have been about within a factor of one. Same ball park exposure as the gamma ray.

Q Is it true the animals who were out on the farm and not inside in the barn, that they would get a greater effect?

A Yes, but the analyses were based upon everyone being outside, with no shielding of any kind of people being in houses, as people are assumed to be there first of all, and they weren't, and second, that they were assumed to be outside twenty-four hours a day.

In the calculations they were very conservative in their estimates of exposure to the population. I'm not saying that you cannot find out what the dose inserted in everybody in the 20 mile radius of the plant was, but to

tell what their exposures were, we just don't have the staff to do it.

Q What kind of a plan do you have? There were pictures of people in the newspaper being measured for radiation and something.

A We tried to use two pieces of equipment, a Geiger counter with an open window, and an iron chamber type survey meter. And we went into the pump with the iron chamber survey meter, and the Xenon went right through the walls of the pump when we got back home, and it stayed at three MR per hour.

We had to quick open it up and vent it. Xenon is a noble gas that will diffuse through the normal gas loss, and will get into everything. Taking cover really didn't help very much if the plume was underground.

Q I apologize for not having the expertise, for not being more precise. People were measured for the amount of radiation by the body counter. Okay, now we heard testimony last night that people outside of a very narrow radius, I think it was two, two and a half miles, two and a half miles, were not allowed to be measured.

Judging from the flow of the plume here a lot of those people got significant radiation doses. What steps

have been taken, or should be taken to measure those people?

A Well, people within three miles was the number that I had been told were given the opportunity to be whole body counted. And over 700 people came in, usually restricted to one person per family if they were together so that, because there is a lot of time involved in doing whole body counting.

It was not our equipment, it was equipment that the Nuclear Regulatory Commission had requested to have on site, and we didn't have any authority over how it was used. But, all of the data indicated through the 700 people that no iodine, no iodine was detected. No significant iodine was detected in anyone and nothing to that could be related to the plant was detected in any way.

Actually, for statistical purposes we could have done with a hundred or less and there was no need to expand that.

Q Okay, to change the subject a little. Could we get tritium out of water?

A No.

Q It's completely impossible to do that?

A Providing it's there it's H_2O.

Q There is tritium in the water now?

A Tritium is normally in the water, in a fresh water reactor, and there is no more tritium in there in the reactor vessels than is there normally.

Q Okay, in yesterday's paper there were stories about TMI not meeting 1975 safety standards and there were waivers given. I wonder if either of you has any knowledge of the other plants waivers?

A I don't know.

MR. DORNSIFE: I think the discussion was whether they complied with the standard review plan. I think that's--I listened to the testimony, I think it was talking about the standard review plan statement or prior to Three Mile Island, it was probably also not covered under that frame.

REPRESENTATIVE COHEN: So that will be something that we ought to look into.

I have no further questions.

CHAIRMAN ARNETT: Representative Poelhmann.

BY REPRESENTATIVE POELHMANN: (To Mr. Dornsife)

Q You indicated in the beginning of your statement I think it was Mr. Dornsife said, that when you got your original report from the Three Mile Island, that original

report indicated there was no radiation that had been released from the plant, and there was nothing outside.

What was your capability to verify that at that time?

A At the present time we didn't have any.

Q When did you first find out that there had been a release from the plant?

A When I was going to the press conference, about 10:30, 11:00 o'clock Wednesday morning was the first I found out that there had been a release from the plant.

Q Did you at that point have the capability to verify that?

A Yes.

Q How did that capability come about, and how was it?

A Once we found the unit defective levels off-site we sent monitoring teams to verify it from our bureau.

Q Okay, so between 7:00 o'clock, approximately when the incident-- I don't recall when the incident happened and 11:00 o'clock, you're depending entirely on the Utility as to the information that there was no release from the plant?

A That's the way our plan was written.

Q Is what I said accurate, is that the only source

of that information? Did the NRC have any ability to monitor in those hours?

A No, they didn't arrive with their monitoring van until later that afternoon. They had people there 10:00 o'clock in the morning to go into the control room and check on the reactor status, they didn't have time to check the entire room until later that afternoon.

MR. GERUSKY: Half of the staff was health physics staff, but they were looking at the mathology and the reports of the radiation levels.

BY [illegible]: (To Mr. Gerusky)

Q To what extent, from your monitoring after the fact of the initial release, to what extent are you able to confirm what Met-Ed said was the fact previous to that?

If Met-Ed said there was such and such a release at 7:00 O'clock, and you were able to monitor at 11:00, to what extent are you familiar with the information as to what they have said previously was true?

A We went down and monitor at 8:00 o'clock. We did not send out people, because, one, we expected iodine problems and we did not have iodine monitors, and we didn't have any way to communicate with them except by telephone.

Q When was the initial release that you were informed

of, 10:40?

A Based upon the information we had received to verify what those were those were the numbers. That those numbers were real, and to get out to get the numbers and to get back because of the inability to contact them. And when they came back they were called in by telephone, the numbers were indeed real.

BY REPRESENTATIVE HOEFFEL: (To Mrs. Reilly)

Q Can I interject something? I'm confused. Let me ask Mrs. Reilly. When were you aware that there was a release of radiation off site?

A 10:45. It was earlier in the morning. The earlier information when I was contacted was that there wasn't any release going on.

Q Well, I think all of the members of the Committee have a summary of excerpts from the PEMA activity logs of that morning, and in this excerpt it states that PEMA was notified of a small off-site release at 0735, and that at 0738 PEMA notified you, Margaret Reilly, of TMI and requested instructions from you on recommendations.

And then on 0745 PEMA received a call from you stating that there was a 10 R per hour, I guess, off-site release in the direction of York Haven,

and Goldsboro?

A Okay, the basis of that is that, as indicated earlier, according to the plan there are certain dose pretensions one can make making certain assumptions on the dose rate on the dome monitor, and that dome monitor was reading such that gave a reference mission of contaminant atmosphere and design pressure and some other paramater, if those things were down true.

We got this information from the site, and we called FEMA and said, hey, I would tell York County to get its ears up because we think there may be a problem over there, we are confirming. In the meantime, Utility staff using state police helicopters went to this area and they would find the stuff which is believable from the standpoint that he didn't have a containment reference, containment mix, because it wasn't the kind of accident that this presumption was built on, because you didn't have design pressure.

Q Oh, you did call FEMA at 0745?

A And we said get your ears up.

Q This excerpt then is misleading, in that you really did not report such an off-site leak?

A That suggests that we will service. Meanwhile,

call York County, we will get back.

Q I guess my question basically is, the only way we know that there were no releases of radiation in that plant until 10:45 is because Met-Ed says that, is that correct?

My question basically is, why should I believe that Met-Ed obviously has an interest in not reporting what it doesn't have to report in that line, and my question to you basically is, can you tell after the fact that what they said was in fact true?

MR. DENTON: Not really. We can tell that what the release was after the fact, because we have TLD's. We have a fixed air monitoring facility, and they have also TLD's so you can determine what the exposure was, and at least what the air concentrations were for particular activity and iodine after the fact.

They were in agreement with the readings from ground level readings and the aircraft readings of what they should be. So, if a significant release had occurred the TLD's would have indicated higher numbers than what was anticipated from ground level reading.

We do not--we could have sent our people out with survey equipment immediately. Our relationship with

the health physics staff at the plant has always been one of providing information back and forth as rapidly as possible. As a matter of fact, prior to this incident there was a truck that was shipped out from Three Mile Island up on Interstate 80 that the truck driver found to be leaking radioactive material.

We called the plant and the plant called us and said, hey, we've got a problem, there's a leak of radioactive material on one of our trucks. It wasn't the State Police calling that there was a leak, the plant called us and said we can have somebody up there by noon, and you better get up there too, meet us there, and we did.

So, we had a good working relationship with the health physics staff at the plant.

REPRESENTATIVE WOELFLING: But, you're satisfied that the plant was accurate in its assessment of what releases it made. They tell us what they knew, and that what they knew was apparently correct?

MR. [illegible]: I think there was a lot of misinformation given about what was going on inside the reactor. No one knew until Friday or so that the reactor core was uncovered for a considerable period of time.

REPRESENTATIVE WOELFLING: No further questions.

CHAIRMAN WRIGHT: It's now 12:30. I'm going to declare a break for lunch and we'll be back at 1:30.

(Recess was taken.)

CHAIRMAN WRIGHT: The lunch recess has been completed. We remind the witnesses that the oath they took this morning continues this afternoon. And I'm going to take the liberty of asking a couple of questions.

Will you define for the Committee the term half life?

MR. GERUSKY: The time frame it takes for a quantity of radioactive material to decay to half of its radioactivity, or half of its quantity.

BY CHAIRMAN WRIGHT:

Q Why do they use the term half life, why not full life?

A It decays in a manner in which half of the material decays in a certain time frame and half of what remains decays in the same time frame, and half of what remains so the time really is infinity until you get down to one atom, and one atom may not decay within the time frame.

So the half life is really an indication of the rate at which the radioactive element is undergoing

disintegration to a new element.

Q Would you make some comment about background radiation. What is background radiation? What causes some of the amount of background radiation today relative to ten years ago, twenty years ago, turn of the century, and our degree of sophistication in measuring radiation historically?

A Well, the--most of the background radiation that we are exposed to was the same--is the same now as it was a hundred years ago. Naturally occurring radioisotopes, including uranium and thorium, and their disintegration products in a long chain are available in the environment, and have been since the beginning of time.

More radiation, more background radiation many thousands of years ago when more uranium and thorium was present, it hasn't all decayed away yet, but within a time frame of a hundred years the decay has been small.

So, we can say that the naturally occurring background radiation is about the same a hundred years ago as now. There are some radioactive elements like Potassium40 that are in everything. Natural potassium contains an isotope of Potassium 40. And all of us have Potasium 40 in our body, and we all receive an exposure in the range of 20 to 30 millirem per year from Potassium 40.

Men, I guess, have more than women, but it

isn't really a significant amount. We receive exposure from the sun, from cosmic rays, high energy particles, high energy gamma rays. Cosmic rays coming in, hitting us and causing exposure .

And we receive the exposure from building materials that contain the natural occurring radioactive materials. There has been some increase in some elements like tritium in our environment because of weapon testing.

There is plutonium in our environment because of weapons testing. The long half life material we saw in some of the milk materials cesium which came from normal fallout did not come from the plant, because they were finding cesium in other locations throughout the country.

Some of the longer half life materials are still around from the weapons testing and they will be showing up in our environment for a long period of time. That's about it.

I think the average exposure to a Pennsylvanian is in the range of a hundred millirems per year, or two millirem per week. And we were talking the total average exposure of people within ten miles of the plant of eight millirem over the two week period. They just doubled, in fact, twice as much as we get from just being in Central

Pennsylvania during that two week period, average-wise. Some people received more, some less.

Q I think you said that natural background radiation isn't significantly different today than what it was a century ago?

A Except for the fallout.

Q I heard a statement a week ago that background radiation today was six times what it was at the turn of the century.

A No.

Q Now, in talking about background radiation there is obviously the natural produced background radiation, but in addition to that there has got to be some manmade radiation too, is there not, because of medical uses, manufacturing operations, burning of coal?

A That's not considered background.

Q Oh, it's not?

A No, that's additional exposure. Background would be what is put into the environment, that is with us. But, x-ray exposure of people in Pennsylvania is not considered background. That's considered medical exposure--medical radiation exposure. Additional exposure above background which one gets, and that s in the range of a hundred, eighty to a hundred.

Q Well, doesn t some of that manmade radiation

from medical and manufacturing processes actually get out into the atmosphere?

A Oh yes.

Q And if it does then how, when you're out there--when you go outside of the building now to measure how can you tell the difference between natural background and manmade background?

A Well, the isotopes that are released from hospitals and universities are normally released through the sewer system. So, in sampling water we have to determine where the source of exposures came from.

As a matter of fact, it is possible that some of the iodine 131 that was found in the river samples came from Hershey Medical Center, and not from Three Mile Island. This is something that we have to follow up on.

There is a lot of radioactive material being used in hospitals throughout the area. So, we can't--what is in the river is not all a result of Three Mile Island. There is also additional uranium and thorium water products that are coming from acid mine drainage, because the northeastern part of Pennsylvania has a lot of naturally occurring uranium. And as the uranium is usually associated with coal deposits at least organic deposits, and we expect,

we haven't been able to yet, but we would like to do a study on naturally occurring radioactivity and where it's coming from.

In the cases of the people who received--the nine people who had higher than normal radon daughter products in their body from the whole body screen, we believe most of it is coming from well water in the area. And we've been sampling the wells, and indeed, there are radon and radon daughters in the drinking water.

There doesn't appear yet any uranium in the water from what we've gotten so far, so that the problem is one of short duration, but if the person keeps drinking it over a long period of time it does cause a radiation exposure, mainly to the stomach.

REPRESENTATIVE [illegible]: Where would that come from?

DR. [illegible]: From going through a uranium deposit.

MS. [illegible]: Radon being a gas may migrate very easily, and help as a store deposit where it was borne, and to disintegrate through fractures in the rock and general soil, as it can then find its way into water.

REPRESENTATIVE [illegible]: (To Dr. [illegible]sky)

Is there much of that in Pennsylvania?

A Yeah, it looks like all of the wells have it. And we just haven't the resources to find out what's wrong. We are looking at some of those starting small scale farms.

Q There's not much you can do?

A Not much we can do about it except report it.

Q Is this common throughout the country or just this section?

A It's common throughout the country. In some places are higher than what we see and other places it's a lot lower, but there is usually some detectable amount in all drinking waters.

BY REPRESENTATIVE STUBAN: (To Mr. Gerusky)

Q You said that the northeastern Pennsylvania mine drainage water, what would be the content of radiation now of the Susquehanna River coming down now on the Wilkes-Barre Area?

A We don't know.

Q Has there ever been that caliber test taken?

A We do gross determinations, gross aopha determinations gross beta determinations.

Q How about the people in there now that are making the tests for PP&L, the ecology experts that are there, would they have the content of radiation that's in that river now?

A Gross. They aren't doing analysis for radium or for uranium. They will do a gross determination for alpha activity and that should be included in the gross alpha.

REPRESENTATIVE O'BRIEN: Well, why not--why wouldn't they do it?

MR. [illegible]: Well, they aren't looking for it because radium does not come out of nuclear power plants.

MR. [illegible]: I've seen some [illegible] data of river samples and they indicate typically one to two pico curies per liter of radium 226. Which is the bad actor as far as naturally occurring things in water go, is the lowest EPA

It's about [illegible] fifths of the safe drinking water level, for radium 226 is five pico curies per liter, and the river is running now at one to two pico curies per liter.

REPRESENTATIVE [illegible]: Well wouldn't that be to the advantage of [illegible] to have the data. Once they find that [illegible] to show whether there is a difference or an increase in [illegible]

MR. [illegible]: You don't get radium from a nuclear power plant. The radium is removed from the--the uranium ore contains all the daughter products, all the

radioactive daughter products. And the uranium that's in the plant does not produce very significant quantities of radium. Radium is a very very--is a very long half life and therefore is very weak in decay. It takes a long time for the radium to build up.

BY REPRESENTATIVE O'BRIEN:

Q How many places get drinking water from the Susquehanna River, below Wilkes-Barre?

A Below Wilkes-Barre?

Q Wilkes-Barre. Does Harrisburg get it?

REPRESENTATIVE STUBAN: Danville got it, and I guess they're going to some of the outside supply.

REPRESENTATIVE O'BRIEN: The reason I asked, is there anything in the water that could hurt people even like from our area, from the open mines and the acid water?

MR. GERUSKY: It's something we've lived with forever, and we're going to have to live with it.

REPRESENTATIVE O'BRIEN: That's not what I asked. The fact is--

MR. GERUSKY: Sure it can help, it can hurt people if one assumes that every little bit of radiation exposure one gets is detrimental to the health of the people. That's a pretty conservative assumption.

MR. DORNSIFE: It is below the EPA safe drinking water levels which are the appropriate regulations in this case.

MR. GERUSKY: There are states though, that have levels of radium in their drinking water that are a lot higher and they're having problems with the safe drinking water.

REPRESENTATIVE O'BRIEN: There's no way of clearing this water when they filter it.

MR. GERUSKY: That's really expensive.

REPRESENTATIVE O'BRIEN: They don't do it though?

MR. GERUSKY: At plants like uranium mines and uranium mills where there's discharges into rivers they are cleaning it up so that there is no discharge, there's negligible discharge of radium into the stream.

REPRESENTATIVE STUBAN: Well, going along the same line, what about these agricultural people that are using the water out of the river for irrigation?

MR. GERUSKY: They would be putting more in from the phosphates that their--from natural radioactivity that they're using on the ground from fertilizer.

It's a can of worms, and it's just slowly being looked at. There is radioactivity everywhere.

MR. DORNSIFE: I think one of the problems is that

they've lowered the standards to the point in the nuclear power industry where a lot of other industries are exceeding the standards of the nuclear power plants. As far as releases are concerned.

REPRESENTATIVE STUBAN: What are some of the industries in the State of Pennsylvania that you think possibly could be exceeding?

MR. DORNSIFE: I've seen studies that would indicate that coal fired power plants could be releasing more radioactivity than a nuclear power plant under normal operations. There are some mines in the state that have very large levels of radon gas coming out of the ventilation shafts.

REPRESENTATIVE STUBAN: Well, does the Department of Environmental Resources have any readings on, say on the Washingtonville plant?

MR. GERUSKY: We havn't had the resources to go get those kinds of numbers yet.

BY REPRESENTATIVE STUBAN:

Q What is it that you need to go get it? The $300 thousand that we voted for equipment?

A Well, that's part of it. I mean, it's just that there are certain priorities that are established, and that's not top priority item right now.

Q Well, who would have that authority to find out what the radiation is in the area?

A We do. We do. EPA is starting to look at it also, but we do. We have the authority, there's no problem with authority. The problem is people, staff, and equipment.

I don't think, compared to what we need to handle reactor accidents that is a second priority item.

Q Well, on the same vein, now you're talking about the coal fires I'd like to ask some other questions. Now, on a coal fire plant, now we're going to get Susquehanna built there. What is going to be the increase in radiation with two plants in that area, within, say, an 18, 20 air mile radius?

A It won't be detectable.

Q Is it detectable now with the coal fire plants there?

A I don't know.

MR. DORNSIFE: Well, you can detect radium in the river, but whether that's--it's probably more from coal mining operations than the plant.

REPRESENTATIVE STUBAN: Well, what about the coal fire plant?

MR. DORNSIFE: We've never looked for it.

REPRESENTATIVE STUBAN: So that, we don't have no data to that effect, what is there now, and what will be there when the other plant is fired?

MR. GERUSKY: The Susquehanna plant is doing a preoperational environmental monitoring program, and we're starting one. But, that should provide some base line data.

CHAIRMAN WRIGHT: Representative Brandt.

BY REPRESENTATIVE BRANDT: (To Mrs. Reilly)

Q Thank you Mr. Chairman.

I have a number of questions here, but I'd like to get one that we just got off a minute ago, and that s on the body count and that whole thing.

There you said it's like 700 people?

A Seven hundred twenty I believe was that number roughly.

Q Are there cases that are still being looked at on that body scan? People who are still being monitored watching their activity?

A No, not to my knowledge.

Q None of them at all?

A No.

Q That case is closed as far as--

A The case is closed insofar as we're convinced that none of the people asked showed any reactor related materials, radioactive materials.

Q Now the high level, whatever that term is you used in the well water.

A Radon.

Q Is that the element that we don't have the ability to test in the Harrisburg Area? Is there something found in the water that we can't--

A Okay, the way the radon content of the water is analyzed is the radon itself is not a gamma emitter, and neither is its next daughter down. What we actually do is look at the gamma peaks from radon's granddaughter and back calculate how much radon would have to be in the sample to support that kind of daughter activity.

We can do this. We've done several well samples in our laboratory up town, and we've also compared those data with similar data generated by the EPA laboratory in Montgomery using an entirely different technique which was in generally good agreement where we can do the analysis but we can't do hundreds of samples.

We have the capability, but we don't have the thru-put.

A What I m getting at, the issue currently in the area where I live, is that--in the area of Red Hill, which is a development right on the edge of the Island, that there are people that live in that area with high body scans.

Now, they once had a well water problem. Are you following through to see where that got in? If it's just in that area or testing other well water?

A We've done wells of several people that work in our shop, and every well that we've done has radon to some extent. This is naturally occurring. There is no way it is due to the plant; it is something that is in soaking in the ground. It's a natural phenomena, and I would be willing to wager that practically any well in the state is going to have some kind of radon daughters concentration in it.

Some months ago, I guess it was last year, I began to be interested in more so in natural radioactivity phenomena which is going to be recognized. I talked with a college in EPA in Washington regarding what number should one expect for radon in water, I was trying to find out whether my numbers were the values that we were finding in some water samples that we had done earlier, whether they were believable or not.

It's not uncommon to find thousands of picocuries per liter radon water. It's practically everywhere except in areas that absolutely don't have any uranium authority.

Q Well, in this particular area wasn't the limit higher, what you found higher in that area? You're saying that there is practically some in all water. But, didn't one of these cases--

A They weren't particularly high. They were like 1500 picocuries per liter. There was one that was to the order of four or five thousand. There are studies regarding wells in New England where in one case they had a quarter of a million picocuries per liter.

Q Well, then, on the issue of the body scans and the people that you found were somewhat better?

MR. GERUSKY: Some of those people were brought back in for re-scanning and indicated very low levels.

MRS. REILLY: It appears to be a transitory thing. For instance, it could be that for instance these people just before they have their first scan may have drunk a big glass of water and that inventory is still in their stomach when they go to get scanned and that's what the detector picks up.

The detector won't tell you really the material

is in the body compartment like the stomach before it's distributed throughout the body.

REPRESENTATIVE BRANDT: But as far as your operation, your bureau is concerned, you're satisfied with that?

MRS. REILLY: We're satisfied that it's not reactor produced. I really, personally, was not surprised that we found some people with radon daughters in them, because we know that probably throughout the eastern half of the state there is naturally occurring uranium in the soil and rocks, under foot, and that he who drills into a well down there might get some radon in the water.

We had planned earlier to go on a campaign this summer to systematically look at the matter of natural radioactivity, at least in the eastern third of the state, because we know that there are certain areas that have recognized deposits of uranium in there, and where there is uranium you're going to have possible radium and possibly radon in a condition that is observable.

REPRESENTATIVE BRANDT: But then that issue there with those few people that's still an ongoing project still as far as your department is concerned?

MR. BERUSHY: Yeah, it is not the most, indicating by shaking my head, is that the subject of natural radon exposure in drinking water is not closed.

REPRESENTATIVE BRANDT: But you're satisfied that none of that came from a reactor?

MRS. REILLY: Correct.

BY REPRESENTATIVE BRANDT: (To Mr. Gerusky)

Q I'd just like to back up. Your department, it seems that numbers keep coming up like 1963, is that when the state got in the business of monitoring radioactivity?

A 1961. Well, actually, radioactivity--some environmental mining programs were carried out in 1956.

Q This was handled by the Department of Health prior to the DER?

A Yeah, we were all in Health until 1971.

Q How big is this department in DER?

A We have a staff complement of 25, and this is to take care of 9,000 x-ray facilities throughout the state. And all the reactors and other environmental problems.

Q How many reactors are you looking at now?

A Beaver Valley, Peach Bottom are the two facilities that are operating and two others, the Susquehanna station and Limerick were doing preoperation work.

Q The reason I'm getting to these type of questions, I feel that these are the areas, directions, that the EPA is looking. You mention the name Burns and Rowe, who is

Burns and Rowe?

MR. DORNSIFE: They're the architectural engineering firm for the Unit two Three Mile Island. They did the auxiliary equipment design they're faced with the reactor system itself and the Triple S nuclear steam supply system.

REPRESENTATIVE BRANDT: They did not do Unit one?

MR. DORNSIFE: No. Gilbert Associates designed the Unit one.

BY REPRESENTATIVE BRANDT: (To Mr. Gerusky)

Q Back to your initial opening remark when you started the chain of events, did you ever have any problem with--prior to whatever date it was, March 28th, did you ever have any calls prior to Three Mile Island that there was a problem down there?

A Transportation accident which I had mentioned.

Q You mentioned that?

MRS. REILLY: We had drills with them in the past. We've had drills with them routinely in the past.

MR. GERUSKY: The Nuclear Regulatory Commission routinely informs us of any activity in any reactor where there are possible problems. And there were attempts to gain entry to the plant and things like that. There were

some injuries that had occurred at the plant and they notify us. I don't think of anything radiation-wise except for transportation accidents.

REPRESENTATIVE BRANDT: Do you have any prank calls that you had to check out that somebody tried to--

MR. GERUSKY: No.

REPRESENTATIVE BRANDT: I'd like to talk just a minute on the limit you just made and the limits you set down and now even on coal fired, etc. Who sets those limits?

MR. DORNSIFE: The Nuclear Regulatory Commission.

REPRESENTATIVE BRANDT: Do they the United States? Do they check for each plant?

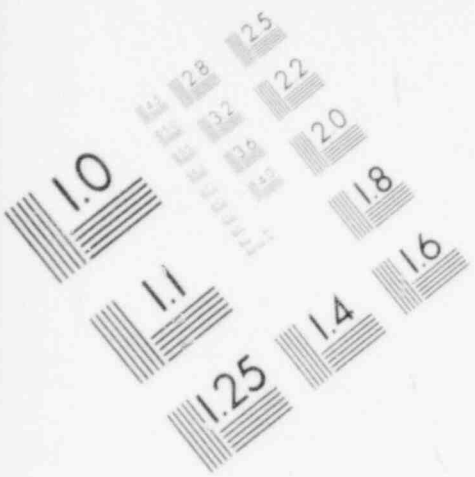
MR. DORNSIFE: Well, each plant has their own technical specifications, but they're based on 10 CFR Part 50, Appendix I, so as to reasonably achieve their limits. So, they all use the same regulations, but they don't necessarily have the same technical specifications.

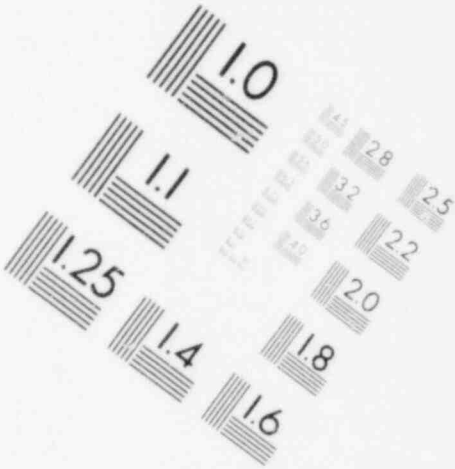
REPRESENTATIVE BRANDT: What happens when a plant cannot meet those limits?

MR. DORNSIFE: They're not allowed to operate. If a plant has a certain quarterly limit they have to meet, if they exceed that they have to shut down.

MR. GERUSKY: Except for a need for power.

MR. DORNSIFE: Yes, except for emergency or some extraordinary circumstance, which, who decides that, I don't





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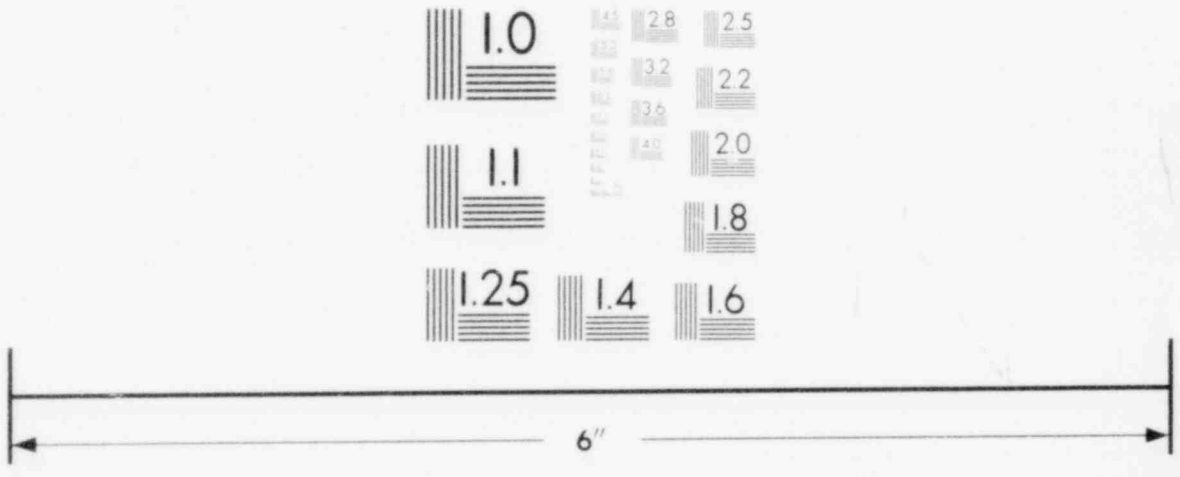

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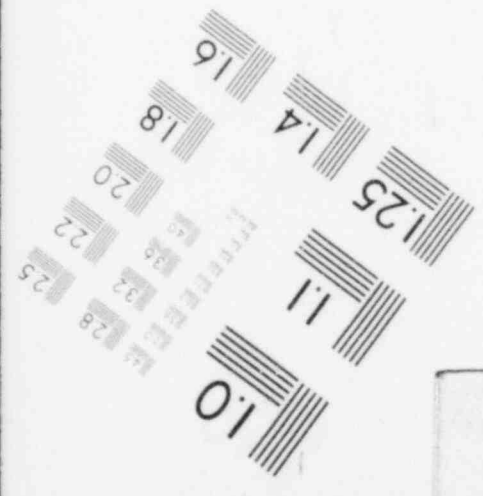

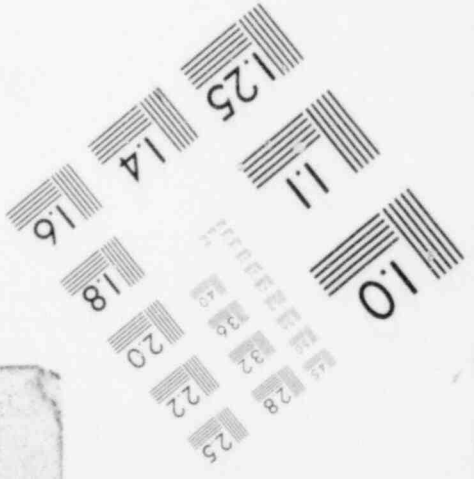

know. But, nobody has ever done it. Nobody has ever exceeded their limit in operating as far as I know at least in Pennsylvania.

REPRESENTATIVE BRANDT: Tell me if this is wrong. The limits, the operation of nuclear plants, or the operation of nuclear reactors was more strict under the AEC than it is under the NRC?

MR. GERUSKY: Same people.

MR. DORNSIFE: Their regulations have been tightened over the years. They made improvements in the licensing process by a series of rule making procedures, and their regulations are, in my opinion, much more strict than they were under the AEC under the normal decision making process, normal rule making evolutions. But it's essentially a lot of the same people were transferred over from AEC to NRC.

REPRESENTATIVE BRANDT: But the limits of releases--

MR. DORNSIFE: Have gone down.

REPRESENTATIVE BRANDT: Have gone down. Considerably?

MR. DORNSIFE: Appendix I is a fairly recent thing. But before that the limit was 10CFR 20, which is five hundred--allowable limit of five hundred millirem per year. Now they're down to five and ten allowable per year. There is also an EPA regulation concerning nuclear

power plant releases, but that covered the whole fuel cycle, and allowed the maximum of 25 millirem per year. But the Appendix I limits, NRC limits already within the EPA standards which I believe will be in effect in 1980, I believe.

MR. CERUSKY: EPA has the primary responsibility at the federal level to establish standards for the protection against radiation exposure for all standards under an old General Radiation Council Authority, which was transferred to EPA when EPA was created.

EPA has only come out with a couple of standards since they were created, but all federal agencies must follow those standards in writing the regulations, and they can use those standards to write regulations around and interpret those standards the way they see fit. And the Nuclear Regulatory Commission complies with the standards of the Environmental Protection Agency, but it gets more specific in the actual limits.

The concentrations of certain isotopes are not EPA--EPA does not come out with a concentration for tritium in drinking water, for example, tritium in river water.

MR. BORNSTEIN: Specific as far as releases.

MR. CERUSKY: Right, releases from a plant, that

is the NRC, provided they're within the guidlines put out by the Environmental Protection Agency.

REPRESENTATIVE BRANDT: Then you're telling me that the limits are more strict now than they were ten years ago, as far as nuclear reactors go?

MR. GERUSKY: Yes.

REPRESENTATIVE BRANDT: A couple--they talked about--well, first the extensive period of time, you used that term, do you recall what you used that for? This morning you said you were relating to something extensive period of time.

Does anybody recall about the release of something? You said it was for an extensive period of time.

MR. GERUSKY: Friday.

REPRESENTATIVE GEESEY: Yeah.

MR. DORNSIFE: Based on measurements that were taken even a 1200 millirem reading in the plume was just a peak reading. The helicopter flew through it, detected this was an open beta-gamma reading it flew out of the plume and it couldn't find it again. When it tried to come back into the plume again it couldn't duplicate the 1200 millirem reading. Indeed off site the same phenomenon existed.

The NRC team and our team were off-site in almost the same proximity saw a peak occurring, going up

about twenty millirem quickly and then dropping back down in a very short period of time.

The duration of any elevated reading which are fairly small to begin with we're very limited.

REPRESENTATIVE BRANDT: You've made that statement extensive period of time. You're talking about when they informed you that there is going to be a release, or there was a release, or there's going to be one, whatever you said, as long as it's not for an extensive period of time.

MR. GLADNEY: I think that I probably said that they told us that it was not going to be an extensive period of time, and therefore, the levels would be decreasing rather rapidly, shortly, and that if we start to evacuate people by the time we got them into the evacuation mode, the levels would have dropped back down to where they were the day before.

BY REPRESENTATIVE BRANDT:

Q When you use that term extensive you're talking about hours?

A Hours. For that particular episode it was hours. They said that it was going to be over shortly. They meant by shortly, hours.

Q You use the same definition from when they used the term puff?

A A puff is a minute.

Q But Saturday in Elizabethtown I think it was Arnold who used puff as a long period of time. When I think of a puff I think of--

A I do too, but a puff to them means there is a release, the realease continues and then it stops abruptly, and it doesn't continue.

MR. DORNSIFE: There really is a fine line between what is a puff and what is a continuous release.

REPRESENTATIVE BRANDT: Two more subjects. On the water issue presently we have and that's probably a main concern. That decontamination process that's on board down there now, they're working on the buildings and I've seen and told things on Friday.

Do you as a department have any ability, are you part of the monitoring of that system? Is there DER people on board as that process is going on process?

MR. GENUSKY: Yes. All-we are going to be reviewing all of the processes. We will be involved in the decision as to whether or not it can be released, and we will be monitoring if the decision is positive. We are monitoring now.

REPRESENTATIVE BRANDT: I realize that, but if that process starts up and they are working will there be a person from DER on the Island?

MR. GERUSKY: No.

MR. CORNSIFE: There will be a discharge monitor there that EPA is speeding into DER that will detect the off-site releases. But as far as the actual operation of that system, no, there will be nobody monitoring that.

REPRESENTATIVE BRANDT: Will there be somebody from the NRC there?

MR. GERUSKY: Yes,

REPRESENTATIVE BRANDT: EPA

MR. CORNSIFE: I'm not sure EPA will be there, they will be monitoring discharge. NRC people will be monitoring the operation.

REPRESENTATIVE YAHNER: Have you made a request to be there?

MR. GERUSKY: No.

REPRESENTATIVE YAHNER: Why don't you?

MR. GERUSKY: I think if they start it up, when they start the procedure up we will probably be there, but if that's going to take months we don't want to be there all the time.

REPRESENTATIVE YAHNER: Are you going to have access to the design of the system?

MR. DORNSIFE: We will be reviewing the procedures and the design.

REPRESENTATIVE YAHNER: And if you find that there is something that you don't agree with what would you do?

MR. GERUSKY: We'll notify them and if they don't do it we'll notify the Governor too. Because that's-- he's directed us to do that if it's something that they refuse to change or we believe strong enough. We will scream and yell.

MR. DORNSIFE: This is not a legal binding agreement. NRC has offered us a review of that procedure and any problems we find will go to NRC. And if we feel strongly enough about it we can do things that we are sure we can get our concerns implemented into that procedure.

MR. GERUSKY: Last resorts court.

REPRESENTATIVE BRANDT: On that point, does the DER have the ability to not allow Metropolitan to dump water?

MR. GERUSKY: I don't think so.

REPRESENTATIVE BRANDT: They don't. Does the State of Pennsylvania?

MR. GERUSKY: If it's a violation of their permit to discharge nonradioactive water to the river, yes. But

radioactive water is right now the responsibility has been preempted by the federal government as a responsibility of the NRC.

MR. BORNSTEIN: We can take action through legal means.

MR. GERUSKI: If we feel that the levels are inexcessive--

MR. BORNSTEIN: But as far as the regulatory process goes, no.

MR. GERUSKI: If we feel they made a wrong decision on a releasing versus some other source of disposal. I think we could go to court on that. I know we could go to court on that.

REPRESENTATIVE BRANDT: So you have the ability to keep them from doing it until that decision would be handed down?

MR. GERUSKI: I think they would. I think on it you could get a court restraining order.

REPRESENTATIVE BRANDT: Would this be along the line of what the City of Lancaster did?

MR. GERUSKI: Yes.

REPRESENTATIVE BRANDT: Do we have any deposit sites at all for nuclear waste in Pennsylvania?

MR. DORNSIFE: Not for nuclear power plants, no.

MR. GERUSKY: No commercial sites.

REPRESENTATIVE BRANDT: What sites do we have?

MR. GERUSKY: Well, under the regulations and prior to regulations there were companies that processed uranium for radium. And under the present NRC and State regulations one can dispose of small quantities of radioactive material by burying it on your own property.

In addition we got the Canonsburg problem. Which is--which may require us purchasing property somewhere else and digging all that material up in Canonsburg and moving it to a better location for the--to reduce the exposure of the public.

BY REPRESENTATIVE BRANDT: (To Mr. Gerusky)

Q Okay, one other area. Does [illegible] get involved at all in the issues of permits or watching the removal of solid [illegible] off the [illegible]?

A [illegible] not. I can't speak for what they are doing.

Q [illegible] has it that--

A In York?

Q [illegible] that there was, for example, the suits and so forth that the [illegible] that worked in hot

spots and so forth, was coming off the island in garbage trucks.

[illegible]: Well. I have some personal knowledge of it by interactions with the NRC people at the site. They had a--Met-Ed had a land fill on the island and that caught fire and the NRC inspectors became suspect of what they were putting in the land fill, and they actually found some contaminated packages.

But I believe the City of--somebody in York County in preparation of accepting some solid waste from the plant talked to some of the NRC people on site and they were sure that NRC would monitor in the future anything that would go off site.

REPRESENTATIVE [illegible]: And that's strictly an NRC problem?

MR. [illegible]: Active material it is an NRC problem.

MR. [illegible]: But solid waste is a [illegible] problem, but as far as radioactive material that's NRC's problem.

REPRESENTATIVE [illegible]: Okay, one last one here [illegible] passed over. [illegible] Met-Ed have the ability to measure the island?

MR. [illegible]: Yes.

REPRESENTATIVE [illegible]: They had that ability

and they could do that prior to the accident?

MR. GERUSKY: Oh yes.

REPRESENTATIVE BRANDT: And you're on communication about what those levels were?

MR. GERUSKY: We cross checked their item numbers at our laboratory, as I said, they found some--what they thought were high levels of iodine in the air during the first day, and they didn't believe those numbers. We didn't believe those numbers either.

We weren't sure and we wanted to make sure and we checked them out because of high background at their own facility. And by that time they did not have the off site capability with Teledyne -- it was not off site. So they flew up a helicopter to Holy Spirit, and we went over to our lab and checked it out and indeed there was no significant quantity of iodine present on those samples.

REPRESENTATIVE BRANDT: One last thing, Tom, could you give us--the Chairman a copy of the testimony that you gave when you first went down to the site?

MR. GERUSKY: I got it in handwritten form. Yeah.

REPRESENTATIVE GEJDENSON: Mr. Chairman, I've got to go, but I would like to make one request of you before I leave that I think is going to be important in deciding

the route that you are going in the future.

I would like, as soon as possible, for the benefit of the Committee, a report from you as to exactly what problems your department has in carrying out its function, and what you need to resolve those problems, because it appears me as though your operation holds the key to many of the problems that the future of this Commonwealth will face.

And we, I think, have to find out what we can do to help you face those problems and resolve them and we have to know those problems better. I'm somewhat concerned.

CHAIRMAN WRIGHT: Representative Hoeffel.

REPRESENTATIVE HOEFFEL: I think Gene Geesey got off to a good start here. I'd like to know as kind of following up on what Gene started, what kind of improvements you would like to see in radiation monitoring of commercial items?

MR. GERUSKI: Margaret is our expert on environmental monitoring. Why don't we let Margaret answer this question.

MRS. REILLY: Well, considering the whole ball of wax both the routine operations and accidents. There is a need to improve our gamma spectroscopy capability. It's a lab function. It is important for quick thru-put and good analyses of things like milk samples, in a reactor accident or even with routine operations.

analysis, or even with routine operations. We know a fair amount of milk throughput, plus it's a handy analytic tool for all kinds of other samples.

We have some need for more survey equipment particularly in terms of instruments capable of reliably detecting airborne beta emitters. One thing, I think everybody has recognized as having been a profound problem in this matter is communication. And one thing that definitely got to come to be is that we get better communications between ourselves and the facilities and field teams that we might deploy.

One thing that we're seriously considering right now is getting dedicated telephone lines to the control rooms of all the facilities.

MR. HERRINGTON: (To Mrs. Reilly)

Q Do you see a need for increased monitoring devices maybe permanently placed around the facilities?

A We're more or less under way in that now. About a week before the war started, as it were, we had taken delivery of a new TLD system with several hundred dosimeters while we were in the process of shaking this down, the balloon went up. We have since begun to deploy those, we're short of planning to cross rough the data we generate with them

against the data the other agencies are resolving in the course of this, too. But that problem is sort of beginning to be taken care of, and that was underway before the accident.

We also had on order at the time ten new air samplers which we plan to place around the various sites. It seems to me we need more than one air sampler per site, although the air samplers we had were in a position where, on the average, if anything would have gotten out you would have seen it.

Also we're underway, this equipment also was on order at the time the accident started, the equipment for doing airborne iodine estimates in the field. We're sort of beginning to be squared away on that, some of the problems, it seems almost as if the accident had been put forward in time several months, we would have been in somewhat better shape.

Q Should we be asking the utilities to foot more of the bill for this increased monitoring?

A I have mixed emotions on that, because there is always the matter that you're somewhat indentured to the individual that pays the bill. And I would rather be accountable to one individual;namely, the taxpayer.

Q How much monitoring do the Utilities do now with their own plant?

A Considerably more than we do. Plans with TLD we had four in the environment and they probably had about twenty. The air sampler we have one, I think they have something to be on the order for at least a half dozen or better.

Their sampling is done at more locations and in most cases with greater frequency than ours is.

REPRESENTATIVE HOEFFEL: Thank you.

Mr. Dornsife you talked about your background in Admiral Rickover's program. And from newspaper accounts I'm concerned that many of the controlroom operators in the early days of the commercial nuclear industry were old Navy men, ex-Navy men, and maybe old Navy men, too. And they seem to have a reputation of being very well trained.

What does the Navy do that may be lacking today in training the operators and what sort of thing should we be pushing the Utilities to do toward adequate training?

MR. DORNSIFE: I'm not very conversant with the Utility's training program. I just in general terms know what they do. I think the classroom portion of the first six months of Admiral Rickover's program is so much of the

same thing. I think where the difference occurs is the qualification and actual operating submarine prototype. I physically had to qualify on each of the various watch stations.

REPRESENTATIVE HOEFFEL: A simulation kind of training?

MR. DORNSIFE: No, it was an actual operating reactor. A prototype reactor plant that they planted submarines on. I, physically myself, as an officer had to qualify on each of the watch stations. So, I knew when I was telling one of my men, Hey go down and turn this valve and this pump, I knew physically what he had to do.

I don't think you can get any more familiar with that in the system. I had to trace each individual system in that plant. I knew where each valve was. Now, the problem you get into with a nuclear power plant is it is a much more involved system, it's much more complex than a submarine plant.

It has a lot more--a submarine reactor has basically no safeguards. It relies exclusively on operator's action taking the appropriate actions if something goes wrong. There are no high pressure injection pumps, there--all you have is a reactor trip system. So the operators are trained to

respond in much greater detail to accidents than emergencies.

I think that's the areas they're lacking in, in the civilian program.

BY REPRESENTATIVE HOEFFEL: (To Mr. Hornsife)

Q Is it appropriate for a state to mandate that kind of training? Is it a federal function?

A That's a federal function at this point. I think they're moving in that direction. I would just like to sit back and monitor how far they plan to go and make a decision whether it is adequate or not.

Q Well, one last question, and I'm getting broader and broader in my questions, I guess. What role do you see for regulations of facilities by the state? Up to now we just seem to be monitoring and assessing and looking over the shoulder. Where would you like to go? Where would you like to see the state go?

A I personally feel we cannot duplicate what the NRC does, because we just couldn't physically and monetarily afford it, because they have a staff of 1200 people. They must have at least a hundred people working in the licensing procedure. And in my opinion in the licensing procedure they ask the right questions for the most part, and they do a very thorough job licensing nuclear power plants. I

feel our role is indeed looking over their shoulder and maybe getting some more authority to look over their shoulder through some sort of an agreement.

I would really like to have one nuclear engineer in our office per site. His exclusive function would be to monitor the licensing process for that plant, and after the plant is in operation he would have the authority to go with the NRC inspector. Maybe, if we think the NRC is doing a proper job we could call off the inspectors.

Q You would need four or five nuclear engineers then to cover the plants in Pennsylvania?

A Right. That would be the maximum I would want.

Q With the authority for unannounced inspections?

A Well, yeah, that might be a good idea. That would require extraordinary legislation.

Q Well, that's what we're here for.

CHAIRMAN WRIGHT: Explain extraordinary.

MR. GERUSKY: We could do that on our own couldn't we?

MR. DORNSIFE: Why couldn't we. You could come to a court problem with federal preemption. I had an agreement prior to this accident, I had an agreement with the King of Prussia NRC office I could accompany the NRC inspectors on their inspection source if I thought it

was appropriate, and if I could get the permission of the Utility to do it. I never had to utilize that, because it was mainly for something that had a great public interest.

REPRESENTATIVE HOEFFEL: You can't go in now and inspect?

MR. DORNSIFE: No, I can't.

REPRESENTATIVE HOEFFEL: And not only the feds can stop you, but the Utility can stop you, right now, is that right?

MR. DORNSIFE: Yeah.

MR. GERUSKY: However, it is being done in Illinois. They make independent inspections of the nuclear power plants with nuclear engineers and they have not had a problem.

REPRESENTATIVE HOEFFEL: Do they have legislation giving that authority, they just do it?

MR. GERUSKY: They just do it. Like Maggie said, it's amazing what you can get away with if you just go and do it. I think in the atmosphere of the aftermath of Three Mile Island, one, legislation could be passed and two, no one's going to turn you down.

MR. DORNSIFE: Yeah, even without legislation, I think.

MR. GERUSKY: I think there is a need for legislation. One, to authorize--to make it mandatory that we have

people at least reviewing what's going on at those plants.

REPRESENTATIVE HOEFFEL: One per plant?

MR. LORNSIFE: One per site.

MR. [illegible]: One per site.

MR. LORNSIFE: One per site, because they're usually--the process is usually dual and once the plant is licensed the function would, of course, diminish. It would be more of a routine inspection type of procedure, rather than a full blown inspection with the licensing documents and the S.. and the whole bookshelf of documents that have to be reviewed.

REPRESENTATIVE HOEFFEL: Well, then, finally, if this inspector, or engineer, or whatever, is doing the job and you guys are making an independent evaluation of material. If he finds something and you as supervisors agree that that something is wrong, are we going to rely on the public noise that you can raise to stop that, or should we be able to pull a license, of course, we don't license now so we couldn't do that.

What steps should we be able to take against a facility that doesn't meet our standards?

MR. LORNSIFE: My opinion is that I--I have enough faith in the ..., if I told them I didn't think,--in fact I have a line of communication open with Harold Denton and Vic

STELLA, who will be making those decisions, I could call them and tell them, hey, Harold, I don't think that's safe. And I'm sure they would initiate an investigation based on my say so right now. I think they're reputable enough to follow up. I don't think--if that were to fail, at this point, based on the regulatory process we have at public hearings, which the state participates as an interested party. We could bring it up in the public hearing process.

REPRESENTATIVE HOEPPEL: What if the license had already been granted and you find something else?

MR. DORNSIFE: Well, then it would have to come through the NRC.

REPRESENTATIVE HOEPPEL: And if they just didn't agree with you that the practice was unsafe, but if something had to be corrected?

MR. DORNSIFE: We have no legal authority to do anything.

REPRESENTATIVE HOEPPEL: Should we?

MR. BERUSKY: Yes, I think so.

MR. DORNSIFE: Yeah, I think that might be appropriate. But it would only be used under--you know, not on a routine basis.

REPRESENTATIVE HOEPPEL: I understand. Can you

suggest what that authority might be? What kind of steps we might be able to take?

MR. [illegible]: The problem with the state passing legislation is always, going back to the Atomic Energy Act that preempts the state from making some of these decisions. And not being a lawyer I, you know, I guess I don't know how that's going to be done. Without having maybe the possibility [illegible]

I can't answer your question.

REPRESENTATIVE HOEFFEL: Okay. Thank You. Thank You Mr. Chairman.

CHAIRMAN [illegible]: Representative Cowell.

BY REPRESENTATIVE COWELL: (To Mr. Cerusky)

Q First a couple background questions. Prior to today's testimony did any of you discuss today's hearing with any other members of the administration outside of your own bureau?

A Sure.

Q And for what purpose?

A Just a general discussion of the hearing process itself, and what could be expected, what we could be expected to be asked. We have not been participating at all in these hearings, and we just yesterday got a copy of the transcript

to find out what you people were asking. So we could be prepared a little bit in advance for the kinds of questions you were asking, what areas of interest you were looking for.

Q Was there any discussion at all about the substance of the answers to the kinds of questions you might expect?

A No, there was a suggestion from everybody who we talked with to answer questions only in your area of expertise and only where you had knowledge, direct knowledge, which is normal for any hearing.

Q And with whom did you meet or discuss the hearing?

A With everybody up the line into the Governor's office.

Q Including the Governor's office?

A No, into the Governor's office. Not the Governor.

Q People in his office?

A Yeah. Well, we got the transcripts of the hearing from the Governor's office.

Q Back in the second general area, does any member of your agency bureau including yourself work on a contract or consulting basis, or any basis for anybody outside of

state government?

A No.

MR. DORNSIFE: Well, I do. I teach part time at the Capital Campus. Once every other year I teach nuclear--I recently taught, a year ago I taught a nuclear engineering course at Capital Campus.

REPRESENTATIVE COWELL: Nothing in addition to that?

MR. DORNSIFE: No.

BY REPRESENTATIVE COWELL: (To Mr. Gerusky)

Q Has that been the case for anybody in the past two years. That would have that kind of dual employment?

A Nobody in the organization.

Q Do your own rules or standards or policies whatever you might call them, prohibit that kind of dual employment, if you will?

A Well,conflict of interest would prevent a lot of employment. We can't , for example, work for anybody dealing with radiation because we have regulations that are related to the activity of that--we could work in another state, maybe, but not in Pennsylvania. Because of conflict of interest related to that particular facility.

MR. DORNSIFE: I had to get approval up the line

for my part-time teaching.

REPRESENTATIVE COWELL: Okay, so there is something in writing, a written policy?

MR. GERUSKY: I don't know, there may be a written policy in the administrative manual and--and I know there's a written policy on conflict of interest, but it's a tradition no one can work, and if anybody found out that anybody was working for another organization they would either leave or have to quit the job.

REPRESENTATIVE COWELL: Okay, Bill, earlier this morning I can't remember exactly where it was, but I think it was part of the prepared remark or prepared statement.

You were going through the sequence of events of the morning of March 28th, and I believe it was about the time where you indicated you had conflicting advice from the NRC in terms of the advisibility of the evacuation.

I can't remember exactly where you said it, but you pointed to some confusion anyway, and then you said, by that time the telephone line was tied up and we couldn't contact anyone.

Could you elaborate on that, particularly in terms of who you tried to contact, and what kind of problems were presented by your inability to get through.

MR. BORNSIED: Okay, that was Friday morning when the so called uncontrolled release occurred and caused all the panic. Well, when we came into work that morning we had somebody on shift overnight, we came in, I guess, Tom, Maggie, and I came in about 7:30 or 8:00 o'clock, somewhere around there.

And the first thing that occurred was we received, I guess, notice first from the plant that they were having a release, had had a release it was--the off-site levels were nothing to speak about, and we had sent a team down in the meantime, not for this purpose, we had a team stationed down there and they were confirming the off-site readings were not anything to write home about. They were typically less than twenty for a very short period of time.

They told us that there was a 1200 millirem reading at the plant then. The release had been terminated and the levels were coming back down again. About that same time we had a call from Civil Defense who said that Harold Collins from the NRC had called Civil Defense and they recommended evacuating up to ten miles based on this 1200 reading at the plant. And they asked us what our opinion was, and we told them, based on the off-site readings we were experiencing, we knew what was occurring, we didn't feel an evacuation was necessary, but we would get back to them.

In the meantime we called Washington, Harold Collins directly, and in no uncertain terms told him how we felt about his decision to evacuate, which was not based on conditions occurring at the site. And he told us that he didn't make that decision that the brass told him to call the state and we asked who were the brass, who told you to do this and he wouldn't tell us. And we had a very unpleasant conversation, to say the least, with Harold Collins that morning.

After hanging up from, and confirming that the off-site readings were indeed coming down and there was no problem off-site, we attempted to call back Civil Defense. At that point evacuation, preparations for evacuation were already going out over the media. And, of course, the phones in Harrisburg were totally tied up, and we couldn't get an outside line. I tried for about ten minutes to call Civil Defense to tell them there was no need for an evacuation.

So, finally, I went over to Civil Defense headquarters. Myself and Tom went over to the Governor's office, both having the recommendation that no evacuation was necessary.

REPRESENTATIVE COWELL: And Tom, when you went

to the Governor s office with that recommendation, with whom did you speak?

MR. GERUCKY: The Governor and the staff who was there with the Governor.

MR. DORNSIFE: I told Colonel Henderson.

BY REPRESENTATIVE COWELL: (To Mr. Dornsife)

Q And you told Colonel Henderson in his office, not the Governor's office.

A No, in his office.

Q And that was about 9:30?

A Some of the times these things occurred we were just too concerned about what was going on. It was very frustrating to hear the announcements on the radio and know they weren't right.

Q Communication problems. Mrs. Reilly mentioned that you are considering the possibility of the direct telephone line directly from your office to the facilities and other entities that are involved. PEMA, for instance, would be one.

Now, I understand that the NRC has already made a decision for a direct communication line between their center and has that been discussed?

A We've already--when I first saw the notice that went out to all of the utilities installing a direct line

from the plant to both the regional headquarters and the NRC headquarters, I said, hey we want to be cut in on this too. Don't bypass us and make a wrong decision about evacuation. We're still in the hang of things as regulation heads now.

Decision making that is going on, and I made this known to the regional office being down on the Island most of the time, especially with regional office, and I made it known to the appropriate people in the regional office that we want to be cut in some how, even by installing our own direct line in the plant.

MR. [illegible]: But, it would be much better to have one and have everybody using that one.

BY REPRESENTATIVE [illegible]: (To Mr. Gerusky)

Q Need the Legislature do anything to authorize that?

A No, I think that can be done. I don't know how much it costs.

[illegible]: It's the best thing at this point. We don't know what the cost would be.

MR. GERUSKY: All of the direct lines that have been installed in our office so far have been paid by the federal government, and we--I don't know how much those

things cost. We've asked our administrative officer to determine what the cost would be, and he s trying to get Bell Telephone to give us an idea.

REPRESENTATIVE POWELL: In your comments you noted that you were the only nuclear engineer employed by the State for this sort of thing. Anyway, with your existing importance and authority and responsibilities that have already been assigned to the bureau, what kind of recommendation would you make in that area?

How many of you should there be if you were to do just the job that you have today, fulfill the responsibility that you have today the way you think they ought to be done?

MR. [illegible]: Well, as I said before. Right now I really have no defined role, nothing legally binding. I have no role set down by statutory authority. What I do, what I typically do, I can't begin to review each license application that comes along. A lot of them are occurring in other ways. In fact, the only one I really reviewed in detail was the Shipping Port's light water breeding, and that was because the NRC had no statutory authority over it, so I did a very defined review.

Design changes come at that point, and that's

saying something, because Admiral Rickover was--he was the one who was running that operation, and to get the Admiral to do anything is always an accomplishment. So, we feel very good about getting some design changes made in that plant through my review office, and I feel one engineer with a similar background and capability as I have for each site would be a sufficient number in the Commonwealth to look over the NRC's shoulder essentially, and try to uncover areas where they might not be reviewing thoroughly,or things they may have missed.

It would involve, especially during the licensing phase, a tremendous amount of review and major work, and enormous amounts of questions asked between the utilities and the NRC during the licensing process.

There are shelves and shelves of documents that would have to be reviewed, but I feel one person working on that fulltime would be sufficient. Because once the plant is licensed it's more of an inspection and environment type thing. One person, I feel, would be sufficient.

I'd like to add something to that. I feel that the proper role for this engineer would be in the office not at the plant. Resident engineer, as one of the bills that passed through the Senate, called for, in my opinion, would not be the--

appropriate role. He should be at the home office reviewing the documentation and inspecting where necessary, to get full coverage at the plant.

REPRESENTATIVE COWELL: Is the NRC also talking about some people at the federal level?

MR. DORNSIFE: Yes. I would suspect very, very soon that all of the plants in Pennsylvania would have at least one inspector. In fact, Peach Bottom and Susquehanna all have a resident inspector at least one per plant, one per site.

MR. GERUSKY: In addition where I was, where both of us were, in discussion with Joe Henry and the Governor, the Governor requested that Henry see that Pennsylvania would be given top priority to get the additional inspectors at those plants, including Three Mile Island.

REPRESENTATIVE COWELL: Next point. I began to say, we touched it already, but I'd like to ask the question in a somewhat more direct way. Do all of you feel that at all times during the crisis you had complete, accurate, and timely information from the plant with the company firms?

MR. DORNSIFE: Based on what they knew, yes. In retrospective, there were things that they weren't aware of at the time, but I believe they were quite candid with us

on what the plant situation was.

REPRESENTATIVE COWELL: You don't feel they were keeping things from you or misleading you?

MR. DORNSIFE: Not at all.

REPRESENTATIVE COWELL: Okay, last question. If this kind of incident were to repeat itself, say at Shipping Port this time tomorrow or today, would you react any differently than you did with the Three Mile Island incident?

MR. GERUSKY: In a duplicate type of situation?

REPRESENTATIVE O'BRIEN: Ron, why don't you rephrase that,if you think the mistakes were made.

REPRESENTATIVE COWELL: Well, I didn't want to characterize them as mistakes. Sometimes you learn from experience too, but what you want to call mistakes or a learning experience, would you do it any differently?

MR. GERUSKY: Well,first of all the location of the plant provided us with an opportunity to stay in Harrisburg. If it happened in a location which we couldn't get to in 15 or 20 minutes,we would have had much more severe problems.

I think that most of our staff would be moving to western Pennsylvania with equipment, and we wouldn't have

many people here, and that causes us some problems, because the basic state government is here. The biggest problem here and there has to be communications between the people we got out in the field and the people here in Harrisburg.

I don't know how many people we would send out, but we would have to send out a heck of a crew because we only have two people in our Pittsburgh office and they aren't equipped with survey equipment right now to do the job.

REPRESENTATIVE COWELL: Well, correct me where I'm misinterpreting your statement. But, the impression I got is that you're not certain how you would react today if the same kind of incident occurred in Pennsylvania, for instance, or some far corner of the state.

MR. GERUSKY: We wouldn't react the same way, because the reactor location would be 200 miles away, and we have a different problem or maybe a problem similar to what the NRC had down in Washington, if we didn't get out to the site, and who gets out to the site? We haven't had a chance to think about it yet.

We had, prior to the Three Mile Island accident, had planned not to send a lot of people out, to use a small group out there and have most of our people stay in Harrisburg

evaluating what was going on, collecting data, analyzing it, and giving advice. I don't know if that would be the same case now after finding out the problems with communications.

I don't think we would act any differently except probably move to the site to make that chain communication.

REPRESENTATIVE COWELL: Okay, that's all Mr. Chairman.

CHAIRMAN WRIGHT: Short break.

(Recess was taken)

CHAIRMAN WRIGHT: Representative Stuban.

BY REPRESENTATIVE STUBAN:

Q One of the questions I would like to ask. You made mention that you thought there ought to be one of our people at the plant at all times.

A I said I would recommend against that.

Q But you thought there ought to be a person around that plant going to be working out of here and monitoring each one of the plants and everything else.

The question I would like to ask, what process do you people play in the licensing of these plants?

A We have no statutory authority other than licensing and public hearing process. We can participate in

the public hearing process as an interested state.

Q You have been doing that, but how are you collecting this data if you're the only fellow around here?

A Well, primarily most of the contentions--I have been doing the best of my ability and cursory review of each. And the only one that really came up was the Three Mile Island Unit two, and I had a very detailed knowledge of that plant, based on my prior experience.

So, I did the best of my ability at the time with the other responsibilities I had. Performed a--if you can call it--a review of the plant. Prior to participating in the public hearing process, but none of the contentions were really specific as far as safety items were going. They were mostly concerning environmental contentions.

I guess the only one dealing with safety was really the evacuation contention. Others were strictly environmental contentions.

Q Well, what review are you doing with the two plants now that are being built by the time they come on line?

A I will before that plant is--before the licensing procedure starts, I will review all the documents to the best of my ability and see if I can uncover them.

This review ought to be a continuing thing, you

know, let's start in the state, the engineer ought to be involved in a question and answer session, which I just couldn't, based on the other responsibilities I have, I just can't get involved in that much detail. On one specific thing, one person it's a physical impossibility. All I can reasonably do is review the SAR and try to find out if I can see anything obvious in the SAR that we could bring up as a problem of that plant. That's what I plan on doing before the Susquehanna Unit.

Q But at this point do you feel that we have enough input, or are spending enough time, you know, that you can afford to give that much time to that plant?

A Well, that is my primary responsibility. To review nuclear facilities in Pennsylvania. But, I've been spending a lot of my time lately on radioactive waste. I've been heavily involved in commenting on the federal documents of radioactive waste, we're also, essentially, the cognizant agency as far as radioactive waste goes.

You can imagine, there are hundreds of documents coming out monthly on radioactive waste. I try to review as many of them as I can and comment on them. So one person just physically cannot cover all those areas. And I would like to have one person per site exclusively reviewing

the reactor.

Q Then really what you're trying to say is you need more people over there with the knowledge that you have, and it's just grown too big for the people that we have.

Another question, Colonel Henderson, when he testified over here stated before this Committee that about three years ago his agency drafted a pamphlet titled, What You Should Know About Nuclear Radiation Accidents. This booklet was to be distributed to those people living near nuclear power plants, however, it was not published because Mr. Henderson stated that the Bureau of Radiological Protection, after consulting with its advisory Committee on Atomic Energy development and radiation control did not believe that the booklet should be distributed because it unfairly singled out the nuclear industry, can you comment on that?

R. [illegible] has been involved in the writing of that document for 7½, I think, under a contract with the Federal Government. One of the problems with the document, there are a lot of problems with the way it was written.

Technically it was wrong, and we made many suggestions as to how it should be changed. I have copies of the correspondence received back from the members of

the advisory committee that commented on it. And most of them said that they thought it was a good idea. Many of them made comments, made suggested changes in it. These were all forwarded to the civil defense.

One of our concerns was, there was nothing in the document that said what do you do when you do evacuate. It said be prepared to evacuate, but it didn't say how you prepare to. In other words, it did not give you a check list of items that you ought to do before you leave home, and it still doesn't, but if civil defense wants to get it out, I guess, that's their prerogative, it's always been their prerogative to put it out, we did not kill it.

We suggested that a check list for evacuation for any purpose should be included in the document. For example, a person who has false teeth should take their false teeth with them. What do you do with animals? If you were told to leave your property how do you maintain your property, do you turn off gas. A simple check list of maybe twenty items that could be included in this that would be available for use any time it could be used--what we were concerned about was that people would get the document, because it was just kind of a public information document saying there's a nuclear power plant in your neighborhood

these--this is what could go wrong at that nuclear power plant, and listen to your radio, if there's an accident you'll be told about it, you'll be told what to do. That in effect, is what it said.

We said, that's kind of dumb. We think it ought to be much more detailed, tell people what do they do in any emergency, not just a reactor accident, because you do the same thing. If you have to leave your house because of a spill at a train wreck, you must do the same thing, you must button up the house in some way. Turn off the heat if that can be done.

We suggested that this be included. We also suggested that it would probably be a better possibility to put it inside a telephone directory, on the inside cover of a telephone directory. Instead of them circulating it out where people will read it once, especially in the pre-accident phase of Three Mile Island, most people would throw the thing away and never refer to it again. If it was in a telephone directory with instructions as to what to do if you are required to evacuate then, I think, it's a good document.

We didn't--we weren't opposed to putting it out we felt it could have been done a lot better, and suggested

that. I got copies of the correspondence if you wish them.

REPRESENTATIVE BRANDT: Did you see, and I didn't see it, but, like ten days before TMI there was a distribution made in Lancaster County through a merchandiser type thing of what to do in case of a nuclear accident?

MR. GERUSKY: No, I didn't.

REPRESENTATIVE BRANDT: That was distributed down that way by the company, Met-Ed.?

MR. GERUSKY: The county--Lancaster County may have done that.

REPRESENTATIVE BRANDT: County civil defense?

MR. GERUSKY: No.

REPRESENTATIVE BRANDT: Are you sure it wasn't county civil defense?

MR. GERUSKY: No, I don't know. I don't know.

MR. DORNSIFE: We heard they planned to do it.

MR. GERUSKY: But, if you wish copies of the correspondence--

REPRESENTATIVE STUBAN: Do you think people living near nuclear facilities should be periodically informed about nuclear plant hazards and emergency actions to better prepare themselves in the event of radiation releases?

MR. GERUSKY: Yes.

BY REPRESENTATIVE STUBAN: (To Mr. Gerusky)

Q What do you think we ought to do or DER ought to do to get this information out there?

A I think that kind of an approach with the information--well, the document that was put out does not give enough information so people can make their own decisions. If they heard five millirem per hour, like we were saying over television, no one knew what five millirem per hour meant. And I doubt that we can put out a document that's going to solve that problem.

I think that has to be started in the schools. And some kind of an educational program has to be carried out in the schools. There is a nuclear science engineering program that's conducted in some of the schools, where they actually do some experiments, but they rarely get into the kinds of things we're talking about.

Q Do you think the state of Pennsylvania ought to move in a direction now, say like PP&L the Susquehanna plant require them to come up with better plans and get involved with the community and the school system, and require that this be done before the license goes into effect, or the plant be fired up, to set up an ongoing program?

A I think it's a good idea, but I'm not sure how

easy it's going to work out.

Q Well, do you think possibly by legislation here in the State of Pennsylvania we could get this requirement across and tell NRC we want this done before they approve the licensing procedure?

A I don't know. I don't really know. I havn't thought about it, and I hate to give you a quick answer off the top of my head.

Q Well do you--but do you feel that it should be the Utility's job,or their effort should be put into it, or should it be the State's effort?

A I think it probably should be a combination. One of the things that was happening over the history of nuclear power is that there had been lots of publications were handed out by the old Atomic Energy Commission, the manufacturers of nuclear power plants, and the Utilities, showing all the great things about nuclear power and very little about what would happen in the event of a major accident.

I think everybody's got to re-think and their PR and the public information that's put out to put it into proper perspective and to tell people what they should do. Right now I don't know what that perspective is I'm

still living in the Three Mile Island, and it's very implications. I'd like to sit back for a little bit and take a look at the broader picture before I make that recommendation. Something has to be done now, and I hate to do it in a hurry without thinking about it.

Q Well, do you think before PP&L goes into its last process of getting a license that you people may be in that position to make some recommendations as to what you think they ought to do, or to go to Colonel Henderson?

A I think the booklet that Colonel Henderson has is probably going to go out. I don't believe that's enough. It's not very well done, honestly, it's not really a professional job.

MR. DORNSIFE: One of the problems, how do you disseminate this information to everybody? It's a logistics problem.

REPRESENTATIVE SHUMAN:

Q This is what I mean, actually it's got to be a logistics problem and in cases like TMI or Crown at Limerick we can get those people to say, hey, how about you with the local school district and state government and local government get a program involved in the school system, and let's get this thing going before you can be licensed

to fire up.

A I'm not saying no, I'm not sure how to implement it, that's all. I think there is a--I think legislation in Pennsylvania is a possibility, and it can, and there won't be any conflict--there won't be any problem with federal legislation, because it involves responsibilities that are state responsibilities.

MR. BORNSTEIN: There's a definite need for that kind of a thing. How it's carried out I'm not sure.

MR. GERUSKY: I think it's a good idea, but I--just off the top of my head I haven't thought about it, that's all.

REPRESENTATIVE STULAR: Okay. That's all I got Mr. Chairman.

CHAIRMAN WRIGHT: Representative Itkin.

BY REPRESENTATIVE ITKIN: (To Mr. Gerusky)

Q You mentioned earlier that you were pretty surprised that there wasn't iodine in the air. You seem to be amazed with the fact that there wasn't iodine in the environment and you anticipated. Why did you believe that there would be significant concentrations of iodine in the air?

A One, we didn't know where the radioactivity was coming from at that point. And the amount of iodine that's produced and would be released from a reactor accident of

this nature is really significant. It is the critical isotope when it comes to off-site consequences, because of the problem of concentration in the thyroid and getting in the milk and food chain.

Q. So, you are principally concerned of the damage that iodine could cause and also because of its production that occurs in the reactor process?

A. Right.

Q. Do you have any information, for example, as to what the company provides, or the company have, to the best of your knowledge, any understanding of the distribution of the radioisotopes at the time when the basis of power production industry. Could they follow it, could they tell you that 90 percent of the activity that's presently contained in the system was due to iodine or due to other radionuclei?

A. Not immediately, the first--they didn't know what got out of the system. The first core sample was reading, cooling [illegible], and reading a thousand R per hour when it caused the first forward exposure in the plant when they tried to get it.

I think that the first sample that was actually analyzed was taken on [illegible].

Q That thousand R/H was mostly gamma, correct?

A Yeah, that means there's a lot of stuff in.

Q Okay, that's just a very quantative--

A Well, you don't know how much Strontium 90's is in there, where there is any plutonium, where there is any fuel melting, that was our--that was the big question, was whether any fuel had melted.

It didn't appear to be, and you need a validation of that. We knew there was Iodine there and it was probably the most significant isotope in the mixture.

Q But, then, subsequently you learned that there were releases in certain relief valves, and therefore, you could trace where the release had to occur, but the ventilating stack, it went through the sump pump.

So those--are you familiar with the filtration system as associated with the ventilating equipment? Could you just describe to this committee what type of filtration system exists at the plant through these conduits for ventilation and what their capabilities are?

MR. ECKHILL: There are, and each building has its independent, typically it's an independent ventilation system, or an independent cleanup system.

The primary release was coming through the auxiliary building, so I'll just describe the auxiliary

building filtration system. Essentially, it's two 50 percent trains of fans and filter bags, and each filter bag has a high efficiency particulous filter which has a removal efficiency of 99.99 percent, something in that order. I don't know the exact number, but it's a very very high efficiency filter.

It then has following that a charcoal filter, which has a 99 percent removal efficiency of iodine, elemental iodine, then it has another heap of filter on the back side of the iodine. Two banks, two 50 percent banks, two, 50 percent fans in each building.

Q So, knowing that, basically, what do you expect from what comes into the filtering system and what actually gets out into the environment, what would you expect having knowledge of just noble gases?

A Maybe some organic iodine.

Q Organic would not be stopped by the charcoal?

A It's less efficient for the organic.

Q So, principally, what you had in the environment were the noble gases?

MR. GERUSKY: At that point though, we didn't know what was coming out of the a u x building. First all we knew was that there were detectable levels, but we didn't know where it was coming from.

MR. DORNSIFE: In fact, up until about noontime, at least I suspected and the Utility, I think, suspected, that the primary release was probably through the leakage of the B steam generator. That's the first information we got, anyway.

REPRESENTATIVE ITKIN: Well, even it--let's assume it came out of the steam generator, that's in the primary system, I mean, the containment system. So, the only way--

MR. DORNSIFE: No, it would have contaminated the secondary system, and they were atmospherically dumping that steam.

REPRESENTATIVE ITKIN: Oh, they were atmospherically dumping the steam?

MR. DORNSIFE: And indeed there was a peak iodine in the milk after the first couple days and it's still suspected that that could have been the reason for the small 20 pico curies per liter peak that occurred in the milk after about three days or so.

REPRESENTATIVE ITKIN: All right, now you go out and you're surveying,with the various equipment that you do have for surveying, and you mentioned earlier today about the problems for really getting a feel for what's going on. You go over one hill and get one reading

that's ten times higher, you go down to a valley there's a change. Do you feel comfortable in being able to describe that type of a mobile system of going up to a hill and then going down to a valley, that you can assure that the public health is not being endangered?

MR. GERUSKY: No. One of the things that was instituted fairly early by DOE was the ARAB system which is tied into the Lawrence Radiation Laboratory in Livermore, a computerized system which will, by knowing what is being released from the plant, and knowing the weather conditions, wind speed and weather conditions.

We'll plot out on a map what the--where the plume will be going, and the helicopter, provided by DOE, went out to--in the directions of the--that the computer told it to, and indeed, that's where the plume was. What we would like to see, installed on all the plants in the country, is this capability, so that they can,at any time, get an indication with the wind speed, direction, and weather conditions. And knowing the source term can tell where the radioactivity is going, and then you can make a determination on what should be done.

Most of our pre-emergency planning was based upon conditions at the reactor, and knowing what the source

term was, and evacuating in the direction of the prevailing wind, downwind, in sectors. Not evacuating people in a five mile radii, or ten mile radii, five to ten mile radii.

Everybody around the plant, it just didn't seem conceivable, that's what our--we have to do. And that's the way the NRC guidlines are set up. And a call came in saying evacuate ten miles downwind, we didn't have a wind. That meant ten miles in every direction.

REPRESENTATIVE ITKIN: Do you feel that,that--

MR. GERUSKY: We don't feel that certain readings on the ground are necessarily the only thing one should take into consideration in determining what action should be taken.

REPRESENTATIVE ITKIN: But, certainly a computer model is placed on a lot of hypothesis. I'm not a meteorologist, but I would assume that the forces and things that occur in terms of their movements is an extremely complex thing to try to program.

MR. GERUSKY: I didn't bring some of the print-outs, but they are unbelievable in their accuracy, and in the way they shift.

REPRESENTATIVE ITKIN: By the way, how's that helicopter pilot doing, since he was the guy that went

through all those plumes and all that stuff that we're talking about?

MR. DORNSIFE: He's fine.

MR. GERUSKY: He's fine.

BY REPRESENTATIVE ITKIN: (To Mr. Dornsife)

Q He's fine, is he concerned about his own personal well being?

A I spent--Thursday I spent at least ten hours there, and from Friday I spent at least twelve hours a day, and when my film badge came back it was reading what it normally does, less than ten. Over this whole time period I spent most of my time at the observation center right across the river nearest to the city of the plant, over that whole month long period.

Q So, you think probably, you probably received as much exposure as any non-site person in the Commonwealth?

A Right.

Q And you're telling me that that exposure--

A Was less than ten from my film badge. I wore my film badge the whole time.

MR. GERUSKY: I had dosimeter on and was down at the site Thursday--Saturday, and my total exposure over the period of time was five.

MR. DORNSIFE: The NRC people would have more--

MR. JERUSKY: That's the maximum because it could have leaked.

MR. [illegible]: The was--minimum sensitivity was ten, but the new people have some [illegible]'s which gave a continuous updated reading. I think that Vic Stella who spent probably more time than I did at the site had the same range, about eight millirem total exposure.

REPRESENTATIVE O'BRIEN: Maybe that's why you're going to the doctor tomorrow Bill.

MR. [illegible]: You get that in four weeks of just existing.

REPRESENTATIVE [illegible]: (To Mr. Jerusky)

Q Yes, you think that the appropriate way to go is to be able to be more sophisticated in predicting once you know a base point in terms of what was emitted from the plant?

A We didn't know what was being emitted.

Q And then being able to use some type of computerized model to predict it and then perhaps verify it with a couple of test samples to insure that's,in fact, what is being released, or is,in fact, true?

A Bill has a rather unique system which you might--

MR. DORNSIFE: Yeah, I developed this--it mainly was developed for Susquehanna. Essentially looking at the Wash 1400 results and coming up with a decision-making chart, a faultry analysis type thing where you say electrical power available, it's not, obviously nothing's going to work and you come out with the consequences, which is very large consequences based on Wash 1400.

If you go along to the next decision point if this works, fine, if not, it drops out to a consequence, so this the real large consequence accident that occurs very early on, you could do that just based on status of safeguards.

Now, for a long drawn out incident like Three Mile Island was, you would have to rely also on an off-site monitor which we did.

BY REPRESENTATIVE ITKIN: (To Mr. Dornsife)

Q Let me ask you this, do those vents have valves on them that you can close them off to the atmosphere , the vents that are in the auxiliary building?

A If fact, yes, in fact they did that at various times during the first few days, but the levels got so high in the reactor in the plant, noble gases--

Q The building or the plant?

A. The building. In the building and control room they had to start the fans up again.

Q. So, you're saying the reason why the leaks occurred was because they kept those--they could have--

A. The release would have occurred anyway.

Q. They could have released it directly to the environment of the building, and let it just--

A. That was a current, that was whether they liked it or not, it was a current. It was an uncontrolled release from the floor of the auxiliary--

Q. Okay, but then the building itself, if all the valves were closed and vents and what have you, would have contained it or at least resisted--

A. For a while.

Q. -- for a while before it would ooze out rather than--

DR. MICHELL: But, iodine would have come out, and other things would have come out causing the noble gases.

MR. [illegible]: Because you wouldn't have how to have filtration.

DR. MICHELL: The iodine levels got--they tried that, the iodine levels got so high they had to start the ventilation.

DR. CURTISS: They couldn't have anybody go in

there to do anything in the auxiliary building unless that ventilation system was on.

REPRESENTATIVE [illegible]: Well, you don't have any problems as health physicists with the filter, do you think filters are reasonably--work reasonably well and provide the objective use?

[illegible]: There was a problem when they became saturated later on. Eventually the charcoal became saturated with iodine and it wasn't--this was weeks after the main release occurred. It [illegible] few days, but they had to be replaced eventually.

[illegible]: Last weekend.

[illegible]: And it caused a small iodine turbidness [illegible] that time period.

[illegible]:

Well, so as a health physicist you don't get unduly disturbed when you learn about a release or a vented filter system, because it tends to, or will eliminate the radioisotopes--

The biological significant--

The biological significant isotopes, and as long as those released are not intensively higher in terms of external exposure energy emission they should not be [illegible].

problem to the public health.

A Right.

Q Now, the plant is in a--I don't know whether you can accept this, I don't know what to call it--but, whatever it needs mention, natural circulation. Do you receive periodic reports of the activity of the liquid in the containment, I assume it's all liquid in the containment now, to the best of your knowledge, and in the storage tanks?

A Yes.

Q If you take the storage tanks or the containment, get all of it, there's still some stuff that has to be cleaned up? Everything's been cleaned out to the best of your knowledge?

MR. DORNSIFE: There are some areas that have to be decontaminated before somebody goes over there.

REPRESENTATIVE ITKIN: But basically all the contaminated liquid is in isolation? What do you think? Do you have knowledge of the activity levels of plant?

MR. GERUSKY: Yeah, in some locations.

MR. DORNSIFE: There have been no measurements taken from the reactor building. I have some concentration that are in some of the tanks.

BY REPRESENTATIVE ITKIN: (To Mr. Gerusky)

Q But on the basis of decibel reactors you can usually determine if you know what it was we had and make a hypothesis on what the elements were, and since nothing has happened we haven't had more generation of radioactive concentration and no way of telling what activity is occurring.

A It's less than what it is in the reactor vessel. We know that. We know it's probably the same type--the same isotopes but this time the concentrations are a lot lower.

Q Well, iodine 131, what's its half life?

A Eight days, but it is--right now it looks like that cesium is becoming more important an isotope, iodine is decaying to a point where cesium is taking over as a much more important isotope.

Q But iodine and cesium are not related in any way, it just happens that the activity levels of each come into radioactive nucleii.

A Right, cesium's got a long half life, and iodine's got a short one, and iodine is decaying past cesium, micro curies for cesium.

Q Cesium, what biological effect does that have on--

A That is a muscle, whole body muscle. It follows a potassium pathway in the body, and it is a significant isotope for the whole body--an internal muscle.

Q In your judgment, does there require some health physics involved in determining what would be the best time to start purification , or decontamination of the cooling or the liquid that's now there? In view of the fact that when the activity and the concentration of various elements are at its biologically least, of the least problem?

A It would be nice to wait until all the short life isotopes got out of there, but it probably would be impossible to wait that long for every--on every--

MR. DORNSIFE: Cesium is typically the most difficult to remove of the fission products, other than tritium of course. So, it's going--cesium is going to be the predominant one anyway. Cesium is typically the upper cesium on demineralizers, and is usually lower on anything else. So, cesium is going to be the problem getting down to acceptable levels.

BY REPRESENTATIVE ITKIN: (To Mr. Gerusky)

Q And obviously they have they're developing a process now to remove the cesium?

A Remove everything that they can, including the

cesium, the only one we won't be able to remove is tritium.

Q How important is the tritium in terms of the activity?

A Tritium in the activity is the same as it would be in a normal core, there wouldn't be anymore tritium. It is being--it's released routinely from pressurized water reactors in concentrations that they are released should be down to the point that they can normally be released. For actions what is already in the river anyway.

Q Are you doing continuing samples of the environmental water?

A Yes. As a matter of fact, there's a program that's been set up by the Bureau of Water Quality, and they have an early warning system, and we'll give you a copy of it. An early warning system with a sodium-iodine protector at the outfall with an alarm at 300 pico curies per liter, and that automatically rings the telephone beeper, number, and if that goes off then someone goes and checks the system to make sure that it is not electrical impulses that caused it, but indeed there was a release that we didn't know about. And we have eight hours or so to warn downstream users that a release has occurred.

In the meantime, sampling is done, grab sampling

to date in the river, and sampling is routinely done downstream at drinking water locations. extremely downstream.

Q Who is doing the milk analysis?

A We are.

Q You're doing it?

A Yes, the Department of Agriculture is collecting samples, and giving them to us.

Q What about the Food and Drug Administration?

A They are still doing some. FDA, EPA, NRC, everybody is doing something.

Q Well, all right, that gives rise to my next question. Is there any possibility, or am I incorrect in assuming that there is very little cooperation and developing a use of resources from all levels of government that's done in a most effective manner, or is each individual agency deciding what they wish to do and just going ahead and doing it?

A No, the office of the President has directed EPA, NRC, and DOE to work with Pennsylvania to have a program that is, where the four groups together are operating compatibly with one another, so we don't do overlapping work.

The only agency that is not under the direct control of the President is Nuclear Regulatory Commission.

One cannot stop them from doing what they want to do, and we really don't want to.

The other program is acceptable, and I kind of would like the backup of NRC at times in case we find something we would like them around to verify that it is indeed high.

There is an arrangement when meetings are held at least weekly among the various agencies to discuss the environmental monitoring program as it is going on now. And I believe it will probably be increased and decreased more depending upon activities that are taking place at the time.

You said that the FDA is doing milk samples, and you're doing milk samples, and my question is have you decided that they'll do west of this and you'll do east of that?

Yeah, we have worked out an arrangement with all of the agencies so that we know what each other is doing, and they're all compatible, they don't overlap. We're not doing the same things. Everybody doing the same thing. And all the data is being fed into ...

On the assumption of the President and the administration in Washington decides that they have to include their surveillance and their attention to the commercial Lutheran fund to buy additional capability. So you believe that our needs can be reduced to their--if their

emphasis is increased. I think there is some desire for lack of trust, and therefore one to build a human redundancy like, there's one person who has the responsibility, another person is responsible to look over the other person's shoulder, and you told a third person to look over the shoulder of the person who is supposed to be looking over the other person's shoulder.

This is what I hear, you have the operator, you have the NRC, and then I hear some of us talking about having the State look over the NRC's shoulder.

MR. DORNSIFE: Not normally. It's just because of the accident that all these people are monitoring. Normally we're the only ones that check the Utility's numbers. We're the only ones that do a confirmation monitoring program. Nobody else does this normally.

BY REPRESENTATIVE ITKIN: (To Mr. Derusky)

Q I guess the question is, do you think there should be some amount of duplication of protective devices? We have redundancy in our plant system, why should we have--

A There is, the Utility and the State. And the State uses DRA and DOE to cross check on our numbers and make sure that what we're reporting is indeed correct. On a routine

basis, pre-accident basis.

Q So basically you favor some type of duplicity as a means of giving added assurance--

A Yes.

Q --of what's being done is being done properly.

REPRESENTATIVE ITKIN: I have no further questions.

CHAIRMAN WRIGHT: Bob Hollis.

MR. HOLLIS: Let Representative DeWeese have the first one.

CHAIRMAN WRIGHT: I didn't even know he wanted to ask anything. Do you?

REPRESENTATIVE DeWEESE: Yes. I was under the impression that we would go one at a time, and I was just waiting my turn. Sorry Mr. Chairman, I'll put my name on the list earlier next time.

BY REPRESENTATIVE DeWEESE: (To Mr. Gerusky)

Q Mr. Gerusky, earlier this afternoon you indicated you had met with people in the Governor's office, can you tell me who exactly you met with in the Governor's office, prior to today's testimony?

A Well, we had meetings with people in the Governor's office on a routine basis.

Q But preparation for this testimony?

A Well, it wasn't preparation--we met to discuss other problems that involved the water problem on TMI two, the TMI one situation, what our role is going to be in that, what the options were on TMI one.

We have--we are involved with the hearing at Berwick on Susquehanna, and we wanted to give the Governor's office information concerning what was happening at Susquehanna, and we got Limerick coming. We got problems with extending evacuation planning and a whole variety.

And what we did was, Department of Justice and DER met with Paul Critchlow(phonetic)and Mark Knause(phonetic) to request them to speak with the Governor concerning the variety of things. And in the process yesterday, this was yesterday, we said that we were coming over here, and we hadn't testified yet, could you give us any advice as to what was going to happen, and they handed us a copy of all the previous transcripts, and just as at any hearing stick to the facts as you know them, tell the truth, that's about it.

Q But, for today's testimony you didn't converse with either Mr. Scranton, or Mr. Thornburgh?

A No.

Q Did you ever, at any time, discuss with Mr. Scranton,

or Mr. Thornburgh, or anybody else in the administration, anything involving Colonel Henderson's participation at Three Mile Island?

A No.

Q I mean after the fact?

A No.

Q Do you have any observations in retrospection concerning Mr. Henderson's input, because there had been some momentary controversy in some of our early hearings about whether he had recommended evacuation to the Governor, or whether he had not recommended evacuation.

In general terms how do you term his participation here?

A We didn't have any problems. Civil defense was acting like civil defense should act, and we were feeding information as--probably not as fast as we could--but, as we could. And I don't have any negative opinions. I thought the situation was handled very well, by everybody.

Q Sir, why did the Governor, in your opinion, call in, or maybe he didn't call him in, maybe the President ordered him in, Mr. Robert Adamcheck(phonetic) from the regional office in Philadelphia, who took a very active part in the civil defense effort here in Pennsylvania, and yet he

didn't fall in the chain of command. And also Mr. Wilburn, Dr. Wilburn participated, do you have any views as to why this--

A No, I have no idea, we--

Q I didn't think you did I was just trying to get this on the record.

A We saw them in--Mr. Adamcheck in meetings in the Governor's office later in the second week. I mean, we didn't even know what they were there for, to be honest with you.

Q I just wanted to know if you perceived anything or--

A We didn't even know evacuation planning was going on until we were told where we were going to go if we had to evacuate, and I got a little notice in my door in Cumberland County saying where my family would evacuate to.

I didn't realize that massive evacuation planning was happening. I knew that there was a--that there was--we had discussed the times that evacuation, the lead times depending on the situation, and we were given something by NRC that they had put together, I believe, it was on Saturday, Sunday, concerning what would happen, if this went wrong how long a time do we have before evacuation took place,

but that s all, as far as I got.

How about on Wednesday afternoon, Mr. Cornsilk, when you met with--between 1:00 and 1:45 I believe, when you met with the Lieutenant Governor, the Governor and Colonel Henderson on the 20th. Did you at that time discuss evacuation at all? Not at all?

MR. DUNNETT: The meeting after the press conference is very vague to me at this point. You know, but I don t recall, I think, the Governor just asked me what my assessment of what was going on, were there any problems, what could happen, what s the worse thing, and I don t remember evacuation being mentioned.

REPRESENTATIVE [illegible]: My final question, Mr. Speaker, is this. I remember on the 20th, in the evening around 8:15, 9:00, you and I and some other people participated in a meeting in the Lieutenant Governor s office. Mr. Galena (phonetic), and Mr. Higgins, I think it s Mr. Galena and Mr. Higgins, for my own memory, please, could you help me reconstruct what went on, because I ve tried, I know it might be difficult, and I m very very sympathetic, because I don t remember exactly what went on, but you and I were up there.

MR. [illegible]: Jean, but I went to about 25 of those

and I might point out--

REPRESENTATIVE DeMEESE: I really feel sorry because I only went to one and I had a hard time getting in that one, as I recall. But once I did get in--I was under the impression, I left the Lieutenant Governor s office the only reason I was in there was by pure coincidence, the state troopers went in and I ran upstairs because I thought something was wrong, but when I left that meeting I had the impression everything was pretty well under control, everything was okay, and Dr. Galena from the NRC and Dr. Higgins from the NRC gave me the overwhelming impression of comfort and good feeling, and we got everything under control boys, and there was a lighthearted moment when Critchlow (phonetic), and some of the guys came in and started talking about the China Syndrome movie.

Believe me, well, you were there.

MR. GERUSKY: Yes, I remember.

REPRESENTATIVE DeMEESE: And there was banter, and then all of a sudden I went back to my legislative district and chaos seemed to be emitting from the capital city, and could you tell me what your feelings were that night, and that s my final question. Thank you very much.

MR. GERUSKY: Same way. As a matter of fact

that's--you know, we felt that--we felt for the first three days that after the first day the problem was over, after the second day the problem was over again and then the third day, [illegible], and then when Denton informed us of the problem with the bubble it just gotten worse.

MR. DORNSIFE: Looking back in retrospective it was essentially over on Wednesday except for that small release that occurred on Friday morning which caused all the [illegible].

REPRESENTATIVE [illegible]: Thank you very much. Thank you Mr. Chairman.

CHAIRMAN [illegible]: Marshall Beck.

BY MR. BECK: (To Mr. Gerusky)

Q Mr. Gerusky, in 1975 Pennsylvania submitted a plan to NRC for concurrence, you're not aware--

A No.

Q I'm sorry?

A No, we did not.

Q Did PEMA submit a plan?

A No.

Q No?

A Well, I don't know, maybe, they might have. I can't talk for PEMA.

Q Do you have any knowledge about NRC's problem with

concurrence of the Pennsylvania plan?

A We never submitted it for concurrence, as far as I know.

Q Okay. Colonel Henderson testified several weeks ago before the House Armed Services Committee, that the hold-up in NRC concurring was due to NRC and Bureau of Radiation Protection disagreeing over radiation amounts to appear on the plan. Do you have any knowledge of that?

A No. Our plan uses the EPAPAG's which are the ones which every state uses.

Q So, you're not concerned with Colonel Henderson's plan then? You have no input in it?

A In Colonel Henderson's what plan?

Q The PEMA plan that was to go to NRC for a concurrence?

A We are now involved in reviewing the PEMA plan, revised PEMA plan, appendix E to it, and making recommendations to PEMA concerning our role in it.

Q We've heard about this 1200 reading from the stack, that puff that went up. Colonel, or Chairman Hendrie testified before the House Energy Committee that the stack gauges only went to 1200, in other words, the reading could have been more--

MR. DORNSIFE: No, that was not taken from the gauges, that was a helicopter reading, so that is not true. In fact, at that point the monitor, the stack monitors were pegged, as they were for Wednesday morning, they were pegged up until a couple weeks after the incident occurred.

The stack monitors are for, mainly low level releases, and they're not designed for the releases that were occurring, and that's another recommendation I would have for NRC. To make sure that they had monitors that can monitor the releases throughout the accident. But the monitors were pegged from Wednesday morning on. There was no idea what was coming out from the stack except for readings in the plume and off site.

MR. ROCK: Well, he testified that the gauges only went to 1200 and since they did he had ordered that they be replaced in every plant in the country.

MR. GERUSKY: Well, he was--that's--he was misinformed as to the--as to how the reading occurred, but his suggestion or order that the monitors be replaced is proper.

MR. DORNSIFE: The 1200 was a helicopter reading, not the stack reading.

BY MARSHALL ROCK: (To Mr. Gerusky)

Q Would it be feasible, Mr. Gerusky, to supply

a monitoring system and train an operator for each village or township supervisor. Our hearings at Lainbridge and Colchsterp lead me to believe that those residents would feel safer if they were doing something of their own, because they lost a little trust and faith in some of the government organizations to do that job. Would that be possible?

I don't know.

CHAIRMAN WRIGHT: Do you want to take the Fifth?

MR. BERLINER: Remember that early during the accident an expert in Maine made national headlines when he said he found radioactivity from Three Mile Island in Maine.

MR. ROCK: Yeah.

MR. BERLINER: I--see, it depends upon how knowledgable the individual is who has responsibility for the instrument. And you would almost need somebody like a physics professor who could understand electronics, someone who is a neutron electronics, because those instruments are not designed to be, to work forever, and they have to be routinely calibrated, batteries problems, all kinds of things and I hesitate saying yes.

But it could be done, I think you have to have some people who really understand what could be coming

out of the reactor and how the instrument works. Because we're--we could get an awful lot of public concern because of misread instruments going off scale because of a problem with the instrument rather than a problem with the reactor.

And I'm a little concerned about just handing out instruments to everybody. We've had so many problems in the past with transportation accidents, and things like that where people are reading instruments wrongly. We had a state policeman who thought he got a hundred and forty rem exposure and he was ready to call his undertaker.

Not too long ago, because of a misreading on a survey meter that the state police had in the barracks. And it was non-radioactive material, it was aluminum metal. It was non-radioactive aluminum, and he thought he was going to die. And it took us four hours to get there and explain to him that he wasn't going to. I don't want that kind of thing happening, unless the people are really trained.

There are people that are knowledgeable. But I'm not sure that in every community there's one there.

MR. ROCK: That's all.

CHAIRMAN WITHAF: Bob Hollis.

BY MR. HOLLIS: (To Mr. Berusky)

Q Just to follow up Marshall's question. Is

subject has come up before a Congressional committee, in fact, it is Hart's committee where they want to issue everyone, and they want to put it upon the Utility to be responsible, to place a radiation monitor in each home within a five mile area, similar to one that would put in a smoke detector.

In other words, sort of appeasing, but this is, I mean, the NRC and people like that are telling us the problems.

A I don't think it was the NRC that suggested that, but--

Q Well, it was a committee, one of these so-called committees. The next question. The NRC though is proposing to place radiation monitor equipment around all nuclear power plants, their own equipment, is that true?

A Not as far as I know.

Q It was testimony before a committee, or the NRC at one of their internal things, they're talking about, we have testimony on it, where they had one of their staff meetings. They're talking about numbers up to forty radiation devices around each plant?

A These are TLD's.

Q Right. And with the proposition that the question arose during the discussion as to who would be

responsible for the equipment. And what they're proposing, they're already issued in twelve states, or twelve sites, is that the state would be--where they would sign a contract with the state people to pick them up, replace them, and ship the data, whatever's on them, out to Idaho for reading and then as a service the state would get a copy of what the readings are.

And the reason I'm saying this is there was just some appropriation made for monitoring equipment. Would this assist you in your monitoring, if this sort of deal worked out?

A We have a contract with the Nuclear Regulatory Commission now to provide them data from our monitoring program. It would cause us a lot of problems having to go around and pick those up I don't know how frequently they are, and do our own too. I think that they are probably going out to states that don't have programs.

Q As I say, this was a--

A I havn't heard of any--

MR. DORNSIFE: Do you have the name of the group that we can follow up on it.

MR. HOLLIS: It was a staff meeting of NRC and they were discussing the tenth of May, I think was the date.

MR. DORNSIFE: We'd like to follow up on that..

BY MR. HOLLIS: (To Mr. Gerusky)

Q My next question is, Mr. Dornsife, this morning you discussed the economic consequences, was the subject you used, that the plants are engineered and the equipment is engineered to a point of--where economic consequence enters the picture.

In other words, what they're saying is,that when it becomes more economically feasible to do some--not to do something, they're not going to do it.

Do you feel that the industry has used this as a method of getting out of putting certain safety things into it?

A They have to--they have to meet a certain dose limit regardless of how much it costs, but to go any lower than that which is the three millirem whole body dose from a liquid release and a five millirem whole body dose from an air release, to go anywhere below that then they have to have it justified economically. The figure they use is a thousand dollars per person in additional exposure, because if the cost of installing additional equipment to reduce it below that level is in excess of that number,they don't have to do it, but they have to meet the minimum standard which is a

very small fraction of it.

Q Do you think that as a result of this incident, accident, or whatever you want to call it, that there might be some rethinking among the NRC?

A That has nothing to do with the accident. The technical specs, the allowable releases had nothing to do with what occurred in the accident. There'll be rethinking involving the plant design, but not the releases, under normal operation.

Q Yes, but the people are getting uptight, they made a mention, and this came out the other day at one of these hearings in Washington, what they were--that this plant was exempted from putting certain equipment in that would have precluded it because it was in design, or whatever stage it was in.

A MR. CERUZZI: That didn't have anything to do with routine echlinates (phonetic) though, that had to do with closing the--shutting the, isolating the containment building earlier. And therefore, no release would have occurred under accident conditions. This is an accident condition change that they want to--that would be made.

If that equipment had been--if they had been required to reengineer that plant down there that came in

with that lady's requirement, could that release have taken place?

A Not the first two days, probably, but they said there's a question now from this morning's paper, apparently some testimony that was given to the Advisory Committee on Reactor Safeguards yesterday that they said that they aren't sure where the water came from in the auxiliary building that the sump pump was turned off earlier, and whether or not that would have done the job or not, I'm not sure that testimony is correct, or indeed that would have stopped --

MR. DORNSIFE: There were other sources of leakage in the auxiliary building other than that the pumping over of liquid there are--the systems that carried the very high radioactive reactor coolant leak under design conditions. I'm sure that added somewhat to the contamination in the auxiliary building.

MR. GERUSKY: But it would have cut down on the first two days.

MR. DORNSIFE: It would have cut down considerably on the first couple days.

MR. GERUSKY: The third day exposure, the third day release would not have, it would not have made any difference.

MR. [illegible]: It has nothing to do with routine efforts.

BY MR. MILLS: (to Mr. Grusky)

Q The question was posed, and Mr. Hornsife answered it about the number of people and what we might need, what it would take to properly do the job that you're required to do. And we're talking about the whole range of radiological health.

We never did get an answer as to what the total number of people, we're talking about an entire bureau, or the cost of the equipment required to do the job that you should really be doing. In other words, we found out that you need about five more nuclear engineers to put one on each site. How many people do we need in the area of monitoring, we're talking about, and for the other things, improvements to the lab, additional equipment. What are we talking about, numbers and dollars?

A We submitted a proposal to the Mines and Energy Management Committee at their meeting where this House Bill 33 was discussed. That proposal should be--I can make it available to you, I don't have a copy with me.

Q It wasn't over $60,000, it was more than that?

A Yeah, it was $61,00 the first year, and over

$300,000 the second year with the list of equipment in the cost for the equipment. It was a total package of over $600,000.

Q That's equipment, how about people?

A And people. There were five people the first year, and I think four or five people the second year.

Q Yes, but you--we--

A That does not include the nuclear engineer.

Q Not including the engineer?

A Not including nuclear engineers.

Q Okay.

A The House Bill 53 will not provide for the nuclear engineering staff.

Q One last question. The point was made that we're lucky that the accident happened here, if an accident was going to happen from your standpoint you were able to get people out. If a similar accident would occur in Limerick, Susquehanna, Beaver Valley, or even down here at Peach Bottom which is probably the most difficult of all to get to because of the road network.

Would the existing staff and what you know now that you have--you can no longer operate from a distance because of the, as was proved by the NRC, they were making

decisions operating from a distance about evacuation and things like that where it takes the people on the site to really know what's going on?

A For this particular accident.

Q For this type of accident. You right now do not have the capability of operating in Harrisburg with the number of people we need supporting FEMA providing them data as well as having the people out in the field.

A That's correct. As a matter of fact, we have two vacancies right now that we can't fill.

Q Do you have difficulty in filling vacancies due to the technical requirements?

A No.

Q Why don't you?

A We don't have any money.

Q You don't have any money within your bureau or within DER?

A In the bureau. It was a line item budget. We have two vacancies that occurred and they can't be filled.

Q How long have you had these vacancies?

A One for about a year, one less than a year. One in the Pittsburgh office, and one in our Reading office.

Q Do you have any people in your Pittsburgh office now?

A Two.

Q And yet you have that plant down there at Beaver Valley that has what, there's three or four plants in it, three or four reactors?

MR. LORNSIFE: One commercial and a light water breeder.

MR. GERUSKY: Beaver Valley Two is under construction.

BY MR. HOLLIS: (To Mr. Gerusky)

Q But you have a shortage of one person in that area?

A Yeah, one of our people in the Pittsburgh office left and we weren't able to replace him.

Q This is sick. I hope they're giving you a little priority in replacing these, or filling these vacancies as a result of this accident. Have you gone to the secretary and said, hey look?

A Yes, but the present budget as designed does not allow us to fill those jobs.

MR. HOLLIS: No further questions.

CHAIRMAN MINK: Representative O'Brien.

BY REPRESENTATIVE O'BRIEN: (To Mr. Gerusky)

Q Yeah, first off I'm concerned about the

whether it s Democrat or Republican take over in office. And I'd like the three of you to submit to this committee what you think should be done in case of emergencies. What procedure should be followed, what is there, and who should be in charge and command all the way down.

I don't like to use the word mistakes, but I feel that some areas of--like the federal government and civil defense, I understand they're not even involved in it, they can't give any orders in Pennsylvania, is this true?

A I don't know.

Q To your knowledge you don't believe that they do? They can't give orders to Pennsylvania's civil defense?

A I don't know.

Q You don't know?

A I am sorry, I have very little dealings with the federal civil defence.

Q Another area that I'm concerned about. I guess I'm about one of the few politicians publically to come out and say we need nuclear. It's political dynamite, I know, but I feel with the oil crisis the way it is, and the problems we're having throughout the country, to eliminate fifteen percent of our energy is going to be a problem.

Do you feel that the waste problem politically

is being solved, and do you feel that nuclear plants reasonably can be made safe, the same as like flying, driving a car, I know you're going to have accidents, going to have problems, but over twenty years, in my opinion, what I mean is that no one has ever been killed in a nuclear plant.

You three are experts, how do you feel the government should go, what would you advise the government in this point?

DR. [illegible]: Well, I'll try to answer the waste disposal question for you because I've been reviewing most of the federal government's reports that have been coming out, and there have been quite a few of them over the last year or so.

I feel financially, yes, the government is moving very quickly toward starting a mandatory radioactive waste disposal program, one I feel there are technologies very sufficient to dispose of high level radioactive waste, which is the concern.

In my opinion, low level waste is not nearly the concern of high level waste, in fact, there are other types of waste which are much more hazardous than low level radioactive waste, so I believe the problem area is the high level waste area.

I believe they are definitely moving toward a

expanding their storage plant. So, there is no plant in Pennsylvania, that I know, that will run out of space before 1985. And by that time, if there is no resource to ultimately deal with high level radio-waste there will be in place some sort of an interim storage facility.

Q In other words, you're telling this committee, in Pennsylvania we con't have to worry about any plant and extension until 1985?

A That time frame I'm--I'd have to check the documents but that's the number that sticks in my mind, 1985.

Q You better check one or two.

A Peach Bottom may be the first running the problem. It may be within the middle '80's that there will be off-site storage built.

Q Okay, now, let's go nuclear. What kind of support can you give me that we can testify that we request continuing nuclear in Pennsylvania?

A Well, probably being the one most familiar with the technology, well, opinions I have, I personally feel, and professionally feel that a nuclear power plant can be s a f e l y operated. Like you say, there will be certain things that slip through, but I feel it's the most regulated industry today, by far, and a nuclear plant can be

controlled, and it can be designed and operated safely with minimal risk, that's my professional opinion.

[illegible]: What is your professional opinion, Don, you're staying away from it.

MR. GERUSKY: Well, I think the problem is one of not only acceptance by the technical committee, but it's acceptance by the public. And politically there will be accidents at nuclear power plants to the environment.

Probabilities have not really been absolutely determined, but in general, the chances of a major accident are indeed relatively low. We will have small accidents, and I think the accident at Three Mile Island is a small accident, and it will improve the safety of nuclear power as a result of this accident.

I'd rather not give a personal opinion concerning the future of nuclear power in Pennsylvania, because we have to take a look at the safety of these and if nuclear plants are changing. If the Nuclear Regulatory Commission has learned anything from this accident and puts some of those things into effect, I think, that we're going to have a safer nuclear power industry.

I can't comment any further. I don't think I should as being in charge of a program that which is

regulator rather than proposer.

REPRESENTATIVE O'BRIEN: Just one more question. I expect the same thing, I don't think it will be perfect, but do you feel that the accidents that would happen would not be any worse than the accident that happened at Three Mile Island?

MR. GERUSKY: I can't say that.

MR. DORNSIFE: There's a certain probability that it will, you can't say that there won't be a worse accident occurring, anything is possible.

REPRESENTATIVE O'BRIEN: What other accident could happen that could be worse that would be under control at all times by the personnel down there?

MR. DORNSIFE: Core meltdown.

MR. GERUSKY: That's the worse.

REPRESENTATIVE O'BRIEN: What could happen there?

MR. DORNSIFE: I believe the Wash 1400 has fallen in disfavor with the Nuclear Regulatory Commission, but not because of the consequence, because of the probabilities.

The critic of that report substantially said that the probabilities were based on some data that was probably not too good. You should have a bigger air vent, but they didn't find any fault with the consequences, and I believe

from memory, if I recall it, the maximum is essentially a non-core melt with a massive failure of containment. The worse possible thing that could happen would be, talking in the range of 30,000 people being killed in a matter of days as a result of that. Probably anywhere in the neighborhood of 3,000 to 4,000 eventual cancers. Contamination of hundreds of square miles which could be cleaned up and reused in a very short period of time.

These are dire consequences, but it's not something that's outside the realm of manageability. I mean, it's something you can recover from. It's not something that's so catastrophic that the country would go down the tubes because of it. In fact, there are some out in California that are in the neighborhood of 300,000 people if it would go and it's in an earthquake zone energy source.

REPRESENTATIVE O'BRIEN: That's--

MR. GERUSKY: I think the problem is getting the reactor accident and its consequences in perspective with energy sources and other so vital risks and the risk that we accept,not involuntarily accept and must accept for society itself, not like an automobile where you can decide you're not going to drive an automobile, or you're not going to fly an airplane. There are a lot of risks that we face day in

and day out that we have no control over.

REPRESENTATIVE O'BRIEN: I don't know if you would give a decision to continue nuclear power?

MR. GERUSKY: I think that decision is the government's decision, and I'll make my recommendations to the government.

REPRESENTATIVE BRANDT: On that plan we said about the ability to dump water in the river, do we have the ability in Pennsylvania as a government to say no nuclear energy here?

MRS. FEILY: Legally.

MR. GERUSKY: No, I don't think so. The California law was tossed out by the Federal Court. I think there are ways around it, but directly we couldn't say no nuclear power, we couldn't exclude nuclear power.

CHAIRMAN WRIGHT: We thank you three, You have been most helpful.

(Whereupon, the hearing was concluded at 4:00 o'clock p.m.)

I hereby certify that the proceedings and evidence taken by me in the within matter are fully and accurately indicated in my notes and that this is a true and correct transcript of the same.

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solution of that problem, in fact, a couple boys and I got an environmental impact statement, which is the first big step proposed to determine what the plan will be. So, they are definitely moving toward a solution, and I believe that solution is available.

BY REPRESENTATIVE O'BRIEN:

Q Do you think it would be given within a year?

A That's, well, it depends on what you say is the paper plan. I believe there will be a paper plan within a year, it will take a much longer time to get an in-plant response for it, but I believe a paper plan will be in-plant within a year.

Q Do you feel that any other plan should be drawn in Pennsylvania until the nuclear problem is solved?

A I think the method of handling spent fuel at this point is quite sufficient. Fuel storage has been evaluated for its safety in environmental vents, and there is no problem of fuel storage for spent fuel, from reviewing the documents.

Q Well, isn't it true that we have parts in Pennsylvania, plants that only have storage up to 1981 and '82, and have to get a permit to continue?

A All the plants were running out of storage. Beaver Valley and Three Mile Island had approvals for