UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Title: BRIEFING BY IIT ON UNAUTHORIZED FORCED ENTRY INTO THE PROTECTED AREA AT TMI-1

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Tuesday, April 6, 1993

The Commission met in open session, pursuant to notice, at 10:00 a.m., Ivan Selin, Chairman, presiding.

COMMISSIONERS PRESENT:

IVAN SELIN, Chairman of the Commission
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner
FORREST J. REMICK, Commissioner

STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

JAMES TAYLOR, Executive Director for Operations

EDWARD L. JORDAN, Director, AEOD

SAMUEL COLLINS, IIT Leader

LEE MILLER, IIT Member

DR. R. LONG, Vice President & Director, Corporate Services and TMI-2, GPUN

P-R-O-C-E-E-D-I-N-G-S

10:00 a.m.

CHAIRMAN SELIN: Good morning, ladies and gentlemen.

This morning the Commission will hear a briefing by the NRC's Incident Investigation Team which was formed to evaluate the circumstances surrounding the unauthorized forced entry into the protected area at Three Mile Island Unit 1 on February 7th of this year. Also with us today is a representative of the GPU Nuclear Corporation who will address the Commission.

At approximately 7:00 on February 7th, an intruder in a vehicle drove through the open north gate at the TMI site. He proceeded along the causeway over to the island where he drove his motor vehicle through the plant's protected area fence and crashed through the turbine building's roll-up access door. Approximately four hours later, the armed intruder was apprehended inside the Unit 1 turbine building.

As a result of the potential physical security significance and the potential regulatory questions that the event raises, Mr. Taylor requested the establishment of an IIT on February 7th. Members of the Incident Investigation Team are here today to

brief the Commission on their findings regarding the licensee's response to the event and the adequacy of the regulatory process to prevent this type of event from recurring.

The focus of the group's effort has been on the investigation into all the circumstances surrounding the event which occurred, more than on the second part of what I just said, on the full implications of what this event means to our regulatory program, which will be the subject of considerable follow-on work.

The IIT provides a great deal of food for thought which will be analyzed as part of our overall security review which the Commission has already requested. As many of you know, we did request the staff to evaluate the design basis threat will be the subject of a separate briefing later this month.

This event, which started out rather innocuously, has led to really quite a far reaching investigation. In reading it, I was impressed with the large number of topics that were dealt with and just how much information was turned up based on what was really a very short event. The focus of the meeting today will be primarily on the factual questions and the questions that it raises, not the

conclusions as to what the proper course of action will be.

I'd also like to stress again that protecting licensed nuclear power plants from radiological sabotage is the basis for the Commission's regulations on power plant security. It is in this context, in the question of radiological sabotage and the protection of the general public that this event has raised many questions. We're looking forward to hearing the team reports.

Copies of the staff slides are available at the entrances to this room.

Do any of the Commissioners care to say anything?

Mr. Taylor, would you proceed?

MR. TAYLOR: In further amplification of your remarks, Mr. Chairman, I would note that we decided the very day of this event, February 7th, in discussions between Mr. Jordan and myself, that an IIT was appropriate to follow up to this occurrence. We established at issue the charter the next day, February 8th, and the team leader, Sam Collins, who is here with us, was on site that day.

With me here at the table are Ed Jordan, Director of the Office of AEOD, and Sam Collins, to my

right, the II Team leader, and Lee Miller, the assistant team leader.

We will not provide classified safeguards material at this public briefing and material that is classified related to this event has been separately provided to the Commission.

With those opening thoughts, I'll ask Sam Collins, the team leader, to continue.

MR. COLLINS: Thank you.

Good morning.

CHAIRMAN SELIN: Good morning, Mr. Collins.

MR. COLLINS: (Slide) I would like to start off by introducing the team. Along with Lee Miller and myself we have Mr. James Creed from Region III, Mr. Emilio Garcia from Region V, Mr. Charles Gaskin from NMSS organization, Mr. Will Hutchinson from the Office of Investigations, Pete Moeller, who is the industry consultant, Mike Warren from NRR, and our two administrative assistants, Cherie Siegel and Edie Becker.

(Slide) Next slide, please.

COMMISSIONER REMICK: Sam, could you elaborate on what Mr. Moeller's role was?

MR. COLLINS: Yes, sir. Mr. Moeller was

a full team member. He participated both in the on-site portions of the review as well as the report writing, the assessment and the conclusions. Mr. Moeller was provided as the industry consultant through the INPO organization. He is a normal employee of Public Service Electric at the Artificial Island site. His normal position is as a security manager on site and he reviewed both security and emergency preparedness for the team.

COMMISSIONER REMICK: Is that independent industrial viewpoint helpful to the IIT?

MR. COLLINS: Yes, sir. Mr. Moeller is very knowledgeable and he brought an industry perspective that balanced the regulatory perspective on the event.

MR. TAYLOR: Our procedures normally allow us to do this, which we find very useful in IITs.

COMMISSIONER REMICK: Yes. And I favor. So, that's why I was interested to make sure that it is working successfully.

MR. COLLINS: (Slide) If we proceed to slide 3, I'd like to acknowledge that we did have three observers on this Incident Investigation Team. Mr. Rich Janati, who is here with us today, from the Bureau of Radiation Protection, Commonwealth of

Pennsylvania. He's normally the site nuclear engineer. Mr. Joe Lafleur, who was not able to attend today, was an observer of the team, as well as Mr. Rae Scott who is present with us today from the Office of the Inspector General.

(Slide) Next slide, please.

We received technical support from many individuals. As you know, we have two reports that were issued as a result of this incident, one safeguards, one non-safeguards.

CHAIRMAN SELIN: I'd like to stress for the audience that the safeguards information really is quite limited. It has to do with specific effects that different types of explosions or different kinds of impacts might have on plant equipment and it has some detailed analysis of how those effects would take place, but it really doesn't effect the overall conclusions or the overall considerations. They just put some more detail behind some of the conclusions that might be a little harder to understand in the IIT. I've read both reports and we'd just like to testify to the fact that there's no significant differences between the two other than the amount of detailed back-up that's available in the safeguards report.

MR. COLLINS: Yes, sir. The findings and conclusions for both reports are the same.

(Slide) The next slide, 5, is the charter, which was issued on February 8th. Appendix A of the reports contains the full charter.

(Slide) Slide 6 indicates the IIT schedule. In conjunction with the schedule there are a number of meetings with the Commonwealth of Pennsylvania. We had to have full cooperation both as observers and additionally we briefed them periodically throughout the event as a result of their previous agreement with the governor of the Commonwealth of Pennsylvania. We do have a follow-on meeting with the Commonwealth of Pennsylvania scheduled for the 14th.

COMMISSIONER REMICK: Sam, we know that you had recent training as an IIT leader just before the event, but how about other members of the team? Have they all received some training in advance? If they don't, when you start out on a group like this do you have some initial instructions? How does the team function?

MR. COLLINS: Specific to this team, we were fortunate to have Lee Miller with us, who has been affiliated with the IIT for quite awhile and was

at the course with myself serving as an adjunct to the instructors. He also helps coordinate the training program for AEOD. The other various members have had investigatory training, but not the IIT type of training. So, it's really up to the team leader to ensure that that methodology, using the Agency guidance, which is a NUREG document, is imparted on the team. The team's talents fall in the inspection investigation areas. It's up to Lee and myself to structure the process.

COMMISSIONER REMICK: Did you find that you would have preferred that the individual members of the team, besides yourself and Mr. Miller, would have had training or did it work out satisfactorily, the fact that they had the background they had?

MR. COLLINS: I did not note any shortcoming in the process as a result of the team not having the training.

COMMISSIONER REMICK: Okay. Thank you.

MR. COLLINS: (Slide) Slide 7, to proceed, is the agenda. The presentation will focus on these four major areas throughout the period that I'm making the presentation. Within the bounds of the charter we focus primarily on operations, security, emergency preparedness and the regulatory areas.

(Slide) Slide 8, please.

On this slide and on the viewgraph we will depict the path of the intruder from Pennsylvania Route 441 into the turbine building. Starting at the north gate, the individual in the vehicle proceeded around the guard booth by the outbound lane without stopping to show an owner control badge. The normal process is to stop, show the badge, be administratively logged into the site, and then proceed.

The individual then crossed the bridge, came onto the island, through the north parking lot, through the first stop sign, through the second stop sign. At this point he's proceeding directly towards the service building. At that point, he took an immediate left, which is a right-hand turn across the process center, which is the access house, took an immediate right. At this point he's approaching gate 1, through the protected area fence, into the protected area, through a drive which is a railway actually, through the roll-up turbine door and into the turbine building.

COMMISSIONER REMICK: Did anybody actually observe him when he made the left-hand and the right-hand turn? Did he hesitate or just continue

apparently knowing where he was headed?

MR. COLLINS: He was observed by at least two individuals, most likely three, a shift foreman who was coming off-site, an additional control room operator. Both of those individuals were leaving their shift, getting ready to go out into the parking lot or in the parking lot. The third individual was a security guard who was in the process center who heard the radio broadcast and proceeded to the door and viewed the car as it came across the site.

The second answer to your question is that he did slow down. Hesitation wasn't described. I believe taking out of context from the interviews, it was difficult to see the individual because of early morning and the condition of the car was such that they couldn't get a clear view of the individual unless you were close. So, whether he hesitated or not is hard to say.

COMMISSIONER REMICK: Okay. Thank you.

MR. COLLINS: (Slide) At this point I'd like to proceed to slide 9. We have a short video, approximately three minutes, where the team reenacted the drive onto the site by the intruder. We will concentrate on the five areas here and I will narrate the video as we proceed.

(Video) May we have the video, please?

This was a recreation of the event. The event actually took place on an early Sunday morning. The particular reenactment was a Monday. It was a holiday, so the plant conditions as far as the congestion of the site was similar. This is the gate booth. The car is going into the outbound lane traveling at approximately 40 miles an hour now. The total distance from the guard booth into the site is about 7/10ths of a mile. At this rate it takes about a minute and nine seconds or so to get from 441 to the protected area.

This is the bridge that crosses the Susquehanna River. This is called the North Entrance. There's a similar entrance at the south side of the site which normally has a locked gate. Proceeding into the lower parking lot area, called the north parking lot. The individual now would be presented an overall view of the site. During a normal work day that parking lot is relatively full of cars. This is a circle where he took a right on the circle.

Directly ahead now is the processing center. If you look directly ahead now you can see a gate. That's gate number 13. That leads into the maintenance shop. This is the left, coming directly

across the processing center. He now takes an immediate right. This is gate number 1. That compensatory measure was not present, of course.

This is the damage gate and it's a still photo. The gate actually rotated and pivoted on the upper right and the middle left-hand corners. The car actually pushed the gate up, the gate flipped, the car went underneath the gate and returned to this particular position. The gate construction, as you notice, is similar to the protected area, hence construction.

We'll proceed now into the turbine building. This is looking back out at gate 1. The tire marks you see here are present as a result of the car being removed, dragged out. This is the turbine building roll-up door after the car has been removed. Straight ahead, the green cylinder is a Powdex cylinder that was moved. This is the individual's automobile, a 1984 Chrysler K car. It weighs approximately 2500 pounds.

COMMISSIONER REMICK: It doesn't look like he hit that container very hard.

MR. COLLINS: No, sir. The container was pushed with the right-hand side of the car. It moved about six feet. The container was empty at the time.

This is a pathway, the most direct pathway. It's a reenactment, it may not be accurate, of the intruder. The path to the top of the ladder which leads to one level below, this pathway is approximately 240 feet long from the car to the nearest ladder, which is directly ahead. The individual was actually found to the right of this ladder, underneath the grating. It's about a 12 foot height there at the lower grating. If you notice, this support is found on the backside leading up against the support by the GPU security force.

Okay. If there are no questions on that particular part of the presentation, I'll proceed.

(Slide) Slide 10 will go into the sequence of events. There's a very detailed sequence of events that's contained in Section 1 of the report. I will overview the sequence of events on February 7th using the handout.

The background of the intruder is covered in Section 1.1 and 1.2 of the report. The individual has a history of admissions to mental hospitals for depression. He was last released on January 22nd, 1993. He has a total history of three admissions. He has no personal association with Three Mile Island. That was verified by the licensee, either as a

contractor or an employee.

CHAIRMAN SELIN: I'm sorry. Repeat the last thing you said.

MR. COLLINS: It was either as an employee or a contractor. He has no history of violence nor record of previous arrests, no known association with anti-nuclear groups.

The individual is currently in the Norristown state mental institution for a 90 day observation period. He had a February 12th hearing. He was sent to that facility for a 90 day observation period.

There are four pending charges. They're all felony charges by the Commonwealth of Pennsylvania. He has a June 8th mental health review to determine his capability to stand trial.

COMMISSIONER CURTISS: The fact that this individual didn't have any previous employee relationship or contractor relationship, or I guess any evidence that he'd been on the site before, should I take that to suggest that in terms of the route that he took and the path that he got into the plant, that it was essentially something that he did, felt his way as he went along? Is that a fair assessment?

MR. COLLINS: That can be one of the

potential circumstances. The other potential circumstance is that the individual was familiar with the area. He did state on the Thursday prior to the event to acquaintances that he was going to become famous and they should watch the TV and the newspaper for him. On the way to the site, which is approximately a 56 mile trip, early morning he did stop at a television station in Mount Gretna, which is about 26 miles from his home, knock on the door, was observed, then quite a bit later that morning he did show up at the site. We did not interview the individual as a result of the IIT. We do have a follow-on action for one of the offices, any member of the IIT to perform that function.

COMMISSIONER CURTISS: So there may have been some degree of advanced planning in terms of the route that he took, but we can't say for certain.

MR. COLLINS: That could be true.

COMMISSIONER CURTISS: Okay.

MR. COLLINS: He did take a series of turns as you come into the site, as you'll notice by the video.

(Slide) Next slide, please.

The initial conditions, the site security organization and the operations organization were

fully staffed per license requirements. There were no security systems out of service at the time, no compensatory measures. Unit 1 was operating at full power, 870 megawatts. Shift change in the security organization had taken place at 5:30. The south gate was locked, the north gate was open to provide for continuation of the operations and the remainder of the organizational shift change.

(Slide) Slide 13, please.

All safety systems were operational. At the time of the event there were approximately 60 people on-site. Normally staffing at the site is approximately 900 individuals.

(Slide) Slide 14 gets into the detailed chronology. I'll highlight some areas as we go through. As I mentioned, the individual was last seen at his home approximately 2:30 in the morning. He did drive 56 miles to get to the site. He was observed on the way to the site both at the TV station as well as on Pennsylvania Route 441 which leads to the site by at least two individuals who were departing as a result of shift change and recognized the car. The car was described as traveling at an excess rate of speed and driving erratically.

Following his entrance onto the site,

which was depicted by the video, the first indication that the individual was not an employee who was essentially looking for a place to park but had bypassed the north gate, which happens infrequently but it has happened, was when the individual turned towards gate 1 and was observed to turn toward gate 1. Shortly after that period, the licensee did receive protected area alarms, intrusion alarms which are designed. There was no camera assessment of the vehicle since the rate of vehicle entry was beyond the camera design.

In response to the intrusion, the control room was notified both by an on-shift security responder, as well as by the off-shift foreman who observed the car in the parking lot. The control room took some immediate actions. I'll get into those later. But essentially they locked the control room fire doors. Here on the slide you'll see the pointer is pointing out the two control room fire doors which essentially are between the control room panel area and the shift supervisor's office. That becomes important later on in the area of emergency preparedness. The shift supervisor's office and the associated facilities there are the second half of the emergency control center. With the fire doors locked,

they're not accessible.

COMMISSIONER REMICK: Sam, was that a procedural action or an ad hoc action?

MR. COLLINS: That was a procedural action. It's contained in emergency procedure 1202. It's a follow-on step following the emergency classification of the event, but in this case the shift supervisor was prompted to lock the doors by the security guard and by the shift foreman who called.

COMMISSIONER REMICK: Emergency procedure not security plan?

MR. COLLINS: It's an emergency procedure that's titled "Intrusion Into the Protected Area." So, it's actually an operating procedure in response to a security event. I'll get into this topic a little later on in the emergency preparedness area.

Site area emergency was declared at 7:07.

(Slide) Slide 15, please.

The NRC actually received two notifications of the event, the initial notification of the security event and the follow-on notification of the classification. The licensee performed a manual call-out of emergency personnel. The manual call-out is a result of the shift supervisor's office being isolated. There is normally an automated system

which requires an interface with an individual, but it's automated to provide for a pager call-out and a return call with a voice box message, as well as the notification to the Commonwealth in the five risk counties is also performed normally from the shift supervisor's office.

8:00 is another significant point. That's when the emergency director assumed -- second emergency director, correction, assumed control of the emergency response organization. That was located in the central alarm station. The initial emergency director is the shift supervisor. As soon as the event declaration was complete, the shift supervisor became the emergency director. He was relieved at 8:00 by the Director of Operations and Maintenance, who responded to the site.

COMMISSIONER REMICK: Is he SRO licensed, the second emergency director?

MR. COLLINS: The second individual holds a license. It's not an active license. He does hold a license.

At 8:38, the first search of the turbine building commenced. That was two teams using the Three Mile Island security force. There was a Pennsylvania State Police individual there. It was

led by Three Mile Island.

At this point in time, an initial search of the condensate pit area where the intruder was eventually found was conducted, but it was not complete because of lack of lighting and questions on the physical arrangement and the damage that could be done if shots were to be fired in that area. So, that was initially searched to a limited extent. The remainder of the search was performed and then I will come back in a moment to the second search where the intruder was found.

(Slide) There's a second call-out of individuals in the emergency response organization at 9:28. Various licensee's facilities became operational later in the event, approximately three hours after the event declaration. At 10:20, the vehicle was searched. No explosives were found. That's by an explosive ordnance division team responded to the site. The vital area search was conducted at 10:22. That 10:22 vital area search was significant to the team. That's the first time that the vital areas themselves were physically searched. Up until this time, the licensee in their own mind had confidence that the vital areas were intact as a result of the response to the vital area barriers as

well as by an indication that no unauthorized intrusions into the vital areas had taken place.

COMMISSIONER REMICK: Maybe you'll cover this. I assume the vital areas, the computer -- they had a computer lock on the vital areas at that point so that there was limited access to vital areas by people with cards?

MR. COLLINS: Yes, sir. Let me phrase this in a general way so we don't get too specific. The vital areas, of course, are normally locked. There is a subsequent compensatory action which is taken as a result of the security event where an additional higher tier of access is found into the vital areas. There's a trade term for that. It's called a zap-in in the licensee's procedures. That was conducted within two minutes of the intrusion.

COMMISSIONER REMICK: But the security personnel were able to still enter? They were some of the admitted personnel?

MR. COLLINS: There was a group of individuals, which is smaller than the normal group, without getting into numbers, which was allowed access. That included security individuals. The second side of that is it excluded a majority of the operators. We'll get into that in a moment.

COMMISSIONER REMICK: Sometime I would like the staff to provide that information to me, those who did have access once the zap-in occurred.

MR. COLLINS: Yes, sir. We can do that.

The vital area search was conducted essentially after people had been -- security guards had been used to post various plant trip sensitive positions in the turbine building and a search for the intruder had been conducted.

A second search of the turbine building commenced at 10:40. The intruder was found at 10:57. He was found by a team of search and clear individuals who are employed by Three Mile Island. He was found about 14 feet from the ladder leading into the area, leaning against the circulation water support at the 292 foot elevation. He did not offer resistance. He was not armed. He was taken into custody by the Pennsylvania State Police, was initially questioned on-site and then was removed from the site and detained.

Following the event, the emergency director relocated from the central alarm station to the control room. The follow-on actions indicated on slide 17 are the follow-on searches as well as the conduct of the deescalation of the event, as well as

the last search conducted by the Pennsylvania State Police cadets which responded to the site. At 8:00, the last Commonwealth officer left the site, and that was Pennsylvania State Police.

COMMISSIONER REMICK: In this time period, I believe there was at least one FBI agent on site, but I assume he departed somewhere around this time also. What were his functions and were those consistent with the MOU?

MR. COLLINS: The FBI was informed of the event from their central office. They did respond to the site. When they responded to the site, they were briefed both by GPUN and by the Pennsylvania State Police, if I recall. They assessed the crime scene essentially for the purposes of determining if they had federal authority based on a nuclear threat, the connotation to the incident. Based on their observation of the crime scene, as well as the briefings, they determined fairly shortly after they arrived that their jurisdictional responsibilities were not needed. That's a call that's in accordance with the MOU, the memorandum of understanding. They then stayed on-site and essentially, I believe, after the intruder was found, they left.

We do have some follow-on actions and

staff recommendations in the area of the memorandum of understanding which go to a common understanding of the memorandum of understanding and a means of contingency training to ensure that the right type of support is available to provide for effective FBI response.

COMMISSIONER REMICK: Then are you saying that according to the present MOU what they did was consistent with that, but the MOU needs some refinement?

MR. COLLINS: I think the MOU, in my personal opinion as a result of this event, and Mr. Hutchinson's review, the MOU is sufficient. It's a matter of understanding whether the MOU can be supported to be effective. That would be in some type of contingency training and a common understanding of the MOU requirements and a common level of expectation as far as the FBI's role and the limitless possibility of these types of challenges. For this specific event, we believe the FBI individual responded appropriately. He made a very early decision based on the briefings that he had received as well as his view of the crime scene which ultimately was correct. There was no nuclear incident that required his command and control at the scene.

COMMISSIONER REMICK: I'm not sure, and I don't want to pursue it in great depth, but what you mean by contingency -- I forget if you said training or planning. What did you mean by that? This would be of the FBI personnel?

MR. COLLINS: Yes, sir.

COMMISSIONER REMICK: You mean actually bringing them on-site and other exercises?

MR. COLLINS: It can take various forms. That is one form. It would be a familiarization with the site, an understanding of the most direct route perhaps, simply put. The manner in which the licensee's forces will respond, what the command and control decision making process would be. Those types of resources, some of them physical, some of them structural, which would be necessary to provide for that effective interface between the FBI and the Pennsylvania State Police.

COMMISSIONER REMICK: Thank you.

MR. COLLINS: (Slide) Proceeding on to slide 18, the response to the event, I've detailed some of these areas specifically during the time line. The individual, of course, traveled through the owner controlled area prior to his entry into the protected area. There is a guard who is meant to respond in the

owner controlled area. That guard was broadcasted twice over the radio to respond to the intruder. He responded the second time. He essentially was not available because of the breadth of his responsibilities in the owner controlled area and he was not able to intercept the intruder.

The response to the vital areas once the individual was inside the protected area was controlled by the security plan. The licensee's security force did a good job in responding in accordance with their security plan. They have specific requirements, where they go, and guidance in what time frame they shall get there.

In hindsight, taking a lessons learned look at that requirement, we view that that response is perhaps somewhat limited, without getting into the specifics. That will be a follow-on action review area and it may not be unique to the site.

The licensee conducted search and clear operations. They did a very good job in conducting those. The plan does not originally envision though that GPUN will have that sole responsibility. It relies on the state law enforcement agency to provide for the primary means of search and clear operations. In this case the licensee waited to some extent for

the specialized team to come on-site, essentially similar to a SWAT team. After a period of time, they organized their own search and clear teams and went out and did the two searches of the area which were effective.

There were various training issues that were evident as a result of our review of the event. Examples of those are the types of weapons used, the placement of weapons, communications with radios, the effectiveness of that, the need for briefings for the search teams, those types of, if you will, practical factors involved with the security response.

We reviewed the security measures which were suspended as a result of the intrusion. There are provisions in the regulations for the suspension of normal security actions as a result of specific challenges. The licensee did that in this case. Their consideration of that was appropriate. However, the methodology that was used to suspend those was not consistent with the intent of the regulations. That comes up again in the area of emergency preparedness. We do have a staff action proposed in that regard to review those circumstances and if necessary to provide for internal or external guidance.

COMMISSIONER REMICK: Did they have

procedures that they followed to suspend? Not regulations now, were there procedures they were following?

MR. COLLINS: They did not have procedures which specifically told them the process to follow and I think I would have to add that it's not necessarily envisioned that they would have a procedure to do that. There should be a process defined wherein the individuals who are in charge of security understand the provisions of the regulations to ensure that the method that's used is consistent with the regulations, which is two key points. Determine that it's necessary to deviate, determine that there's no acceptable alternative available, and then in the latter part of the regulation obtain as a minimum SRO approval for those deviations.

COMMISSIONER REMICK: Was this approved by the SRO?

MR. COLLINS: In these particular instances, they were not initially approved by an SRO. That's true. The SRO who would have passed judgment on these actions would normally have been the emergency director in the control room who is also the shift supervisor.

COMMISSIONER REMICK: Or the second

emergency director who was --

MR. COLLINS: Later on in the event.

COMMISSIONER REMICK: -- an inactive SRO?

MR. COLLINS: Yes, sir. He would have had that responsibility also. And I'll get into the emergency plan aspect of this similar finding later on.

COMMISSIONER REMICK: Right.

MR. COLLINS: The response by the federal, Commonwealth and local authorities, they were notified, they responded to the Commonwealth facilities as well as the five risk counties. That includes the Pennsylvania State Police initial response, the response by the specialized team, search and find team, the FBI response as well as an Explosive Ordnance Division response, which is part of the federal response.

(Slide) The next slide, slide 20. I'll briefly dwell on that just to show you -- the I block in that slide indicates the location where the intruder was found. You'll notice the condenser which rises two to three levels in the turbine building is between the intruder's car, which is in the left-hand corner and the location where he was found. You'll notice the liner, the SEG liner, which is a trade

name, was moved approximately six feet as a result of the impact. A subsequent analysis was done and no damage was done to that liner other than to the top fittings onto a bolt-on type of fitting which impacted in auxiliary steam line. There essentially was no damage to the turbine building other than a roll-up door as a result of the intrusion.

(Slide) The next slide shows the turbine building sectional view on level 292. It shows the circ water discharge piping, very large piping which the individual was found beneath. The actual entry is on the 322 foot elevation.

(Slide) The next slide, continue into area 3 in response to the event. In the operations area there were concerns for personal safety in the control room which affected decisions that were made, some of them appropriate, some of them warranting review. Essentially the control room found out of the event as a result of the guard responding into the control room, which was essentially just momentary after the event took place, as well as the call from the shift foreman who was leaving the site.

The first reaction was to lock the control room fire doors. Those control room fire doors are between the shift supervisor's office, as I mentioned,

and the control room. They are double key locked. There is no dead bolt. The operators took the time to find the key, lock the doors and then at the same time essentially control room operators were looking at the EP procedure 1202, which is the operational response to a protection area intrusion.

COMMISSIONER REMICK: Isn't this an example where security plans, carrying out security plans as was called for in this case interfered with operations if conduct of notification and so forth is in operations?

MR. COLLINS: A finding from the team is that there is a security operations emergency preparedness interface which those three spheres of influence were somewhat unique to this event and it's cause and effect. What drove the operators to lock the doors was personal protection of the operators in the control room. There are vital area doors beyond those fire doors. We queried the licensee on when the locks were installed and why they were installed. There's not a clear history to that. It goes back some period of time. But there is a consensus that they were put there at the request of the operators to provide an additional barrier in the event of a threat.

The direct answer to your question is the effect of those doors being locked was on the influence of the emergency plan implementation.

COMMISSIONER REMICK: Right.

MR. COLLINS: The operation of a plant --

COMMISSIONER REMICK: No, I understand. But it is an operational type of function, although we call it emergency planning.

MR. COLLINS: That's right. But it was driven by operators and not by security, driven by everybody's need for self-protection.

COMMISSIONER REMICK: Yes. It's that interface between security and operation in very general terms that I continue to have concerns about.

MR. COLLINS: Yes. And this event was unique in that regard, I believe.

COMMISSIONER REMICK: There was something I didn't understand. In the report you indicate that the supervisor had trouble with a key and I wasn't sure if that was a key to lock the door. I assume not. It was to find the key to eventually get into the room to get some quick access. Is that correct? And the concern is that if there had been a fire or a reason to evacuate the control room, people might have been locked into that area? I'm not quite sure I

understand the concern about the key. I can hypothesize, but I'm not quite sure.

MR. COLLINS: Both of your statements are correct. The initial statement in the report has to do with locating the key to lock the doors.

COMMISSIONER REMICK: To lock them?

MR. COLLINS: Yes, sir. It's a single key and the operators had to find the key essentially and find the right key and then lock the door.

COMMISSIONER REMICK: I must admit the report does say that, but I was saying, "Well, gee, probably they can lock it without the key." Okay. The report is clear then.

MR. COLLINS: You need the key on each side of the door to lock and unlock the door.

COMMISSIONER REMICK: I see.

MR. COLLINS: And eventually they did go in, when prompted by the emergency director later on in the event, and unlocked the door to allow individuals into the shift supervisor's office to make the notification and the call-outs. They unlocked the door, let the individuals in, then locked the door behind them.

I'm reminded here by Jim Creed to emphasize that locking the doors is not a regulatory

requirement or a security program requirement. It's in the operations procedure in response to the protected area intrusion.

COMMISSIONER REMICK: And that's not a security, protected area intrusion? Not a security question?

MR. COLLINS: The procedure itself is in response to a security event, but it's an operations procedure.

COMMISSIONER REMICK: I see. Okay.

COMMISSIONER ROGERS: Now the third set of doors on the drawing, they were already locked? Is that it? You were talking about these two doors by the shift supervisor office, but there is a third door shown on the diagram and that was locked, the one down in the lower right-hand corner by the lunch room?

MR. COLLINS: Yes, sir.

COMMISSIONER ROGERS: That was already locked?

MR. COLLINS: Yes, sir. That is a double door that's normally locked and it was reinforced during the event.

The plant did continue facility in accordance with the Procedure 120213. We'll get into the substance of that procedure later on in the

presentation, but essentially the procedure specifies maintaining the plant stable at power and monitor the plant unless instability of the plant is noticed that can be attributed to the intruder.

COMMISSIONER REMICK: Going back to Commissioner Rogers' question, if I recall in the report you mention about a previous item. I don't know if it was an exercise or not where those outside doors -- the vital area doors I guess you would call them -- going into the control room general area were locked using, I assume, this restricted access that only certain people -- and the concern was that emergency response people coming to the control room could not get into the control room because there was not a guard there to let them in. I assume that meant that their guards would not allow them in and there had to be a guard there.

MR. COLLINS: Emilio Garcia.

MR. GARCIA: (Speaker off mike.)

Yes. In the prior -- they had a precursor event, one of these drills. The workers had problems in gaining access to the emergency control center and that access was not a security problem.

COMMISSIONER REMICK: I see. But it is a case again where a security provision could prevent an

emergency response by operational personnel, hypothetically?

MR. GARCIA: Hypothetically, it could be a security issue. But recall that what we were saying earlier is that the experience with these fire doors, these fire doors are not required by the security plan, are not required by regulation, so therefore if the question at issue is the access through these fire doors, they have nothing to do with security.

COMMISSIONER REMICK: Personnel security is not security? Is that it?

MR. COLLINS: I believe that the connotation between the licensee's security program and the need for personal security, those are not necessarily compatible. The fire doors, as far as we were able to trace it, was an operations initiative due to the personal threat connotation of security, not to the maintenance of the protection of the reactor, if you will.

COMMISSIONER REMICK: But the March 16th, 1989, precursor event, are you sure that was fire doors? I did not read "fire doors" in the report, I don't believe. At least I interpreted it to be the outside, what I would call the vital area doors to the control room.

MR. GARCIA: The report does not clarify which door they were speaking of. The use of "fire doors," as they're used -- the IIT has been using to separate these doors from the vital doors, and there's a difference. The vital doors do provide for personnel security.

COMMISSIONER REMICK: Okay. Maybe when the licensee personnel are here maybe they can clarify that.

MR. COLLINS: Okay. If not, we can follow-up and find you the answer.

We looked at the results of exercises and drills over three SALP periods, essentially. There were findings in two areas that bear on your question.

There was a finding that indicated that if the fire doors are locked it restricts access to the shift supervisor's office. That was a precursor finding.

There was also a finding that dealt with the entry of personnel into the vital area door, which is the outside door, and the ability of individuals to get into that door under restricted access or threat conditions.

COMMISSIONER REMICK: And that's the case when you would have the guard -- it wouldn't be the

fire doors you'd have a guard for anyhow. It would be the vital area doors.

MR. COLLINS: That's correct.

The last point on slide 22, the plant did continue to operate at 100 percent power in accordance with their procedure. They did monitor the panels. There was no perturbation of the plant as a result of the intruder.

(Slide) The next slide, 23, we've covered many of the points on this slide including the lockable control room doors; the door at the bottom right, which is a bullet resistant double door; the door on the left-hand side outside of the I&C storage area is not a vital area door but is normally locked; as well as the location of the emergency notification phones within the shift supervisor's office. Those are the automated phones for Commonwealth notification, risk county notification, and immediate response organization call out and call back.

(Slide) Slide 24, in the third topic area, covers emergency response. This is covered in the report in sections 2.4 for description and 3.3 under the human factors.

In accordance with the plan, the shift supervisor was the initial emergency director. He was

informed of the event in a timely manner. He did lock the control room doors. He did call the director of operations and maintenance prior to event declaration. We looked at all that and came to a conclusion that it was a reasonable response, but it did warrant some understanding of why some of those actions took place in that sequence. Ultimately, it did not provide an undue delay to classification of the event.

The control room was isolated from the emergency response resources, both personnel and equipment. We noted that.

The risk counties and the Commonwealth were notified. It was done manually from the control room by individuals who hadn't received this specific training. The goal was accomplished, however the shift foremen, who are the senior licensed individuals below the shift supervisor, did end up conducting those calls. So they were somewhat distracted as a result of that, but it was necessary because the shift supervisor's office was locked and the individual who normally would make those calls, part of the calls, an I&C individual, was outside the control room and was not allowed access. The second set of calls is normally made by a control room operator.

COMMISSIONER REMICK: Why was he not

allowed access?

MR. COLLINS: At this point, I think it's a -- I'll clarify it as another example of maintaining the control room intact and the perception of the threat of the intruder. The individual who would normally make these calls was in the I&C shed which is adjacent to the control room but outside the control room. He could have been allowed access through the back double door. There was a security guard back there who was posted, but the licensee at that point in time was not opening up the doors into the control room to allow either entrance or egress.

COMMISSIONER REMICK: And if he had an access card, it would not have functioned?

MR. COLLINS: That's correct.

MR. MILLER: There's not a card required at the back door.

MR. COLLINS: On the back door, that's right. There is on one door, not on the back door.

On the call out of emergency personnel, that was done manually. There was a mix of individuals who were told to stand by and there was a mix of individuals who were told to report to alternate response centers. This is, I think, probably one of the examples of the deviations from

the emergency plan which we subsequently talk to as far as proper process. This is also, I believe, an indication of the licensee's focus on the security aspects of the event. The NRC did that somewhat too, which we'll talk to in a moment.

The TSC was not able to be manned because of its location. They were not able to get people in and out of the TSC without risk to personnel. That potential had been noted during a previous exercise and the resolution to that was that individuals would be allowed access to the TSC to support emergency preparedness. In the actual instance, there was a deviation from that resolution and individuals were not allowed access and that complicated the emergency response. And by that I'm not saying that they should have been allowed access, just dealing with the program.

The move of the emergency control center to the central alarm station was also an unusual response in emergency preparedness. That essentially moved the emergency control center to the central alarm station area and divorced it from their procedures, the normal phones, the types of resources that are available in the control room.

COMMISSIONER REMICK: These changes or

deviations are permitted under their emergency plan? I mean, they can make changes? Does it require an SRO or does it require approval of the emergency director or, in other words, were these changes made consistent with their procedures?

MR. COLLINS: The direct answer is yes, because their plan allows the emergency director to deviate not only from the plan but to deviate from operating procedures, emergency procedures, license conditions and plant limits. We have a finding from the team that that needs to be judged against the requirements of 10 CFR 50.54(x) and (y), which is a regulatory relief that's available under those circumstances and there needs to be a review of those plan requirements to ensure that there is some consistency with the provisions of 50.54(x) and (y).

So the answer to your question is yes the plan does allow it, but it does not invoke 10 CFR 50.54(x) and that will be a follow-on action for further review.

COMMISSIONER REMICK: Okay. But the changes to the emergency plan do not require invoking 50.54(x) and (y), does it?

MR. COLLINS: As it's currently written, they do not.

COMMISSIONER REMICK: Does not.

MR. COLLINS: That's correct.

CHAIRMAN SELIN: Did you answer Commissioner Remick's question about whether an SRO had to be there to authorize the changes?

MR. COLLINS: The way the plan is written, I'll ask Emilio --

COMMISSIONER REMICK: I'm speaking about emergency plan changes.

MR. COLLINS: Yes, it does reference SRO involvement in the decision, but there's a caveat in those words and we can get them directly to you. The caveat is that the emergency director makes the decision and the input from the SRO is considered. But it's fairly explicit that it's an emergency director function.

Am I correct with that?

MR. GARCIA: That is correct.

CHAIRMAN SELIN: And was it the emergency director who made this decision in this case?

MR. COLLINS: As far as emergency preparedness is concerned, yes. The emergency director made the decisions on emergency response organization, the locations of the facilities in those decisions, that's correct.

(Slide) In slide 25, we continue with the emergency response. The emergency director and the emergency control center was in the central alarm station. There were alternate locations for other various facilities located. Some emergency response measures were suspended as we discussed. The response by the Commonwealth of Pennsylvania and the risk counties was provided for by the licensee.

(Slide) The next area under NRC response, we were informed of the event at 7:11. That was a security notification. Again, at 7:23 from the site area emergency. The operations officer actually reacted to the initial notification at 7:11 and started to coordinate individuals and conference calls. The NRC was placed on standby mode at 7:35. The incident response center was declared operational at 8:45.

What's important to note here in this process is that again there was somewhat of a focus on the security aspects of the event. The normal call-out processes were not used either by the region or by the NRC Headquarters Operations Office. Essentially the response organizations were selectively staffed. The result of that is that protective measures were not fully staffed in either location and the technical

aspects of reactor support in the Headquarters operations was less than normal. So, I think the lessons learned from this event is you have to focus on the security aspects of the event influencing the normal agency response.

COMMISSIONER REMICK: But am I correct that in hindsight to this actual event that that worked out okay? But if the event had gone another course, it might not have.

MR. COLLINS: That's exactly right.

The team's finding is that, again in many cases for this particular event, the actions by the licensee and by the NRC were appropriate. Many of the findings which we discussed look at that larger picture of the potential of this individual, the intruder, to have different intent, different capabilities and would the response of the licensee and of the NRC then been sufficient. The majority of the lessons learned are in those areas.

CHAIRMAN SELIN: I'd like to follow-up on that a little bit.

COMMISSIONER REMICK: Sure.

CHAIRMAN SELIN: The fact was this guy wasn't hostile, he wasn't armed and he didn't do anything. So, almost anything that they would have

done would have been appropriate in that sense, and there would not have been radiological damage, et cetera. But my question following Commissioner Remick's question, is there evidence that at different points in the process people sat down and said, "What do we know about this intruder?" Did they make conscious decisions thinking about whether there was a risk of an explosion or the risk of radiological damage and decided that there was evidence that suggested there wouldn't be or was it that they just did what they were going to do without -- in other words, did they specifically conclude that this fellow probably wasn't armed and that there probably wasn't chance of an explosion and therefore that it was prudent to do the things that they did or did they just do them and it turned out okay?

MR. COLLINS: My opinion of that would be we didn't directly address that in the report.

CHAIRMAN SELIN: Which is why I'm asking you the question.

MR. COLLINS: It's not a charter area. But my opinion of that would be that the initial response was focused almost solely on the security aspects of the event. The intruder was observed somewhat. They had a general description of him as he

passed by individuals. His capabilities or his intent were not necessarily known. For example, when one individual was captured, they still searched potentially for another individual.

To continue with the answer to your question, following through the sequence of events, it became apparent that people started to react to the larger potential after a few hours of the event as when considerations came. "We really need to call out these individuals. Go into the shift supervisor's office, unlock the door and make the call out and let's man the alternate facilities."

The headquarters operations officers' discussions, which are recorded also, contain a number of discussions where the very question is asked by the NRC staff, "Do we know what he has? We have to consider the potential." At that point, the second wave kicks in, if you will, and people start to consider the broader aspects of it.

But until the intruder was found, people did not know and judgments were based on the unknown. So, essentially the response by the licensee and by the NRC would not have been any different had the intruder had different capabilities up to that point.

MR. TAYLOR: I think there's an important

point though. The judgments were based largely on the securing of the vital areas. Is that not correct, Mr. Jordan? It was provided relatively early.

MR. JORDAN: Yes. And I have to say in retrospect and based on the findings of the team, in doing it again I would want to staff a protective measures team and a reactor safety team. Doctor Murley and myself and Bob Bernero responded and were part of the standby team, but we were, in fact, supported by a full security type review, not by a full protective measures support team. So, I think the item that's been pointed out is that both the licensee, the region and headquarters failed to have the next step waiting if in fact there was a more malicious intent.

CHAIRMAN SELIN: Let me follow-up on that. Just choosing as an example the NRC response, not to draw any distinctions between our response and the licensee response, but on your slide 27 it points out essentially what Mr. Jordan has just said, NRC operation center and incident response centers were selectively staffed based on security event. Were they really selectively staffed? In other words, did somebody sit down and make a thorough decision, look at the data and say, "Well, we can selectively staff

as opposed to fully staff," or was it more of a question of some kind of sense that that would --

MR. JORDAN: There are two sides of it. One is that in standby we do selectively staff. But we are staffing up for a contingency. It's my view that we should have been provided the full range of the three sets. Now, when we have a safety event, we do not provide a security team in the center. Absent any indication of a security issue, I think that's correct. But in a security event, I think we should always staff a protective measures and reactor safety and we did not.

CHAIRMAN SELIN: At the risk of driving this into the ground, did somebody think about this and specifically said, "No, it's just a security event. We don't need these other groups," or was it sort of a, "It's a security event. Let's just go ahead with the security support," without specifically deciding not to bring any --

MR. JORDAN: Well, you can certainly point at me. I was, in fact, the executive team member and directed the staff to make a focused staffing in the security area. So, it was an error on my part.

CHAIRMAN SELIN: I'm really not pointing at you, but the question is did you think about it and

decide that that was the right thing to do or did it just seem like the right thing to do without specifically sitting down and considering the alternatives at the time?

MR. JORDAN: We certainly didn't do a pro and con as we should. So, given more deliberation, we should have come to a better -- I should have come to a better answer.

CHAIRMAN SELIN: Thank you.

MR. COLLINS: Proceeding to finish with slide 27, Region I did respond to the site. The Division of Reactor Projects branch chief and the Deputy Regional Administrator responded to the site.

(Slide) The last area of discussion on slide 28, findings and conclusions, these are contained in Section 6 of the IIT Report. Through the charter we covered areas A through I. Start with the first item, safety significance. This is covered in Section 6.1 of the report. The conclusion is that the event resulted in no actual adverse reactor safety consequences and was of minimal safety significance. The intruder challenged the Three Mile Island security barriers and programs and certainly disrupted normal site operations. He was unarmed. He only the protected area. He did not breach the vital area and

the plant was not challenged, either the balance of plant production end or more importantly the reactor and the safety systems in the plant.

(Slide) The next conclusion on slide 30 is the intruder threat characterization. Here we acknowledge that whether he acted at random or to obtain attention, we did not obtain sufficient information to establish a motive for his actions. We do have a follow-on action to attempt to interview the alleger and we will gain perhaps more information then or there's a potential of if he goes for trial for the information being provided at that time.

He did have no history of violence or previous arrests. He was subject to depression. As I mentioned, he had been hospitalized. He had no previous association with Three Mile Island or any nuclear groups and again we did not interview the intruder as part of the IIT process.

(Slide) Under Continued Plant Operation, maintaining power operations was an appropriate decision for this event. This is contained in Section 6.3 of the report. Prior to the event, the reactor was stable at full power. There were no emergency systems out of service. Staffing was per the license. The operators did follow procedure 120213. The

reactor systems emergency safety features, balance of plant production equipment were not challenged. The plant could have been shut down from the control room had that become necessary.

(Slide) The next conclusion under Site Security Response in Section 6.4 of the report, security hardware was functional prior to the event. The individual was detected as he proceeded through the protected area. The staffing was per procedure. Security personnel were found to be motivated and aggressive in response to the event. The protected area barriers, detection system, assessment system, vital area barriers, including access restrictions, functioned as designed during and in response to the event. The guards did respond per approved procedures. Some guards did have beyond required specialized training in the search and find operations and those individuals were used during the search and they proved very effective.

We did note some command and control problems. There seemed to be a lack of structure in some instances in response to the event. There was a reluctance to use certain weapons. The search was conducted before the lead agency for that function arrived. There were other various lessons learned as

a result of the event. Ultimately the security response for the event was appropriate.

COMMISSIONER REMICK: There's a comment in the report that the staff observed that there weren't guards stationed at all vital area doors. Is the inference that there should be?

MR. COLLINS: No, sir. I think it would be probably inappropriate for this team to come to that conclusion. We did, as I mentioned earlier, acknowledge that they do have a contingency plan response to a protected area intrusion, a threat to the vital area. They complied with that process and procedure. In going back and looking at the security plan, the MASP as it's called, and the contingency procedures, the implementing procedures, all of those, there doesn't appear to be a clear goal for that strategy. By that I mean to say there are some conflicts between the strategy of interdicting yourself between the vital area and an intruder, of pursuing the intruder. Those words are in various portions of the procedures. So, I believe our aggregate finding would be that the strategy should perhaps be relooked at to ensure it's current and more contemporary with the types of challenges that we envision with a design basis threat.

COMMISSIONER REMICK: I wasn't quite sure what the intent of that observation was inasmuch as they followed their procedures and so forth. I wasn't quite sure, but it was in that context as you just expressed, confusion over words, what various words mean?

MR. COLLINS: Over that. In addition, I believe I previously mentioned that the response was limited and the access to the doors by this individual in this particular scenario was not necessarily limited. So, although individuals didn't have direction to respond to certain locations, those may or may not have been the appropriate locations had this individual had different intent or different capabilities. So, these are lessons learned under that.

CHAIRMAN SELIN: Please continue.

MR. COLLINS: (Slide) Slide 33 under Operations, Emergency Response and Security Interface. We talked to this briefly before. This is a different version of the safety safeguards issue that's been a concern or been looked at by the agency. There were conflicts that were noted between Operations, Emergency Response and Security. They resulted from the uniqueness of the event and the deviation that was

necessary in some regards from the preplanned response.

CHAIRMAN SELIN: That's the second time you've talked about the uniqueness of the event. What's so unique about the event?

MR. COLLINS: When I say unique, that may not be the right word, but in my own mind what I'm envisioning is a unique challenge to the programs in the way that they interface. You have a plant that's operating at 100 percent power. The operators are responding to that process. They're being asked to support emergency preparedness duties. The emergency control center is typically formulated in the control room. They have functions to perform that were challenged or deviated from as a result of the security aspects of the event. They couldn't get to the resources. They couldn't get human resources.

CHAIRMAN SELIN: But except for the fact that he got in faster because he was in a vehicle, once he was in the turbine room it doesn't strike me that this case was all that different from any case in which you would have to be concerned about a potentially armed intruder where you have the tradeoff between safety and safeguards. I'm not really trying to pick at your words, but I don't see this as such a

strange event if we're concerned about intruders coming into the plant. He got in very quickly because he was in a vehicle, but once he was there, even the fact that this was outside the design basis doesn't strike me as being particular relevant to the situation. It wasn't as if he had somehow found himself in the reactor building or in some peculiar place. The turbine building is a very likely place for an intruder to be if there's an intruder at all.

MR. COLLINS: Yes, sir, depending on the arrangement of the site. It may be the most convenient. It may or may not impact the availability to man the TSC, for example. This site it did, other sites it may not.

CHAIRMAN SELIN: Sure. But when Commissioner Remick first made the point to me about the importance of looking at the tradeoffs between safety and safeguards, I didn't really appreciate his point. But it seems to me that this really makes a very graphic show of things that sound sort of plausible to do from a safeguards point of view can be not the most plausible things to do from an operational safety point of view. If there were an intruder in any of 20 other plants, you might have the same tradeoffs coming.

MR. COLLINS: Yes, depending on --

CHAIRMAN SELIN: And in that sense it's not a unique event, is it?

MR. COLLINS: That's correct. That's correct.

COMMISSIONER REMICK: Following up on that, one of the conflicts that I can see is the case of an intruder threat, it certainly seems logical to lock the vital area doors. If the event had gone another way so that auxiliary operators or operators need to have access to those, I'm not sure which one of the procedures would overrule, the ability to unlock all vital area doors in case of an emergency or requirement to lock them in case of an intruder. It seems to me that there has to be some kind of an optimization of those two needs and I assume that this has not been looked at carefully, but perhaps it has. It's that interface that does concern me, that things that make sense from a security standpoint interfering with the ability of operators to do their job.

MR. COLLINS: There certainly is a hierarchy of responsibilities and safety concerns in that area. Lee and I went to the site recently and we asked an operator, "Could you direct that these doors be opened if you had to have them opened?" and the

shift supervisor was confident that he could. He would call --

COMMISSIONER REMICK: Even in a case like this where you had an intruder and you wanted to lock them all?

MR. COLLINS: Yes. That was his statement. If he needed to get to an aspect of the site to protect reactor safety, he would have that door unlocked and provide for his operators to get there. That's an important consideration for the very reason you mentioned in that the additional layer of vital area protection there were very limited amounts of cards that worked. And people who had keys, and the distribution of keys is limited, were isolated in various areas, some in the control room, some in the auxiliary operator building. Those individuals were told to stay in that building. Now, there was an example where they did have a piece of equipment that they needed to tend to during the event and that required a guard to be located -- the guard escorted the auxiliary operator down to reset the foundation fan and then they escorted him back into the area where he was essentially being told to stay.

So, that provision did work. It did take a guard to do it and potentially distract from

whatever you response you had, but it was workable.

COMMISSIONER REMICK: It reminds me, although completely different, a little bit of the Davis-Besse event, locked doors, keys --

MR. COLLINS: Yes.

COMMISSIONER REMICK: -- who has access.

MR. COLLINS: (Slide) In the emergency response area on slide 34, this is covered in Section 6.6. We've spoken to this area before. The classification was appropriate. There was a call to the Director of Operations and Maintenance during the conduct of that classification. Managers did respond to the site. The Emergency Director located in the CAS area. Notifications and call-outs were ultimately performed using manual methods and then they were backed up with the automated methods. There were delays in the staffing of emergency response facilities.

In the NRC, we acknowledge the finding that we did not fully staff response facilities in preparation to address the broader implications of radiological sabotage.

(Slide) In the area of precursors, we have spoken to a few of these during the discussion today. That's detailed in Section 6.7 of the report. There

were two actual intrusions at this site with vehicles in 1976 and 1980. There have been ten vehicle penetrations that we could find by reviewing records between 1976 and 1989, which may have been the last one up until February 7th. Five of those involved the protected area, three involved failure of brakes. Two were actually vehicle accidents. Four were entries into the owner controlled area.

GPUN has received six bomb threats that were ultimately decided to be hoaxes from March '77 to 1984.

The more applicable precursors are the security event drills as well as the emergency preparedness drills, which we've touched upon during these discussions. But the results of those drills did indicate some preliminary findings that entered into shutting and locking of the control room doors. They're normally shut. Locking of the control room doors, the ability to access vital areas during a security event. There were many lessons learned in the security response having to do with weapons and storage and communications and equipment, command and control briefings, those types of things that had been detailed in the past.

COMMISSIONER ROGERS: And no action taken

on them?

MR. COLLINS: We did not go into great depth on the corrective action system and the status of the corrective action system. Some of those in a cursory review had resulted in a change to the program. We saw at least a facet of that same issue. Maybe not the same issue, but at least a facet of the same issue in the way that this event challenged those programs. In the security area, we were not able to follow-up on those because there was somewhat of a lack of a structure as far as tracking and follow-on to those types of findings. That issue has been passed on to Region I for follow-up.

(Slide) In the regulatory aspects on slide 36, this is detailed on Section 6.8 of the report. This area deals primarily with the definition of the requirements as far as protecting the plant in the physical protection system. We acknowledge that currently there is not the direct consideration of a vehicle to breach protected area barrier. In this event, it demonstrated that the use of a vehicle reduced the amount of time that the security force had to assess and respond to the event. Essentially the intruder, as a result of the method of entry, was afforded time to get to a vital area had he so had

that intent, which would have allowed him to be there before the contingency response by the licensee.

The NRC' security inspection program does not evaluate the type of program that the licensee used to respond to this particular event. We look at the program portion of the licensee's physical security systems and their processes in a component fashion. The program now discourages ad hoc tests, which is probably appropriate. But ultimately we do not have the type of sequence logic tests that you may be familiar with from the hardware portion of the plant where you have a signal and then you have the activation in response. Our inspection program does not follow that type of logic in the security area. We do have some non-regulatory initiatives. In the past we've had the RER program that was conducted at this site, I believe in 1986.

CHAIRMAN SELIN: Use whole words.

MR. COLLINS: Regulatory effectiveness review. Excuse me. And we do have a more contemporary application of that program which is being done at selected sites. It had not been done at this site, but I believe the site was preparing for that type of review.

CHAIRMAN SELIN: Before you get off that

slide, I feel moved to comment that although both those points are true, the thoroughness of your review has turned up that most of the questions you've turned up really didn't depend particularly on there being a vehicle once you stipulate that somebody got into the turbine room. Although the implications for the design basis are of course important, you raise many interesting questions which are appropriate to a whole range of ways of penetrating the building. That's something of a surprise to me. I think that's a sign of very good work on your part, but it's not what I had expected three weeks ago when we were first talking about this work.

MR. COLLINS: I think ultimately we have a staff action which will address this area, but in conjunction with defining the requirement, the staff action encourages the formulation of guidance to the industry as far as the expectations for the application of that guidance.

(Slide) Continuing with the regulatory aspects on slide 37, the charter focused on this area and that was the decision to maintain stable, stead-state reactor operations. It was in accordance with an approved procedure. In looking at the procedure, in looking at the event, it was appropriate for this

particular event. An IIT finding indicates that there may be a need for qualifying guidance to the operators and ensure that the best judgment of the operator is utilized in using the guidance that's in the procedure.

By that I mean that the procedure currently states to maintain the plant at power, to monitor the plant and if the plant's instability is noticed as a result of the intruder, then the plant is tripped. It's also acknowledged that the operators have the responsibility, the licensed operators, to protect the plant and they have the responsibility and the obligation to trip that plant any time they believe it's appropriate.

By this decision here, we believe that there should be some type of a consideration for guidance, lines if you will to operate within in formulating those types of judgments. They shouldn't be strict guidance to maintain the plant at power and they should perhaps be strict guidance to trip the reactor in each case, but there are judgment calls within those lines that perhaps would warrant staff formulation and if necessary provide them to the industry.

COMMISSIONER REMICK: Did the team talk to

ROs or SROs about this point, whether they felt comfortable keeping the plant operating versus shutting it down in this specific case?

MR. COLLINS: Yes, sir.

Lee?

MR. MILLER: We talked to the shift supervisor about it and several of the management personnel.

COMMISSIONER REMICK: And?

MR. MILLER: They determined that for this case it was correct. They felt confident that --

COMMISSIONER REMICK: Not only correct, but they felt comfortable with the plan operating rather than trying to shut it down at this time. Is that --

MR. MILLER: Yes, sir. They expressed the concern that they may have felt uncomfortable in shutting it down.

COMMISSIONER REMICK: Okay. Thank you.

CHAIRMAN SELIN: Let me go through this logic as I understand it and you tell me if it's right. They're saying that there was no immediate threat to the operation that they could see on any of their instruments that if they were to shut down the plant in a gradual fashion that would have required

them to have access to the secondary building, to the turbine building which would raise all kinds of vulnerabilities of people going in and out and perhaps bumping into these intruders and if they were not to go into the secondary building, in other words if they were going to assume the worst and shut down the plant without going to the secondary building, they could always do that and therefore there was no reason to do that preemptively.

MR. MILLER: Yes, sir.

CHAIRMAN SELIN: Is that basically the argument that they made?

MR. MILLER: Yes, sir.

MR. JORDAN: Could I add to that argument?

CHAIRMAN SELIN: Please.

MR. JORDAN: A plant that's in a transient, shutting down or starting up, you have instrumentation changes all the time. A plant that's in steady state, if something is perturbed, a piece of equipment is affected, then one would be able to detect it much more easily than a plant that's in a transient.

COMMISSIONER CURTISS: Could I follow up on that? Several weeks ago when we last addressed the question, I got the impression that the view was

somewhat more neutral on the issue of whether they took the appropriate action with respect to the plant. That is to say, if they had decided to shut the plant down that might have been reasonable. If they had decided to leave it operating, that would have been reasonable. It was an issue on which we had not taken a position at that point.

Do I infer from what you're saying here that we've not only concluded that the action that the licensee took was in fact a reasonable one from the licensee's perspective, but, in making the decision ourselves, if we were to make that decision, we believe the preferred course of action in an event like this is to leave the plant operating, given the facts as we now understand them?

MR. JORDAN: It would be a personal view on my part. Doctor Murley and I and Bob Bernero were supporting Tim Martin in his review, since the region had to lead in the response, and we were comfortable at the time with continuing in operation.

If one were projecting other scenarios, there certainly are other scenarios where one would be less comfortable with continued operation. But given this one of an intruder whose intent is not known, that makes sense to me today as much as it did during

the response.

MR. TAYLOR: I agree with that.

COMMISSIONER CURTISS: The action that the licensee took in this case was, A, reasonable and, B, now that we know the facts, was the preferred course of action?

MR. TAYLOR: Yes.

MR. JORDAN: Yes, for that scenario.

COMMISSIONER CURTISS: For this set of facts, yes.

CHAIRMAN SELIN: It took the best brains in the Commission a month to come to that conclusion. The fact that he had a few minutes to make that decision --

MR. TAYLOR: No, we actually talked about it that day. We did talk about it that morning. There were no signs of disturbance to the plant and then it seemed the collective wisdom of the senior management in NRC that was the right thing to do, and I think we reinforce that.

MR. COLLINS: Just to complicate their position, in 1989 their procedure required that the plant be tripped.

CHAIRMAN SELIN: And they changed the procedure.

MR. COLLINS: Changed the procedure.

MR. TAYLOR: That's why we need to look at procedures like this.

CHAIRMAN SELIN: And we didn't review that position they had in 1989 and think about it and at that time believed that that was also the right procedure? We didn't know about that procedure?

MR. COLLINS: I can't speak to any reviews that were done. We went back -- the IIT team went back and looked at the process that they used to change their procedure and we do have a question that's being followed-up by the region on that process. But either of those -- the illustration I'm trying to portray is that there are two sides of the line and in '89 there was one side and --

MR. TAYLOR: This gives rise to the consideration of guidance and discussion with the industry to define the appropriate guidance.

MR. COLLINS: (Slide) Continuing on with the regulatory aspects on slide 38, we'll talk to each of these points. Essentially, it's the need to deviate from approved license requirements during an event as illustrated in two programs during this particular IIT review. It's in the security aspect and in the emergency preparedness aspect. Both of

those are follow-on actions.

COMMISSIONER REMICK: I had some questions about comments or observations that were made. It says "compensatory alternatives were not considered." Where in 50.54(x) or (y) does it require -- it does say something about other alternatives are not readily available or something like that. How do you know that in the people's minds this was the only course that was obvious to them?

MR. COLLINS: I think the best example of that perhaps is the manning of the TSC, in that initially the emergency response organization was not provided to man the TSC. And that's appropriate, because the TSC was not accessible. That decision process in the course of the review, as we understand it, did not include the judgement of "I need to provide an alternate TSC and, although I can't manage to man and facilitate for the original TSC, there is an acceptable alternative and when I call people out, which I should do right away, I will send them to that alternative place to support the TSC." You're deviating from the plan, because the plan tells you where your TSC is and what it looks like. But at the same time, you're providing an acceptable alternative given the conditions that you're dealing with.

COMMISSIONER REMICK: But where is this acceptable alternative referred to? Is it in guidance?

MR. COLLINS: 50.54(x).

COMMISSIONER REMICK: You're looking at the last few lines, I guess?

MR. COLLINS: Yes, sir, "that can provide adequate or equivalent protection as immediately apparent."

Again, this topic --

COMMISSIONER REMICK: Not very well defined. I mean, that's subject to interpretation I would say.

MR. COLLINS: And that's a staff action to provide the review for that guidance --

COMMISSIONER REMICK: I see.

MR. COLLINS: -- not only in that measure but in other aspects of both of those statements.

COMMISSIONER REMICK: You had another statement that the NRC Operations Center was not notified that they had implemented 50.54(x) and (y). Where is that stated in the requirement?

MR. COLLINS: That's in Part 72.

MR. GARCIA: 50.72.

MR. COLLINS: 50.72.

COMMISSIONER REMICK: 50.72.

MR. COLLINS: Yes, sir, which requires-- the words are "immediate notification," but not to interrupt the response to the event.

COMMISSIONER REMICK: I see.

MR. COLLINS: And there again is a difference of interpretation between the licensee view of reporting requirements and the staff view of reporting requirements. It shows a need for understanding and clarification, providing guidance to the industry.

MR. JORDAN: I think I'd like to comment.

The 50.54(x) was in fact developed out of the TMI lessons learned and it was an enabling regulation that allowed a utility to respond to a markedly different circumstance than they'd had and not to do something stupid because the procedures said to.

The staff over the years has looked at guidance that we could provide and the guidance that we have attempted in the past never was published because it further encumbered it rather than provided flexibility, so this is an opportunity to look once again. Is there a way we can provide guidance that will facilitate its use in an emergency and yet not

encumber it even further with complications?

So it's a very touchy subject. We don't want to cause industry to stop recognizing the need. They may have to deviate from procedures or tech specs in a severe emergency and yet provide something that is equivalent in the level of protection.

COMMISSIONER REMICK: I must admit I wasn't thinking of the TSC. When I was thinking about that, I was thinking about the relaxation of some of the security requirements, apparently, that they did not go through the complete process with the Pennsylvania State Police cars and things, if I recall, and I thought, well, what alternative are there when you're having a flood of people coming on and you want them on and they're there to help you?

MR. COLLINS: Yes, sir. In those cases there would not be an alternative. It would be a decision making process that the more important priority right now is responding to the event and we will suspend routing type of operations and suspend routing types of processes, and that would be appropriate.

COMMISSIONER REMICK: Where I get concerned, these decisions are obviously being made like that in the case of emergency and I'm not sure

what our expectations are that people consider alternatives. I hope we're not expecting them to document these and go through a lot of approval chains and so forth when they have to be making these decisions.

MR. TAYLOR: No, we wouldn't want them to.

MR. COLLINS: No, sir.

COMMISSIONER REMICK: And that's the call you have, I think, that you're trying to define. I understand what you're saying.

MR. COLLINS: (Slide) The last slide on page 39 has to do with communications during the event. Communications were vital in many aspects of the response. There were numerous issues in which communications issues were vital. Some of the findings, for example, there is the decision to move the central alarm station into -- move the emergency control center rather into the central alarm station, provided for restricted phone access just because of the physical location. There was an off hours phone restriction that was taking place at the licensee's facility as the result of a phone modification that was done in December 1992 which restricted some of the capabilities of the outside lines.

The control room staff who ultimately

placed the notifications and the call-out phones, use of phones, were not trained in that aspect because of the isolation to the automated equipment and the inability to provide trained personnel in the control room.

There were a number of findings in radio equipment, radio discipline of the SPOs. Ultimately none of these played a significant role in the event. It's an accumulation, if you will, of lessons learned as a result of the event.

Also in the NRC area, the ERD system, had a failure in the ERD system. We were not able to provide linkage due to a modification of the phone lines that took place on site.

COMMISSIONER REMICK: Has that happened in any other event where we haven't had access to ERDS for mechanical difficulties or electrical difficulties?

MR. JORDAN: Not in association with an event. As you're aware, the ERDS was in the process of being fully implemented at that particular time. The middle of February was when the requirement became effective. So, surveillance of the connections had not been implemented. So, once again, I'm embarrassed that ERDS as a part of my function did not work, was

not available. We have now canvased the other utilities' connections and found several more that in fact were defective and have corrected those and have begun now the periodic surveillance test.

COMMISSIONER REMICK: The way this event went, that was of no significance to NRC staff, I assume, not having access?

MR. JORDAN: It would have been a comfort to have the data and it was not a necessary thing for this response, but it would have been a comfort.

COMMISSIONER REMICK: Were you getting information from the control room on status?

MR. JORDAN: Yes.

COMMISSIONER REMICK: From the TSC if it had been a --

MR. COLLINS: The resident inspector and the Commonwealth representative were in the control room.

That concludes my prepared presentation.

CHAIRMAN SELIN: I personally don't have detailed questions. I have some general questions I'd like to ask you, but I'm going to hold off until we hear Doctor Long before I'll put those to you. So, would you please stay at the table until the Commissioners finish their questions of Doctor Long?

MR. TAYLOR: Mr. Chairman, while Doctor Long is coming to the table, I would note that as with all IITs, this is a product of the team and now there will be considerable follow-up in the staff and we will be advising the Commission of our actions.

CHAIRMAN SELIN: Ken, do you have a question?

COMMISSIONER ROGERS: Just -- I don't know. Did the reports say how long the control room doors were locked and how long the vital areas were in the high security mode, how long that period was in hours?

MR. COLLINS: We acknowledge in the report when the lock down was complete. That's safeguards information. We can provide that to you.

COMMISSIONER ROGERS: Yes. Yes.

MR. COLLINS: The lifting of that we did not provide in the report, but we can get you that information if you'd like.

COMMISSIONER ROGERS: No. I'm curious about that period, how long that period was when they were in a high security mode.

MR. COLLINS: Right. It was in for at least four hours.

COMMISSIONER ROGERS: Yes.

MR. COLLINS: I can tell you that, knowing when it started and knowing when the intruder was initially found and probably for a period following that until the area was ultimately cleared.

COMMISSIONER ROGERS: Well, the reason I think it's of interest is -- and I don't know if it's possible to do this, but it would seem to me that it would be interesting to know what the result of a PRA done on the plant would be with those areas out for that length of time, to see just how significant the overall bottom line safety of the plant was degraded as a result of this event. Not because of the actual intrusion, but because of the operation of the safety systems, the physical security systems rather.

MR. JORDAN: Yes. I can give an educated guess. It would be so small as not to be able to be calculated in terms of you would be losing or delaying operator response which would be a very, very small number. We can make an attempt to assess it.

COMMISSIONER ROGERS: Okay. All right. But that's your --

MR. JORDAN: Yes, sir.

COMMISSIONER ROGERS: -- thinking on it?

MR. TAYLOR: We'll take a look at it.

MR. COLLINS: So the only difference would

be that one of the control room foremen is only an outside control room foreman. He was in the control room at the time, not out in the facility. Whether that makes a difference in response to the event --

COMMISSIONER ROGERS: Yes.

MR. JORDAN: We'd assume a delay in his response time.

COMMISSIONER ROGERS: Yes, right. Well, I might like to talk to you a little bit more about that at some time.

I think that's all.

CHAIRMAN SELIN: Commissioner?

COMMISSIONER CURTISS: Before Doctor Long begins, I just have -- I don't have any questions, but a couple of observations.

First, for the team, I thought the report was extremely well done for this particular event, but more generally it's a testament to what I think is the independence and objectivity of the investigation process for events like this. This event once again, in my judgment, points to the high caliber of the incident investigation program that we have in place.

Picking up on Mr. Taylor's point, as we've discussed, the staff actions that you are considering at this point, it's clear that as you pull each one of

those threads, in some respects they're connected to significant policy questions, one of which the Chairman has indicated we will address at a subsequent meeting. But as he's also properly pointed out, a whole host of policy questions.

It would be my personal preference that when you reach the point of formulating the action plan with the recommendations contained therein, that unlike what the previous practice has been, rather than simply advising the Commission and embarking upon that effort, that that be sent up for some sort of affirmative Commission approval. It's obviously a question that the majority, the Commission as a whole needs to address. But the policy implications here I think are significant enough that some sort of affirmative action needs to be taken so that this is an agency action plan and not simply a staff action plan.

But with that, I thought the report was very well done, Sam.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: I would just add my compliments to the staff too for a job well done.

CHAIRMAN SELIN: I'll tip you off. I will also have nice things to say.

Doctor Long, welcome.

DOCTOR LONG: Good morning. Mr. Chairman, in light of the schedule that I know you're under, I have provided to Secretary Chilk a statement which I would offer for the record. It's available to the public as well through our Communications Division. I propose to make very brief comments.

CHAIRMAN SELIN: Thank you.

DOCTOR LONG: First, our president, Phillip Clark was unable to be here and he sends his regrets, but he also sends his appreciation for the thorough, professional on-site review of the IIT team. They were well prepared and I think we worked effectively with them. We appreciate that effort.

We have completed our review as well and in a quick review of the IIT report, which was all we've had time to do to this point, we find that the conclusions are generally consistent with those that we have reached. In addition to a detailed study of the event, my information provided to you indicates we did two other studies. One was a study of enhancements to the physical security of the site. I believe you heard about those with Mr. Clark at the Senate hearing, and the other was a study of possible sabotage events that could have been initiated and

whether there were other vulnerabilities that we needed to consider. We have found that in both those efforts there are things we did have to learn. We have many things to learn from this event and we will continue to work with the staff to do our best to respond and to make that information available to others so that they can learn it as well.

With that, I'm available for questions.

CHAIRMAN SELIN: Thank you very much, Doctor Long.

I did want to say I thought this was a terrific review about just getting a lot deeper than was initially apparent. This was a rich mine, is a rich mine of information and review.

What I'd like to do is play three impressions on you and ask you your comments on them. I know that they're not strictly speaking the scope of the IIT, but you people know more about this event than anybody else and I'd like to get your impressions.

Also, I'd like to let Mr. Jordan off the hook, that we just picked that particular decision because it was so clear. The fact that you're so painfully honest with yourself and everybody else should not make you feel vulnerable to criticism on

the performance. This is clearly an area in which the Commission and the staff and the licensees haven't spent as much time and effort as elsewhere. I think your comments make it clear that the richness of response and the amount of experience to be drawn on in security-related areas is just much more shallow than it is in normal plant instances and therefore we have to take these thankfully very few incidents and do a lot more work on learning from them than we do with the normal trips and the normal events that occur in plants.

My first impression was that there was really a great deal of ad hocism in the response to the penetration. I'm not clear if that's because the developed procedures just didn't turn out to fit the situation very well or if the people who were making these decisions weren't particularly well informed on what the developed procedures are. That's why I was asking Mr. Jordan these questions. Did you specifically decide to reject the developed procedures or did they just not seem to fit the situation as you got into it or what was the occasion for that? An acceptable answer is, no, I'm wrong, that they weren't so much in the ad hoc area but that's the impression I got.

The second impression is that there seemed to be a lot more concern for what you, I think, call the security threat. Namely, would this fellow do some harm to us or would he hurt the plant? And keeping foremost the possibility of radiological emergency, the Commission has made it very clear that our primary responsibility is radiological emergency and the protection of the general public, not per se the protection of the people or the property on the plant. And yet that doesn't seem to have been the kind of thing that was foremost in people's minds as they were going across their minute to minute activities and I'd like you to comment whether that impression is correct or not.

The third is, as I said before, I have more of an appreciation for Commissioner Remick's point about the importance of trading off between safety and operational considerations versus safeguard considerations. It doesn't seem that this is a case where more security is necessarily better, but that one has to keep the safety consideration, the operational considerations in the forefront at all times and take a look at the safety decisions in that light and maybe there's a lot to learn not just for Three Mile Island but in general in that particular

area.

In fact, my opening comments probably are wrong. I said that the conclusions from this study should be put into the staff's review of the design basis threat. But the more I hear you talk and the more I reflect on this, it seems to me that the design basis threat, while not irrelevant to the study, is really only one part of what is called for and that either the review that we've asked for should be broadened to include the kind of findings you had or it should be complimented by another review that would look not just at whether we should worry about the design basis threat but to what degree should people try to map out in detail their responses to various threats versus giving general guidance and relying on the good sense of the emergency staffs that have to operate.

I know that's a fairly vague and fairly broad set of charges to you, Mr. Collins, but I would be pleased if you or the other members of the team would try to either verify or refute these general impressions.

MR. COLLINS: I will attempt to speak for the team and we'll see which direction it goes.

As far as the ad hoc decisions, I would

acknowledge that many decisions had to be made outside of the normal processes and plans which are provided for an envisioned set of circumstances. The NRC, the licensees train based on those sets of plans. Not that they're structured, but they foresee a certain set of circumstances.

In this particular event, there were circumstances brought to bear which had perhaps been considered before in various parts or perhaps even altogether in a limited exercise. But the overall impact, particularly the personnel threat and the decisions that individuals personally make, and I can't speak for them, couldn't do that, but the decisions that are made based on that, will I go out into the plant and open up that door, will I open up this fire door and make a call knowing that there's only another vital area between.

Those types of circumstances can probably not be envisioned or planned for, but a set of judgments -- I believe in your statement as you concluded, a set of judgments can be provided so that individuals have the tools that they need to make the right decisions.

Ultimately for this particular event, the decisions were made to support the response to the

event for what the event played out to be in hindsight. The lessons learned would indicate that some of those judgments may not have been sufficient had the event escalated into a potential radiological sabotage condition.

So, I think there is a place for -- ad hoc may not be the right word, but there is a place for alternative decisions to be made because you cannot envision every circumstance that's going to take place, particularly in an event which excludes portions of the plant, provides for limited access or different type of response than is trained. But I think that those judgments need guidelines and those guidelines need to be provided.

CHAIRMAN SELIN: Could I just press you a bit? What I hear you saying in not so much that the people were inadequately trained in the procedures, but that the range of scenarios or the type of training may in retrospect have turned out to be too narrow for the situation that came up. Is that putting words in your mouth or is that --

MR. COLLINS: I think that's the majority of it. The other is ensuring that the actual conditions that are provided, the training climate if I could call it that, is realistic. In this case, the

training climate for security is very difficult to provide realistically until you're actually put in those circumstances.

CHAIRMAN SELIN: But what are we to make of the precursors that were ignored? There were opportunities of learning these lessons earlier that appeared to have been passed up. What are we to make of that?

MR. COLLINS: There's probably more than one answer for that, but I think to bear directly on my previous statement, they could have been addressed effectively for the conditions that were envisioned. But given this event when people have to make those types of decisions that they're called upon as an individual or an individual is asked to make a decision for a group, "I'm going to allow a group of five people who I know very well to go into this turbine building to man the TSC knowing that there could be someone out there who could be a treat to their life." Is he going to be able to make that type of decision? In the exercise, the decision was made, "We'll allow the people access." When the actual threat took place, the decision was made not to allow them access.

So, some of that is realistic expectations

of human performance, insuring that that part of the puzzle is brought to bear.

CHAIRMAN SELIN: Anybody want to add anything?

COMMISSIONER REMICK: Mr. Chairman, if I just might add, I'm always reminded in occasions like this of somebody I like to quote, and that's former General Dwight Eisenhower to said, "Plans are worthless. Planning is everything." The Commission on a number of occasions has made some major decisions in which it's pointed out that things like emergency planning and so forth, that we do the best possible job of acquiring information, having it on hand, considering alternatives to the best of our availability, making sure we have communications and so forth, but that we have to adapt to the individual circumstance that you can't anticipate in advance every possible challenge or event that comes about.

I agree with you that ad hoc might not be the right word, but people have to have the flexibility to face those particular circumstances and make the best decisions that they can in a very short period of time generally.

CHAIRMAN SELIN: Thank you.

How about going on to the second question

about the relative emphasis on the possibility of a radiological emergency as opposed to what you might call the security considerations in the narrow sense?

MR. COLLINS: There was a focus initially in the event on the security aspects of the event and to some extent the programs that we've reviewed focused on industrial sabotage rather than radiological sabotage. There was a general expression that radiological sabotage is dealt with with the emergency plan rather than perhaps by the security organization or even in some cases by operations.

I think there was some instances where limited communication between operations and security provided some missed opportunities for vital area searches early into the event, for example.

I think the ideal response and the ideal security contingency plan would assume radiological sabotage until it's proven otherwise. In many cases it's like the emergency preparedness response. It's an all or none. If you don't know, then you have to assume the worst where helping the impact to health and safety of the public is assumed and then you back off from that line if it's appropriate.

In the case where you have an individual whose intent is unknown and his capabilities are

unknown, you have to rely on various systems to conclude his industrial sabotage where we are or is there a potential for this event to escalate even in an insidious way. Given that the individual is captured, he may have left something behind.

So, in my mind, this is somewhat akin to the emergency response where the contingency plans and the response should preclude radiological sabotage and by that method deal with any subset, whether it be industrial sabotage or attempted radiological sabotage in the process of mitigating the worst case.

I think in the particular case that we looked at, there was a transition that took place in the '70s, early '80s, even in the regulatory sense, from industrial sabotage to radiological sabotage. The design basis threat was defined, it was put into the plans and many of the verbiage from that period is still in the procedures as far as the focal point of the program, the intent of the program.

So, there is a little bit across there between are we responding to an industrial sabotage threat and if the primary plant is affected then the emergency plan will take care of that. Or is the intent of the security contingency plan to dovetail in with the prevention and perhaps even the mitigation of

radiological sabotage? That is an area that in the staff actions we believe warrant staff guidance.

CHAIRMAN SELIN: The reason I think that's so important to stress is that in our nuclear power plants we always have the tradeoff between events that are much more likely but which have much more limited consequences. In a day to day, you tend to make a decision based on what's more likely rather than what would the consequences be. You know, to protect equipment that's likely to be damaged in emergency procedures as opposed to sacrificing the equipment to keep up in the very unlikely event that some radiological damage -- either protect the people or the property in the turbine room because it's more likely this fellow is going to do more harm there rather than to say although it's very unlikely if there were some damage done in the primary area, in the vital area, the impact would be much greater. One has to keep stressing, as unlikely as it is, the consequences are much greater that the radiological questions have to be asked first.

It's not that there's a label between industrial sabotage and radiological sabotage, but start first with the unlikely but really awesome type of events and then work down to the more likely --

DOCTOR LONG: Chairman Selin, may I comment on your second issue?

CHAIRMAN SELIN: Yes.

DOCTOR LONG: While I think the IIT report acknowledges, for example, that the foreman assigned people to watch the consoles very closely, looking for any equipment malfunction, which is clearly a focus on the protection of health and safety of the public, and a concern about radiological consequences, and that happened immediately. And I know that in the discussions between the emergency director, the site director of operations and maintenance and the security people in deciding on which vital areas to protect and which equipment to be concerned about, the site operations director was very focused on which equipment, if damaged, could cause us to have difficulties in a plant shutdown.

Then clearly, as you team has acknowledged, as time went on we more and more became focused. Our response team in Parsippany as well as our response team in the emergency off-site facility began to prepare for monitoring teams to be put out. They began to look at what kind of things could happen so that we would be prepared to indeed protect the health and safety of the public.

COMMISSIONER REMICK: Mr. Chairman, if I just might, your mentioning of the labeling, I thought I had an understanding of some of the terminology, but I must admit at the moment I'm confused between the various terms that we've used here in the report like radiological sabotage, industrial sabotage, plant safety, personnel safety, industrial safety, safeguards and security.

If the staff knows of any easy way of educating me where the bins are and what are the bounds on those bins, I would sure appreciate it in the future that you educate me. I'm confused at the moment.

MR. TAYLOR: I'm glad you're giving us time to do that.

CHAIRMAN SELIN: Commissioner Remick asking you to educate him is like Socrates asking his class to explain to him why --

MR. TAYLOR: That's why we're not immediately responding.

CHAIRMAN SELIN: Right.

COMMISSIONER REMICK: Thank you.

CHAIRMAN SELIN: Commissioner Rogers?

COMMISSIONER ROGERS: No, thank you.

CHAIRMAN SELIN: Commissioner Curtiss?

COMMISSIONER CURTISS: Nothing.

CHAIRMAN SELIN: Commissioner Remick?

COMMISSIONER REMICK: I had two questions of Doctor Long. It's pleasant to see him, a long, long time colleague from Central Pennsylvania.

I asked a question of the staff earlier, a precursor event on 16 March 1989. My impression of the words in the report were that the doors that they were talking about were hypothetically emergency response people going in the control room might not have had access because there was not a guard to leave them in there. It was the vital area doors to the general control room, not the fire safety doors. Am I correct or not?

DOCTOR LONG: Commissioner Remick, as I understand it, and one of the things we've found, the IIT has spent more time looking at precursors than we have internally and we need to do more effort in that area. But my understanding of that particular event, they were not the vital area doors, they were the fire doors.

COMMISSIONER REMICK: Oh, I see.

DOCTOR LONG: And there was a sense that somehow you had to have a guard to control access in and out of the control room.

COMMISSIONER REMICK: I see. Okay.

Another question. In my past I have talked to a number of operators that have expressed concerns about a lot of security personnel with weapons and that they felt that this was affecting their personal safety. I assume in this particular event the operators were very happy to have armed security guards helping them. But did anybody express concern through this of their safety from the fact that there were not the intruder but other people with weapons? Any indication from operators?

DOCTOR LONG: Not to my knowledge.

COMMISSIONER REMICK: Okay.

DOCTOR LONG: The one thing we did find within a day or two of the event, we had a lot of people now exhibiting a stress syndrome that is typical of these cuttings, where they began to worry about their own safety, had you the company adequately protected us, the aux operators. What if I had been there? How would I have made a decision? I think much of the discussion you've had this morning reflects that difficulty. As people deal with this in a real way, they don't always make the same decisions that they would make when they're drilling it.

COMMISSIONER REMICK: That's all I had.

CHAIRMAN SELIN: Fine.

I'd just like to summarize that even -- I said this jokingly before, but even with such high-level intense review by so many people over so much time of what happened very quickly, pretty much the responses held up quite well.

Where there are problems, they tend to be more problems of sort of attitude and -- not attitude, but putting people in the right disposition and thinking about things in the broadest sense, not the snap decisions that were made at the time. The proper emphasis was done before an all out search for the intruder. The vehicle was examined to see if it was dangerous or not. The controls were checked, the access to the vital area was checked. There are questions more about are the right people continuing to have access to the vital area, are you zapping out the people you would like there at the time? These are more long-range questions then they are to do with the performance of the people at the site at the time.

So, we thank you very much for this review and there's going to be a lot of work to be done in making sure that we draw the maximum benefit from the information that you've provided.

Thank you very much.

(Whereupon, at 12:01 p.m., the above-entitled matter was concluded.)

CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting of the United States Nuclear Regulatory Commission entitled:

TITLE OF MEETING: BRIEFING BY IIT ON UNAUTHORIZED FORCED ENTRY INTO THE PROTECTED AREA AT TMI-1

PLACE OF MEETING: ROCKVILLE, MARYLAND

DATE OF MEETING: APRIL 6, 1993

were transcribed by me. I further certify that said transcription is accurate and complete, to the best of my ability, and that the transcript is a true and accurate record of the foregoing events.

Carol Lynch

Reporter's name: Peter Lynch

NRC COMMISSION BRIEFING

INCIDENT INVESTIGATION OF UNAUTHORIZED FORCED ENTRY INTO THE PROTECTED AREA AT THREE MILE ISLAND UNIT 1 ON FEBRUARY 7, 1993

APRIL 6, 1993

SAMUEL J. COLLINS
INCIDENT INVESTIGATION TEAM LEADER

INCIDENT INVESTIGATION TEAM

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TMI IIT

CHARTER

- EVALUATE CONDITIONS PRECEDING EVENT
- EVENT CHRONOLOGY
- EVALUATE EVENT RESPONSE
- EVALUATE EMERGENCY RESPONSE
- EVALUATE REGULATORY PROCESS
- SAFETY SIGNIFICANCE
- INTRUDER BACKGROUND AND THREAT CHARACTERIZATION
- EVENT PRECURSORS

IIT SCHEDULE

FEBRUARY 7, 1993	EVENT IIT FORMED
FEBRUARY 8, 1993	IIT CHARTER ISSUED IIT MEMBERS ARRIVE MEETING AT SITE, REGION I, IIT LEADER
FEBRUARY 9, 1993	IIT ENTRANCE
FEBRUARY 10-19, 1993	ONSITE INTERVIEWS AND ACTIVITIES
FEBRUARY 20-29, 1993	NRC STAFF INTERVIEWS
MARCH 3-29, 1993	REPORT PREPARATION

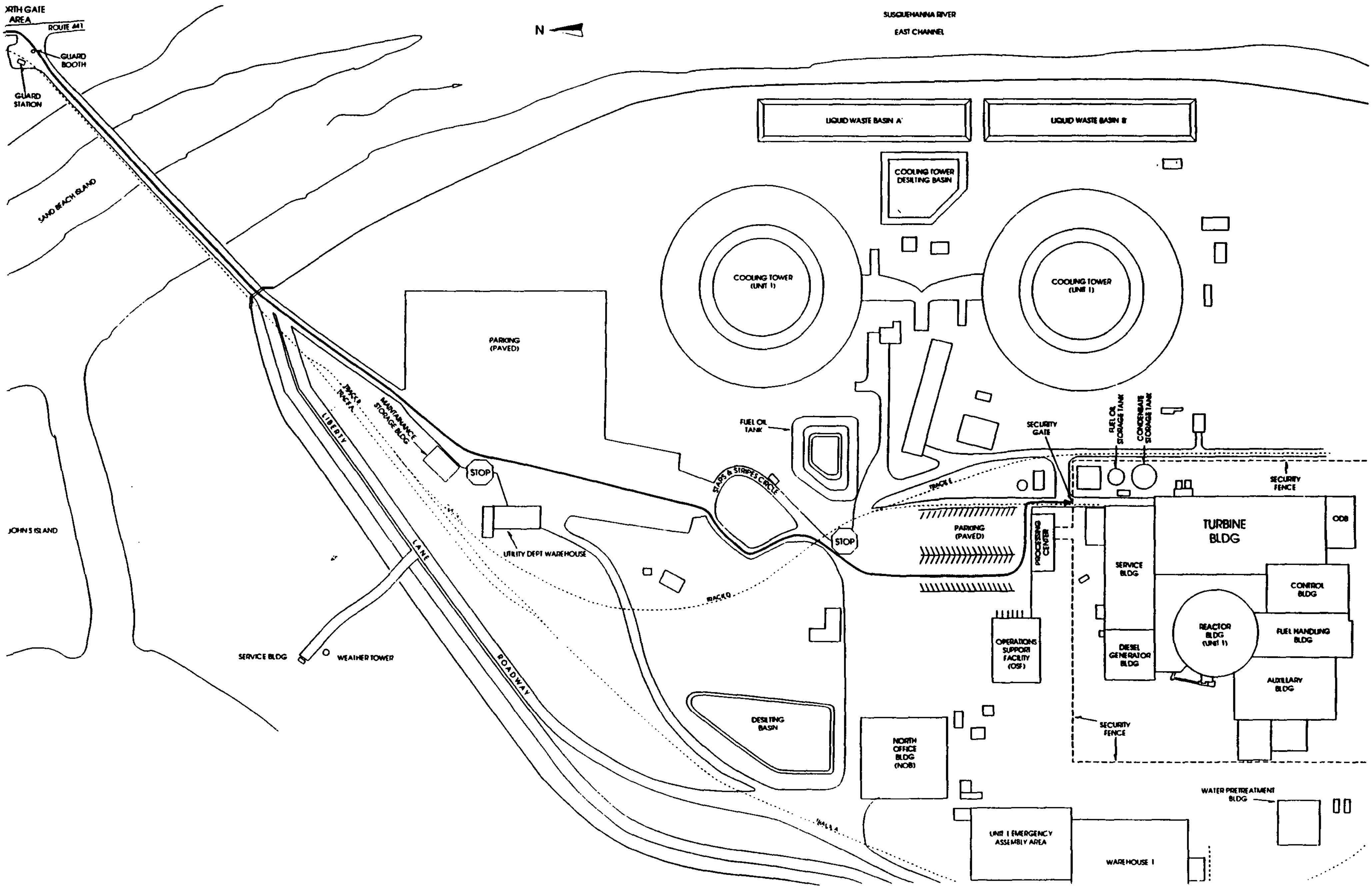
AGENDA

I. VIDEO OF INTRUDER PATH

II. SEQUENCE OF EVENTS

III. RESPONSE TO EVENTS

IV. FINDINGS AND CONCLUSIONS



ORTH GATE AREA
ROUTE 441
GUARD BOOTH
GUARD STATION
SAND BEACH ISLAND
N
SUSQUEHANNA RIVER
EAST CHANNEL
LIQUID WASTE BASIN 'A'
LIQUID WASTE BASIN 'B'
COOLING TOWER DESILTING BASIN
COOLING TOWER (UNIT 1)
COOLING TOWER (UNIT 1)
PARKING (PAVED)
FUEL OIL TANK
SECURITY GATE
FUEL OIL STORAGE TANK
CONDENSATE STORAGE TANK
SECURITY FENCE
MAINTAINANCE STORAGE BLDG
STOP
TRACK B
TRACK A
LIBERTY
LANE
ROADWAY
STARS & STRIPES CIRCLE
TRACK E
STOP
PARKING (PAVED)
PROCESSING CENTER
TURBINE BLDG
ODB
SERVICE BLDG
CONTROL BLDG
UTILITY DEPT WAREHOUSE
TRACK D
REACTOR BLDG (UNIT 1)
FUEL HANDLING BLDG
JOHN'S ISLAND
OPERATIONS SUPPORT FACILITY (OSF)
DIESEL GENERATOR BLDG
AUXILIARY BLDG
SERVICE BLDG
WEATHER TOWER
DESILTING BASIN
NORTH OFFICE BLDG (NOB)
SECURITY FENCE
WATER PRETREATMENT BLDG
TRACK A
UNIT 1 EMERGENCY ASSEMBLY AREA
WAREHOUSE 1

I. VIDEO OF INTRUDER PATH

(3-MINUTE PRESENTATION)

- SITE ENTRY, TRAVEL THROUGH OCA
- DAMAGED GATE 1
- TURBINE BUILDING
- VEHICLE
- PATH TO AREA INTRUDER HIDING PLACE

II. SEQUENCE OF EVENTS

A. INTRUDER BACKGROUND

B. INITIAL CONDITIONS

C. CHRONOLOGY

II. SEQUENCE OF EVENTS

A. INTRUDER BACKGROUND

- 31 YEAR OLD MALE, LIVES APPROXIMATELY 56 MILES (90 KM) FROM TMI SITE
- HISTORY OF HOSPITAL ADMISSIONS, LAST RELEASED JANUARY 22, 1993
- NO PERSONAL ASSOCIATION WITH TMI

II. SEQUENCE OF EVENTS

B. INITIAL CONDITIONS - SUNDAY, FEBRUARY 7, 1993

- SITE SECURITY ORGANIZATION HAD COMPLETED THE 6:00 A.M. (EST) SHIFT CHANGE
- SECURITY SYSTEMS OPERATIONAL
- NORTH GATES OPEN
- UNIT 1 OPERATING AT FULL POWER

II. SEQUENCE OF EVENTS

B. INITIAL CONDITIONS (CONTINUED)

- OPERATIONS ORGANIZATION 7:00 A.M. SHIFT CHANGE COMPLETED
- SAFETY SYSTEMS OPERATIONAL

II. SEQUENCE OF EVENTS

C. CHRONOLOGY OF FEBRUARY 7, 1993

12:45 A.M.	INTRUDER AT RESIDENCE
6:53 A.M.	INTRUDER TURNS INTO TMI SITE ENTRANCE
6:54 A.M.	PROTECTED AREA ALARMS
6:55 A.M.	CONTROL ROOM GUARDED VITAL AREAS GUARDED
7:00 A.M.	CONTROL ROOM FIRE DOORS LOCKED
7:07 A.M.	SITE AREA EMERGENCY DECLARED (AS OF 7:05 A.M.) CALLOUT OF ADDITIONAL SITE PROTECTED OFFICERS

II. SEQUENCE OF EVENTS

C. CHRONOLOGY OF FEBRUARY 7, 1993 (CONTINUED)

7:21 A.M. OFFSITE NOTIFICATIONS COMPLETED

7:23 A.M. NRC NOTIFIED BY SHIFT SUPERVISOR

7:35 A.M. NRC IN STANDBY EMERGENCY RESPONSE MODE

7:52 A.M. MANUAL CALL OUT OF EMERGENCY PERSONNEL FROM CONTROL ROOM

8:00 A.M. EMERGENCY DIRECTOR ASSUMED IN CAS

8:38 A.M. FIRST SEARCH OF TURBINE BUILDING

8:45 A.M. NRC REGION I INCIDENT RESPONSE CENTER OPERATIONAL

II. SEQUENCE OF EVENTS

C. CHRONOLOGY OF FEBRUARY 7, 1993 (CONTINUED)

9:28 A.M.	EMERGENCY PERSONNEL STARTED CALL OUT FROM SHIFT SUPERVISOR'S OFFICE
9:55 A.M.	EOF OPERATIONAL
10:08 A.M.	TSC STAFFED IN TMI TRAINING CENTER
10:20 A.M.	VEHICLE SEARCHED - NO BOMB OR EXPLOSIVES FOUND
10:22 A.M.	VITAL AREA SEARCH
10:40 A.M.	SECOND SEARCH OF TURBINE BUILDING

II. SEQUENCE OF EVENTS

C. CHRONOLOGY OF FEBRUARY 7, 1993 (CONTINUED)

10:57 A.M.	INTRUDER FOUND
1:05 P.M.	EMERGENCY DIRECTOR RELOCATED TO CONTROL ROOM
2:42 P.M.	EMERGENCY SYSTEM CHECK LIST COMPLETED
4:25 P.M.	SITE AREA EMERGENCY DECLARATION ENDED
5:15 P.M.	LAST SEARCH COMPLETED
8:00 P.M.	COMMONWEALTH OFFICERS LEAVE SITE

III. RESPONSE TO EVENTS

A. SECURITY

B. OPERATIONS

C. EMERGENCY RESPONSE

D. NRC

III. RESPONSE TO EVENTS

A. SECURITY

- REACTED PROMPTLY TO OWNER CONTROLLED AREA AND PROTECTED AREA INTRUSION
- RESPONDED TO VITAL AREAS
- CONDUCTED SEARCH AND CLEAR OPERATIONS
- TRAINING ISSUES EVIDENT
- SUSPENDED SOME SECURITY MEASURES
- RESPONSE BY FEDERAL, COMMONWEALTH AND LOCAL AUTHORITIES

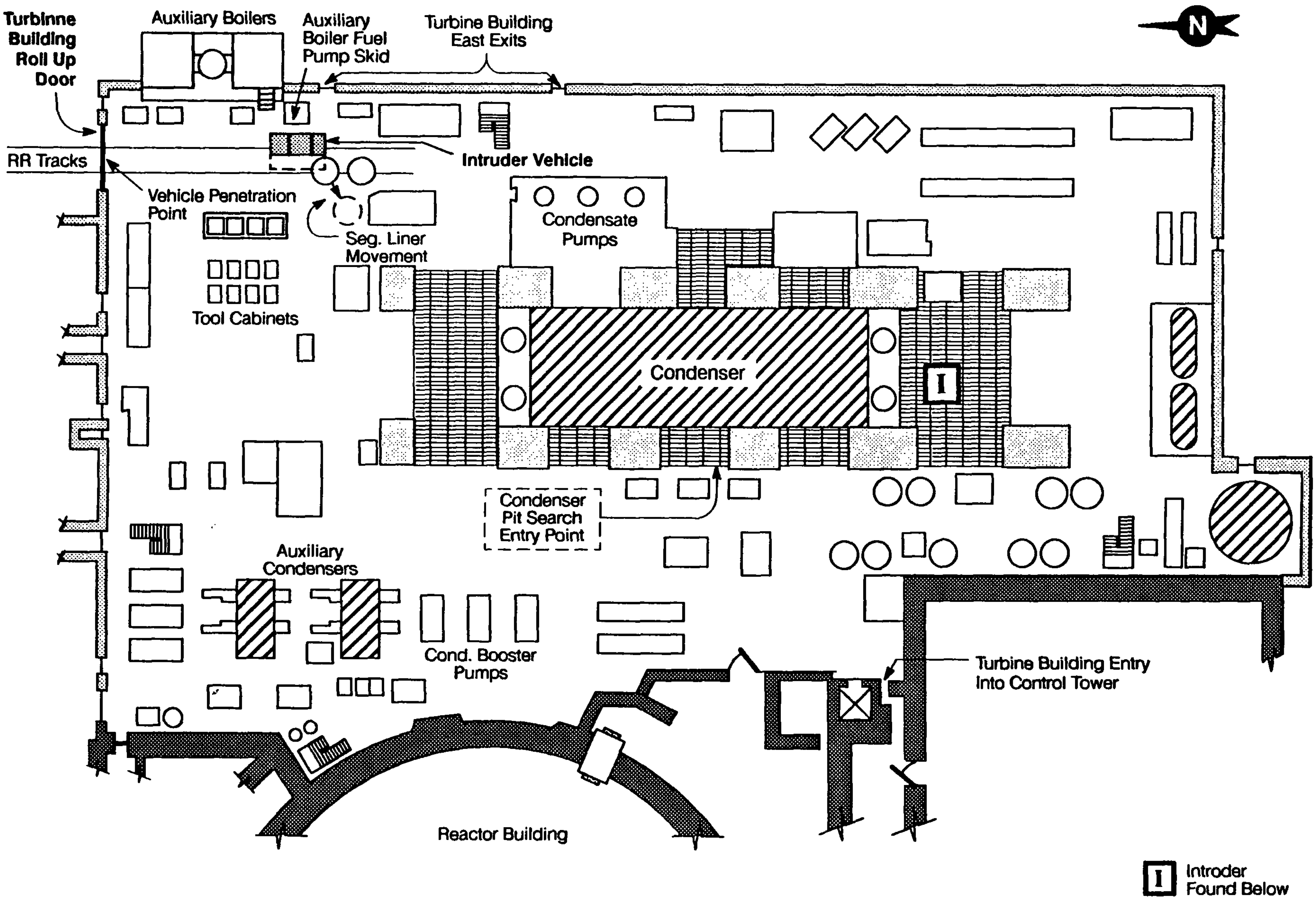


Figure 1.7 TMI Turbine Building [Elevation 305 feet (93m)]

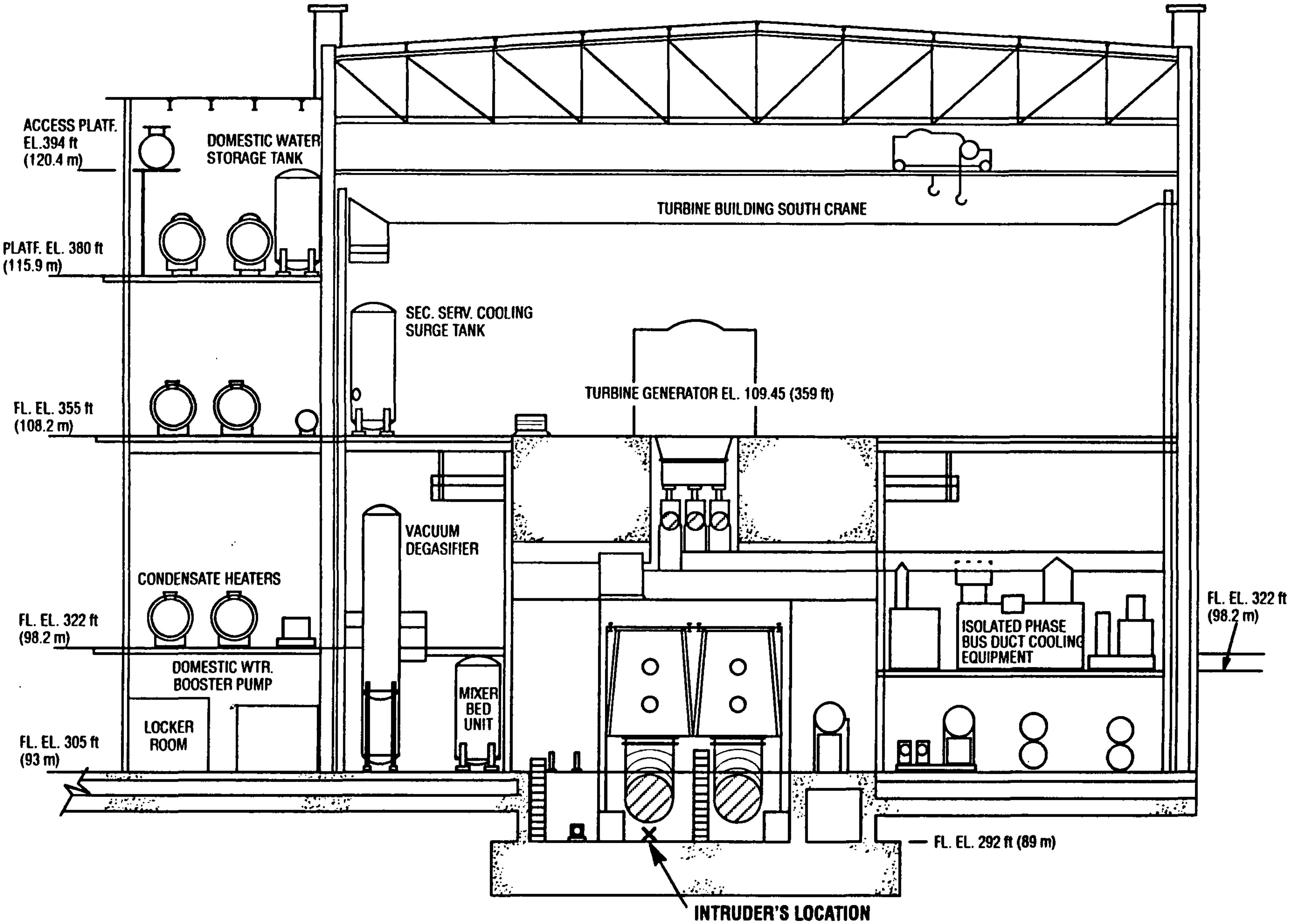


Figure 1.8 TMI Turbine Building (Sectional View)

III. RESPONSE TO EVENTS

B. OPERATIONS

- CONCERNS FOR PERSONAL SAFETY - AFFECTED DECISIONS
- CONTROL ROOM FIRE DOORS LOCKED
- CONTINUED FACILITY OPERATION

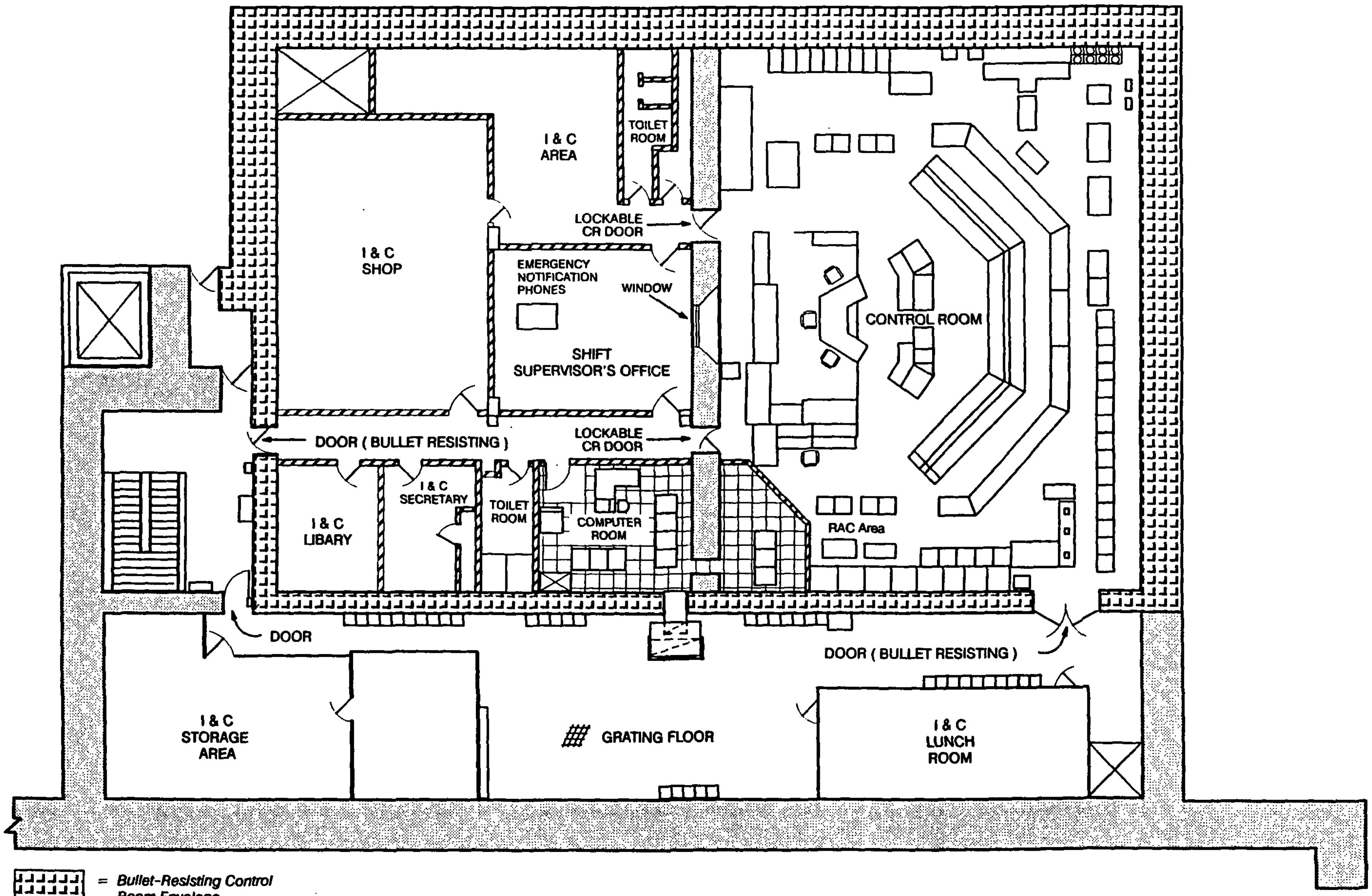


Figure 2.11 Control Room Envelope and Adjoining Area

III. RESPONSE TO EVENTS

C. EMERGENCY RESPONSE

- SHIFT SUPERVISOR INITIAL EMERGENCY DIRECTOR
- CONTROL ROOM ISOLATED FROM EMERGENCY RESPONSE RESOURCES
- RISK COUNTIES AND COMMONWEALTH NOTIFIED
- CALL OUT OF EMERGENCY PERSONNEL - TOLD TO STANDBY
- RESPONSE FOCUSED ON SECURITY ASPECTS OF EVENT

III. RESPONSE TO EVENTS

C. EMERGENCY RESPONSE (CONTINUED)

- EMERGENCY DIRECTOR AND EMERGENCY CONTROL CENTER ASSUMED AT CENTRAL ALARM STATION
- ALTERNATE LOCATIONS FOR OSC, TSC, JIC AND RADIOLOGICAL ASSESSMENT ESTABLISHED AT TRAINING CENTER
- SUSPENDED SOME EMERGENCY RESPONSE MEASURES
- RESPONSE BY COMMONWEALTH OF PENNSYLVANIA AND RISK COUNTIES

III. RESPONSE TO EVENTS

D. NRC

- INFORMED BY TMI SECURITY AT 7:11 A.M.
- INFORMED BY TMI OPERATIONS SHIFT SUPERVISOR AT 7:23 A.M.
- NRC PLACED IN STANDBY MODE AT 7:35 A.M.
- NRC REGION I INCIDENT RESPONSE CENTER DECLARED OPERATIONAL AT 8:45 A.M.

III. RESPONSE TO EVENTS

D. NRC (CONTINUED)

- NRC OPERATIONS CENTER AND INCIDENT RESPONSE CENTERS WERE SELECTIVELY STAFFED BASED ON THE SECURITY EVENT

- REGION I RESPONDED TO TMI SITE

IV. FINDINGS AND CONCLUSIONS

A. SAFETY SIGNIFICANCE

B. INTRUDER THREAT CHARACTERIZATION

C. CONTINUED PLANT OPERATION

D. SITE SECURITY RESPONSE

E. OPERATIONS, EMERGENCY RESPONSE, AND SECURITY INTERFACE

F. EMERGENCY RESPONSE

G. PRECURSORS

H. REGULATORY ASPECTS

I. COMMUNICATIONS

IV. FINDINGS AND CONCLUSIONS

A. SAFETY SIGNIFICANCE

THE EVENT RESULTED IN NO ACTUAL ADVERSE REACTOR SAFETY CONSEQUENCES AND WAS OF MINIMAL SAFETY SIGNIFICANCE.

IV. FINDINGS AND CONCLUSIONS

B. INTRUDER THREAT CHARACTERIZATION

WHETHER THE INTRUDER ACTED AT RANDOM OR TO OBTAIN ATTENTION, THE IIT DID NOT OBTAIN SUFFICIENT INFORMATION TO ESTABLISH A MOTIVE FOR HIS ACTIONS ON FEBRUARY 7, 1993.

IV. FINDINGS AND CONCLUSIONS

C. CONTINUED PLANT OPERATION

MAINTAINING POWER OPERATIONS WAS AN APPROPRIATE DECISION FOR THIS EVENT.

IV. FINDINGS AND CONCLUSIONS

D. SITE SECURITY RESPONSE

THE SECURITY FORCE RESPONDED APPROPRIATELY TO THE SPECIFIC CHALLENGE PRESENTED BY THE INTRUDER.

IV. FINDINGS AND CONCLUSIONS

E. OPERATIONS, EMERGENCY RESPONSE, AND SECURITY INTERFACE

THERE WERE CONFLICTS BETWEEN OPERATIONS, EMERGENCY RESPONSE, AND SECURITY ACTIONS THAT RESULTED FROM LIMITED KEY CARD ACCESS, THE LOCKING OF THE CONTROL ROOM FIRE DOORS, AND PERSONAL SAFETY CONCERNS.

IV. FINDINGS AND CONCLUSIONS

F. EMERGENCY RESPONSE

- THE LICENSEE FOCUSED ON RE-ESTABLISHING THE SECURITY OF THE FACILITY AND ELIMINATING THE INTRUDER THREAT. TMI MANAGEMENT DEPARTED FROM THE E-PLAN AND PROCEDURES TO ADDRESS THE IMMEDIATELY KNOWN CONDITIONS AND DID NOT FULLY CONSIDER THE POSSIBILITY OF RADIOLOGICAL SABOTAGE WHICH COULD WARRANT FULL SCOPE EMERGENCY RESPONSE CAPABILITIES.

- THE NRC FOCUSED ITS RESPONSE ON SECURITY CONCERNS AND DID NOT FULLY STAFF RESPONSE FACILITIES IN PREPARATION TO ADDRESS THE BROADER IMPLICATIONS OF ANY RADIOLOGICAL SABOTAGE.

IV. FINDINGS AND CONCLUSIONS

G. PRECURSORS

PREVIOUS EVENTS, DRILL CRITIQUES, AND OTHER REPORTS IDENTIFIED WEAKNESSES THAT ALSO WERE EVIDENT DURING THE FEBRUARY 7, 1993, EVENT.

IV. FINDINGS AND CONCLUSIONS

H. REGULATORY ASPECTS

- THE NRC REQUIREMENTS FOR ESTABLISHING AND MAINTAINING A PHYSICAL PROTECTION SYSTEM AND AS USED DURING THE SECURITY PROGRAM LICENSING PROCESS DO NOT CONSIDER USE OF A VEHICLE TO BREACH A PA BARRIER. IN THIS EVENT, THE USE OF A VEHICLE REDUCED THE AMOUNT OF TIME THE SECURITY FORCE HAD TO ASSESS AND RESPOND TO THE THREAT.

- THE NRC'S SECURITY INSPECTION PROGRAM WAS NOT EFFECTIVE IN REVEALING AND EVALUATING THE TYPES OF CHALLENGES DEMONSTRATED BY THIS EVENT.

IV. FINDINGS AND CONCLUSIONS

H. REGULATORY ASPECTS (CONTINUED)

- THE DECISION TO MAINTAIN STABLE, STEADY-STATE REACTOR OPERATIONS WAS IN ACCORDANCE WITH AN ESTABLISHED EMERGENCY PROCEDURE (EP 1202-13); HOWEVER, THIS PROCEDURE DOES NOT CONTAIN QUALIFYING GUIDANCE TO THE OPERATORS AND MAY NOT BE APPROPRIATE IN ALL SECURITY EVENT CONDITIONS COVERED BY THE GPUN PROCEDURE.

IV. FINDINGS AND CONCLUSIONS

H. REGULATORY ASPECTS (CONTINUED)

- THE NEED TO DEVIATE FROM THE SECURITY AND EMERGENCY PLAN IMPLEMENTING DOCUMENTS MAY HAVE BEEN APPROPRIATE DURING THE FEBRUARY 7, 1993, EVENT. HOWEVER, COMPENSATORY ALTERNATIVES WERE NOT CONSIDERED, AND THE USE OF 10 CFR 50.54(X) AND (Y) WAS NOT PROPERLY IMPLEMENTED.

IV. FINDINGS AND CONCLUSIONS

I. COMMUNICATIONS

THE EVENT EXHIBITED NUMEROUS ISSUES WHICH DELAYED COMMUNICATIONS OR INHIBITED THE NECESSARY FLOW OF INFORMATION.

NUREG-1485

Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993

U.S. Nuclear Regulatory Commission

NUREG–1485

Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993

Manuscript Completed: April 1993
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U.S. Nuclear Regulatory Commission
Washington, DC 20555

ABSTRACT

On February 7, 1993, at 6:53 a.m. Eastern Standard Time (EST) an intruder drove into the site owner-controlled area, through a gate into the protected area of Three Mile Island Nuclear Generating Station, Unit 1 (TMI-1) and crashed through a roll-up door on the Turbine Building. TMI Security reported this event to the U.S. Nuclear Regulatory Commission's (NRC's) Headquarters operations officer and declared a Security Emergency upon determining that the protected area of the plant had been compromised. At 7:23 a.m., the TMI-1 shift supervisor officially notified the NRC Headquarters operations officer that he had declared a Site Area Emergency effective at 7:05 p.m. Upon considering the possible significance to physical security and the regulatory questions that could result from the event, the NRC Executive Director for Operations established an incident investigation team to determine what happened and make appropriate findings and conclusions. In this report the team described the event and the response to the event, evaluated the regulatory requirements, and presented the team's findings and conclusions.

CONTENTS

CONTENTS (Continued)

CONTENTS (Continued)

TEAM MEMBERS

The members of the NRC Incident Investigation Team for the unauthorized forced entry into the protected area at Three Mile Island Unit 1 on February 7, 1993, are as follows:

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Charles E. Gaskin
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Gail C. Barkdoll, Onsite Secretary
Joanne Johansen, Headquarters Wordprocessor

*INDUSTRY REPRESENTATION

An industry representative served as a member of the incident investigation team to provide industry perspective and expert knowledge of plant hardware and practices and to give the industry accurate information on the event for use in any preventive or corrective actions that it might choose to take.

OBSERVERS

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ABBREVIATIONS

AT&T	American Telephone and Telegraph Company
BPD	Bethel Police Department
BRP	Bureau of Radiation Protection
BTM	base team manager
CAS	Central Alarm Station
CCTV	closed circuit television system
CFR	*Code of Federal Regulations*
DBT	design basis threat
EAL	emergency action level
ECC	Emergency Control Center
ED	Emergency Director (TMI-1 emergency response organization)
ENS	Emergency Notification System
EOC	Emergency Operations Center
EOD	explosive ordnance disposal
EOF	Emergency Operations Facility
E-Plan	GPUN Corporation Emergency Plan for Three Mile Island and Oyster Creek Nuclear Station
EP	emergency procedure
EPIP	emergency plan implementing procedure (this initialism also refers to the collection of these procedures known as the TMI Emergency Plan Implementing Document)
ERDS	Emergency Response Data System
ERF	Emergency Response Facility
ESD	Emergency Support Director (TMI-1 emergency response organization)
EST	Eastern Standard Time
FBI	Federal Bureau of Investigation
FTS	Federal Telecommunications System
GED	General Equivalency Diploma
GPUN	General Public Utilities Nuclear
HOO	Headquarters operations officer (NRC)
HPN	Health Physics Network
I&C	instrumentation and control
ICR	initial crime report

IDS	intrusion detection system
IIT	incident investigation team (NRC)
IRC	Incident Response Center (NRC Region I)
IREO	incident response emergency organization
JIC	Joint Information Center
LLEA	local law enforcement agency
MOU	Memorandum of Understanding
MPD	Middletown Police Department
NMSS	Nuclear Material Safety and Safeguards, NRC Office of
NRC	U. S. Nuclear Regulatory Commission
NRCOC	NRC Operations Center
NRR	Nuclear Reactor Regulation, NRC Office of
OCA	owner-controlled area
OSC	Operations Support Center (GPUN facility)
OSRE	operational safeguards response evaluation
PA	protected area
PC	Processing Center (GPUN facility)
PEMA	Pennsylvania Emergency Management Agency
PSP	Pennsylvania State Police
RA	NRC regional administrator
RAC	radiological assessment coordinator
RCS	reactor coolant system
RCT	response coordination team
RER	regulatory effectiveness review
RI	NRC resident inspector
RO	reactor operator-licensed
RST	reactor safety team
SALP	systematic assessment of licensee performance
SAR	safety analysis report
SAS	Secondary Alarm Station
SEG	Scientific Ecology Group, Inc.
SER	safety evaluation report
SERT	special emergency response team (PSP team)
SGI	Safeguards Information
SPO	site protection officer
SPSS	site protection shift supervisor
SRI	senior resident inspector

SRO	senior reactor operator-licensed
SS	shift supervisor (TMI-1 organization)
STA	shift technical advisor (TMI-1 organization)
TMI	Three Mile Island Nuclear Generating Station
TMI-1	Three Mile Island Nuclear Generating Station, Unit 1
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
VA	vital area

EXECUTIVE SUMMARY

The Three Mile Island Nuclear Generating Station, operated by General Public Utilities Nuclear Corporation, includes two Babcock & Wilcox-designed pressurized water reactor units, one operational (TMI-1) and the other defueled for final decontamination (TMI-2). The site, shown in Figure A, is located on an island in the Susquehanna River, about 10 miles (16 km) southeast of Harrisburg, Pennsylvania. Unit 1 received a full-power operating license in 1974.

At 6:53 a.m. on February 7, 1993, Eastern Standard Time (EST), with Unit 1 operating at full power and with no unusual plant operations in progress or significant equipment out of service, an intruder drove a station wagon into the TMI site entrance and continued past the North Gate guard house traveling in the outbound traffic lane at an estimated 35-40 miles per hour (56-64 km/h) (see Figure B). The North Gate was staffed by site protection officers (SPOs). Normal site procedure calls for the driver to stop the vehicle and for each occupant to present an owner-controlled area (OCA) badge before entering the site. The intruder continued into the OCA on the outbound traffic lane, across the bridge spanning the Susquehanna River, and was observed to travel through a posted stop sign. The SPOs at the North Gate notified other onsite SPOs, thus prompting other security personnel to respond. The vehicle passed through a second stop sign, and continued south towards the TMI-1 protected area (PA) Processing Center (PC) building. The vehicle turned east past the front of the PC, and turned south traveling an additional 90 feet (27.4 m) where it hit PA Gate 1 and proceeded through the gate. As the vehicle passed through PA Gate 1, the gate failed allowing the bottom of the gate to pivot upward for the vehicle to pass through.

The PA alarm system generated alarms upon detecting that the vehicle breached the gate, prompting the security personnel to assess by closed circuit television (CCTV). The vehicle proceeded approximately 189 feet (57.6 m), crashed through the Unit 1 Turbine Building roll-up door constructed of corrugated aluminum, and came to a stop 63 feet (19.2 m) inside the Turbine Building. The turbine roll-up door collapsed on top of the vehicle. The vehicle and door came to rest upon striking a secondary system condensate Scientific Ecology Group, Inc. (SEG) resin liner and pushing it approximately 6 feet (1.9 m). The upper fittings and the lid of the resin liner container were damaged as it passed under an auxiliary steam line, denting insulation on an auxiliary steam line. The roll-up door also struck the auxiliary boiler support equipment and caused minor damage.

The plant operators in the control room were notified of the event by a call from the offgoing operations shift foreman, who witnessed the vehicle travel through the parking lot and heard the vehicle breach the PA gate and the turbine roll-up door. They were also alerted by an SPO who was informed of the event by the North Gate SPOs. The control room personnel responded by implementing emergency response procedures, including locking control room fire doors, and classified the event at 7:07 a.m. as a Site Area Emergency (as of 7:05 a.m.),

performing required notifications, and maintaining and monitoring the continued operation of the plant at full power in accordance with TMI procedures.

The security staff responded by posting security personnel to intervene at predesignated vital areas, confirming vital area integrity, and with the aid of offsite responders conducting an assessment and searching for the intruder. After arriving on site, the U.S. Army explosives ordnance disposal (EOD) unit surveyed the vehicle and noted a suspicious bag and material within the vehicle. Shortly thereafter, the EOD unit entered the vehicle and conducted a preliminary search for explosive devices. During a second search-and-clear operation, TMI security personnel found and apprehended the unarmed intruder. The intruder was located at the bottom of the Turbine Building in a small space under piping in the condenser area, and offered no resistance. The intruder was initially questioned on site by Pennsylvania State Police, then escorted off site in custody. The vehicle was removed from the Turbine Building, and the EOD unit completed a detailed search confirming that no explosives were present. As of the date of this report, the intruder was under court-mandated observation and treatment in a Commonwealth of Pennsylvania facility.

When the licensee began implementing the emergency response program following the operations shift supervisor's classification of the event and declaration of a Site Area Emergency effective at 7:05 a.m., site personnel were assigned to emergency responsibilities. The licensee also notified the Commonwealth of Pennsylvania response organizations and the U.S. Nuclear Regulatory Commission (NRC). These organizations responded by activating their respective response facilities. The licensee activated its emergency response organization in a limited manner because the event involved security issues which restricted site access, precluded the use of predesignated plant areas such as the Technical Support Center (TSC) and shift supervisor's office, and prevented the licensee from notifying and staffing the emergency response organization in the typical manner. The NRC also focused its emergency response primarily on the security aspects of the event which resulted in the staffing of selected positions within the emergency response organizations.

Upon visually inspecting plant equipment, verifying plant parameters to be within the technical specification license criteria, and confirming that the safety systems were available, at 4:25 p.m., the licensee ended the Site Area Emergency.

On February 7, 1993, in conformance with the Incident Investigation Program, the NRC Executive Director for Operations (EDO) requested an incident investigation team (IIT) be established to investigate the event (Appendix A is the memorandum establishing the team and defining the scope of the team's charter). The team included members with a broad knowledge of physical plant security, safeguards, emergency planning, plant systems and operations, and criminal investigation. The team included an industry consultant, two observers from the Commonwealth of Pennsylvania, and one observer from the NRC Office of the Inspector General. The team was to find facts, determine what happened, and make appropriate findings and conclusions. This report documents the results of the team's efforts.

Section 1 is a narrative of the event.

Section 2 describes the facility, systems, and programs involved in the incident. The discussion focuses on the security program, plant operations, and emergency response functions.

Section 3 describes the human factors considerations in implementing the equipment and programs in response to the event including complications which resulted from integrating the security event response, the emergency plan, and support for continued operation of the facility.

Section 4 is a summary of precursors and related experience which are similar to the February 7, 1993, event.

Section 5 is a summary of the regulatory aspects of the activities associated with the event, including regulatory criteria; licensee obligations; and the NRC's licensing, inspection, and assessment processes.

Section 6 addresses the safety significance of the event and contains the findings and conclusions.

Appendix A is a copy of the team's charter for the investigation of the event; Appendix B is a description of the team's activities including a list of interviews, meetings, and previous investigations performed by IITs.

Facts and data in this report are current as of March 29, 1993.

In summary the team concluded the following:

- The event resulted in no actual adverse reactor safety consequences and was of minimal safety significance.
- Whether the intruder acted at random or to obtain attention, the IIT did not obtain sufficient information to establish a motive for his actions on February 7, 1993.
- Maintaining power operations was an appropriate decision for this event.
- The security force responded appropriately to the specific challenge presented by the intruder.
- There were conflicts between operations, emergency response, and security actions that resulted from limited key card access, the locking of the control room fire doors and personal safety concerns.
- The licensee focused on re-establishing the security of the facility and eliminating the intruder threat. TMI management departed from the E-Plan and procedures to

address the immediately known conditions and did not fully consider the possibility of radiological sabotage which could warrant full scope emergency response capabilities.

- The NRC focused its response on security concerns and did not fully staff response facilities in preparation to address the broader implications of any radiological sabotage.

- Previous TMI events, drill critiques, and other reports identified weaknesses that also were evident during the February 7, 1993, event.

- The NRC requirements for establishing and maintaining a physical protection system and as used during the security program licensing process do not consider use of a vehicle to breach a PA barrier. In this event, the use of a vehicle reduced the amount of time the security force had to assess and respond to the threat.

- The NRC's security inspection program was not effective in revealing and evaluating the types of challenges demonstrated by this event.

- The decision to maintain stable, steady-state reactor operations was in accordance with an established emergency procedure (EP 1202-13); however, this procedure does not contain qualifying guidance to the operators and may not be appropriate in all security event conditions covered by the GPUN procedure.

- The need to deviate from the security and emergency plan implementing documents may have been appropriate during the February 7, 1993, event. However, compensatory alternatives were not considered and the use of 10 CFR 50.54(x) and (y) was not properly implemented.

- The event exhibited numerous issues which delayed communications or inhibited the necessary flow of information.

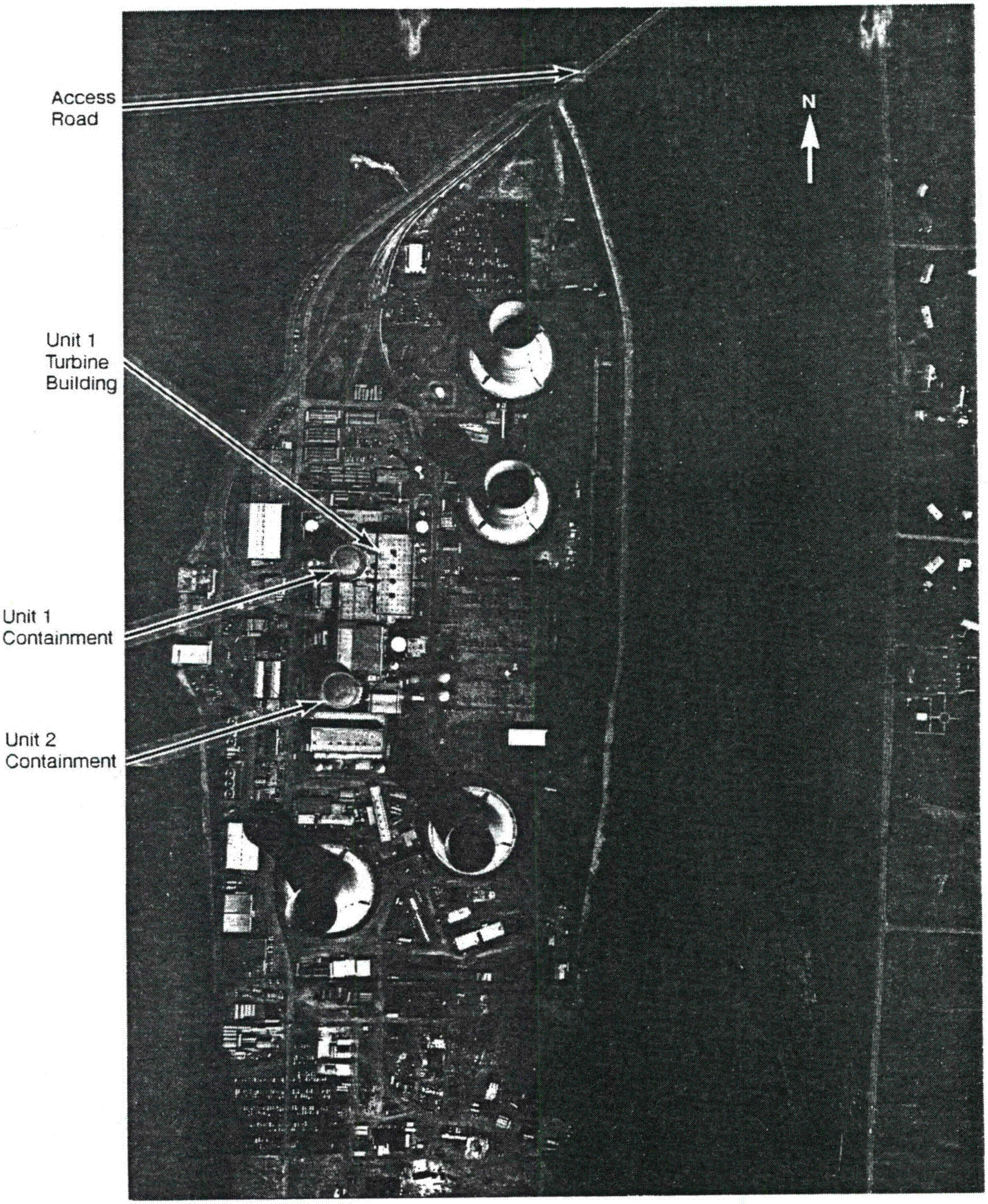


Figure A Aerial Photo of TMI Units 1 and 2

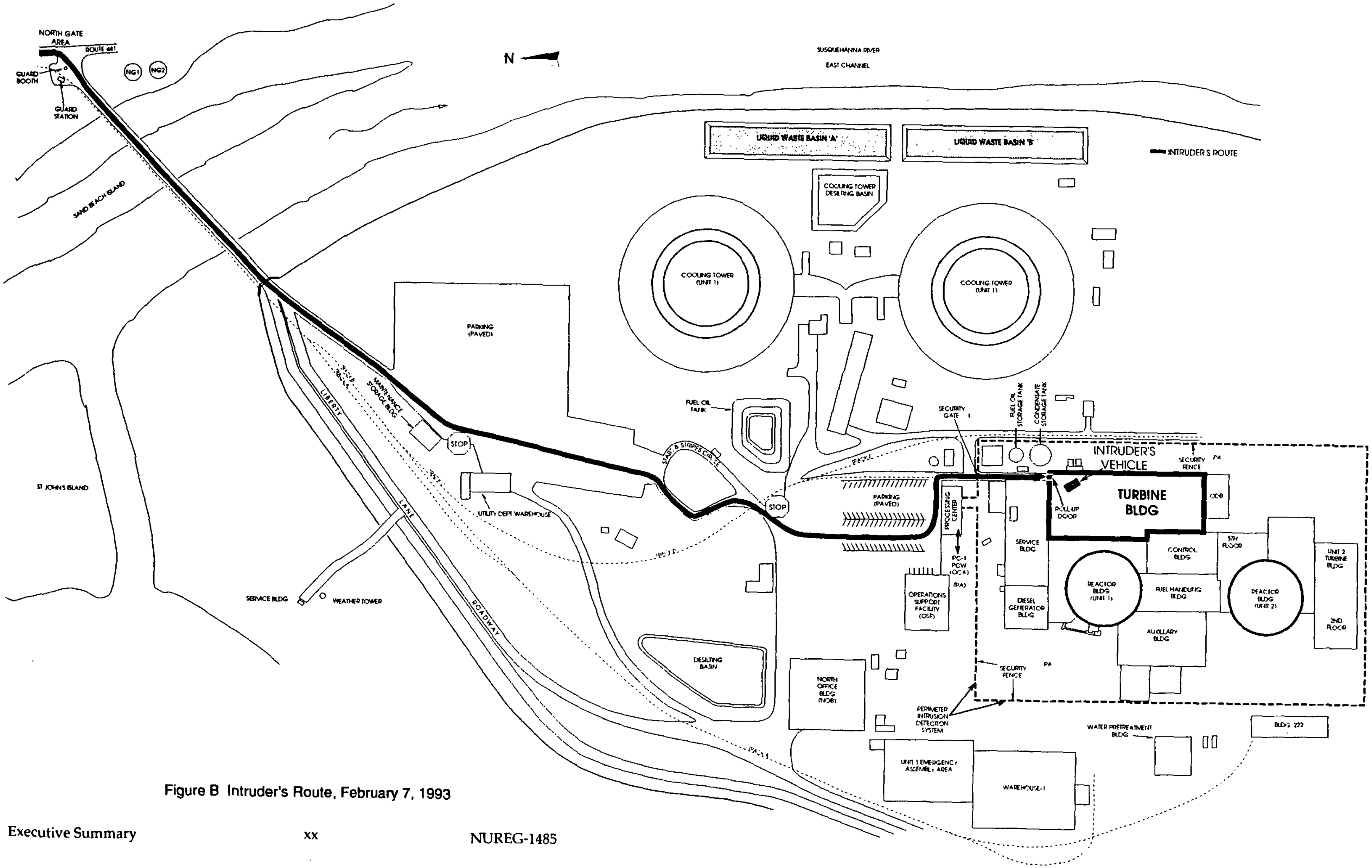


Figure B Intruder's Route, February 7, 1993

1 NARRATIVE

This section is a description of the intruder's background, the threat, and events associated with the forced entry into the Protected Area at Three Mile Island Unit 1 (TMI-1) on February 7, 1993. The incident investigation team (IIT) from the U.S. Nuclear Regulatory Commission (NRC) created this narrative using information from extensive interviews with General Public Utilities Nuclear (GPUN, the licensee) and NRC personnel, logs kept by site personnel, computer printouts, logs and records kept by the NRC, and discussions with the Commonwealth of Pennsylvania and offsite response organizations.

1.1 Intruder's Background

The IIT obtained the following information from interviews with law enforcement personnel from the Pennsylvania State Police (PSP), the Middletown Police Department (MPD), the Bethel Township Police Department, the Federal Bureau of Investigation (FBI), and TMI security personnel and from various records and reports. The IIT also interviewed relatives and acquaintances of the intruder.

The intruder was a 31-year-old Caucasian male, approximately 73 inches (185 cm) tall, weighing approximately 140 pounds (63 kg), with thick black shoulder-length hair and a heavy beard. He had completed the 10th grade and later gained a General Equivalency Diploma (GED) high school diploma. At the time of the incident, he resided with his mother in a small rural community northwest of Harrisburg, Pennsylvania, approximately 56 miles (90 km) from the TMI site.

The intruder was not currently employed and had never been in the military. He reportedly had never shown an unusual or excessive interest in either the military or weapons, but he had hunted wild game locally. The intruder was described as being introverted and subject to frequent periods of depression which had recently intensified. The intruder had no history of violence and no record of previous arrests. The intruder had a history of at least three recorded admissions to hospitals where he was treated for "depression," then released. According to his mother, the intruder's condition had worsened, and he became even more depressed and disturbed after his recent release from a hospital on January 22, 1993.

The intruder reportedly had no acquaintances, friends, or relatives associated with TMI or anti-nuclear power activist groups. He was reported by his family and confirmed by the licensee to have never worked for TMI and had not mentioned TMI to his family.

The individual's mother reported that before the event she last saw her son a little after midnight the morning of February 7, 1993, at their home. She reported to local authorities that the car and her son were missing when she awoke the morning of February 7, 1993. The IIT received various reports of witnessed sightings of the intruder and the vehicle at

locations between his home and TMI-1 on the morning of the event including a sighting at a television station at approximately 2:30 a.m. and a sighting by plant personnel who encountered him just before the event and observed him driving erratically on Pennsylvania Route 441, which leads to the TMI site.

When discovered, the intruder was described as being confused and having no knowledge of his surroundings or location. This description is in contrast to his mental condition during a telephone call he placed once under custody of the PSP during which he was characterized as normal in demeanor. Acquaintances recalled that just before the event, the intruder stated that he was going to do something to get on the news and that they should watch the papers and watch the television because he was going to do something to become famous.

1.2 Threat Characterization

Whether the intruder's actions on February 7, 1993, were a random act or an attempt to obtain attention, the IIT obtained insufficient information to establish a clear motive for these actions. In consideration of the legal charges pending and medical condition of the intruder, the IIT did not interview the intruder.

1.3 Initial Conditions

1.3.1 Security

At about 5:30 a.m., the licensee opened the TMI site north entrance owner-controlled area (OCA) gates to allow shift change traffic to pass. At the time of the event, the TMI site security organization had completed the 6:00 a.m. shift change, no significant security systems were out of service, and no compensatory measures were in place.

The required number of security personnel reported for duty and were on shift conducting routine patrols and monitoring duties. The security personnel were posted and were conducting functions as generally described in Table 1.1.

1.3.2 Operations

On Sunday morning, February 7, 1993, Unit 1 was operating at 100-percent rated thermal power and 870 gross megawatts electric, and no routine radiological releases or equipment or instrumentation surveillances were in progress. There was no major plant equipment out of service. At the time of the event, the operations crew had begun the 7:00 a.m. to 3:00 p.m. shift. The auxiliary operators had not yet come into the control room for their shift briefing. One offgoing shift foreman and a control room reactor operator (RO) were leaving the protected area (PA). The offgoing shift technical advisor (STA) was in the process of leaving the control room after having completed his shift turnover.

On the morning of February 7, 1993, the TMI onshift Operations organization met the plant's administrative procedures and exceeded the TMI technical specification requirements. The operating staff consisted of one shift supervisor licensed senior reactor operator (SRO), one inplant shift foreman (licensed SRO), one control room shift foreman (licensed SRO) three control room operators (licensed ROs) five auxiliary operators (non-licensed), and one STA (non-licensed) (see Tables 1.2 and 1.3).

Table 1.1 Security Personnel Disposition on February 7, 1993

Post	Function
North Gate	Performed OCA badging and vehicle checkpoint operations
Processing Center	Performed PA badging and PC search train (both in OCA)
SAS	Performed secondary alarm station (SAS) functions (unavailable for response)
CAS	Performed primary alarm functions (unavailable for response)
Site Protection Shift Supervisor	Supervised SPOs and had the authority and responsibility to direct all security activities
Other SPOs	Conducted patrols and performed other duties, as assigned.

Table 1.2 Shift Staffing Requirements from TMI-1 Administrative Procedure 1029

Plant >200 °F (93.3 °C) Reactor Coolant System (RCS) Temperature	Plant <200 °F (93.3 °C) RCS Temperature
1 shift supervisor (SRO)	1 shift supervisor* (SRO)
1 shift foreman (SRO)	1 shift foreman*
3 control room operators (at least 2 RO)	2 control room operators (at least 1 RO)
5 auxiliary operators	4 auxiliary operators
1 shift technical advisor	n.a.

*May be waived by the Plant Operations Director, TMI-1. Either a qualified SRO, shift supervisor, or shift foreman must be on shift at all times when the RCS temperature is below 200 °F (93.3 °C).

Table 1.3 Minimum Shift Crew Composition from TMI Unit 1 Technical Specification

License Category Qualifications	Tave > 200 °F (93.3 °C)	Tave ≤ 200 °F (93.3 °C)
SRO*	2	1
RO*	2	1
non-licensed auxiliary operator	2	1
shift technical advisor	1	none required

*Pursuant to the requirements of 10 CFR 50.54(m).

1.4 Chronology of Events

*Time	Description
Intruder's Chronology	
1/22/93	The intruder was released on January 22, 1993, through the court system based on his request after being admitted to the hospital involuntarily in the early morning January 18.
2/7/93	
12:45 a.m.	Intruder was at residence with his mother in Bethel, Pennsylvania [approximately 56 miles (190 km) from TMI site].
(time unknown)	Intruder took his mother's car without permission.
2:30 a.m.	Intruder was reported to have been seen in Mount Gretna, Pennsylvania, at a television station facility [approximately 30 miles (48 km) from TMI site].
5:30 a.m.	North Gate into TMI OCA opened to allow shift change. Both sides of the 24-foot (7.3-m)-wide gate had been opened (see Figures 1.1 and 1.2).
6:00 a.m.	Intruder's mother reported her vehicle and son missing to local authorities.
	TMI security personnel changed shifts.
6:51 a.m.	Two employees, who were leaving work, observed a vehicle traveling south and driving erratically on Pennsylvania Route 441 about 1.5 miles (2.4 km) north of the entrance to TMI site. One of the employees pulled off the road to avoid a collision with a vehicle that appeared to be a grey station wagon traveling at a high rate of speed.
6:53:30 a.m. (estimate)	Intruder turned into the TMI site entrance, passed by the North Gate guard house without stopping to show a badge, and entered the OCA at an estimated 35-40 miles per hour (56-64 km/h) on the outbound lane of the two-lane access road. No vehicles or personnel were endangered (see Figure 1.3).

The vehicle continued across the bridge spanning the Susquehanna River. At a split in the access road, the vehicle continued toward the plant by turning to the left and moving down a slight hill. The vehicle slowed and crossed a parking lot, referred to as the lay-down area, without stopping at a posted stop sign. At this time, the vehicle was being observed by an offgoing plant operations shift foreman who was opening his parked car about 25 feet (7.6 m) in front of the Processing Center (PC).

The intruder's vehicle continued in a straight line, up a slight hill on the right of a circular connecting road, and into the parking lot on the north side of the PC without stopping at the stop sign. The vehicle slowed to an estimated 15-20 miles per hour (24-32 km/h) but continued south toward the PC.

At the end of a row of parked cars and directly in front of the PC, the vehicle turned left (easterly direction) and passed between the offduty operations shift foreman and a site protection officer (SPO) who had been alerted by a North Gate SPO and was looking out the windows of the double entry doors to the PC. The vehicle continued to the north east corner of the PC where it turned right (southerly direction) toward Gate 1 and was lost from view.

The vehicle continued toward the plant for 90 feet (27.4 m) where the operations shift foreman heard it hit Gate 1 (Figure 1.4). The PA detection system generated alarms in both onsite alarm stations. The vehicle continued straight toward the south about 189 feet (57.6 m) and hit the corrugated aluminum roll-up door at the northeast corner of the Turbine Building. The crash was heard by two offgoing maintenance employees who were located in a locker room in the service building beside the Turbine Building, about 75 feet (22.9 m) west of the roll-up door.

The roll-up door collapsed onto the vehicle which continued into the Turbine Building and stopped approximately 63 feet (19.2 m) from the entry point. The roll-up door covered the station wagon's hood and roof obstructing any view of the rear license plate (see Figures 1.5 and 1.6).

About 15 seconds after the noise of the crash stopped, the two offgoing maintenance employees entered the Turbine Building from the service building locker room, turned to their left, and saw that the Turbine Building door was down. They noticed the

door lay in a pile but could not see the car under it and at this time did not realize a security event had occurred.

The intruder is assumed to have left the vehicle immediately after it came to rest, since the driver's side door was found open. The IIT could not locate any witness who observed the intruder before he was found at 10:57 a.m. in a location one level below his entry and approximately 240 feet (73 m) from the vehicle (see Figure 1.7).

Response Chronology	(Some event descriptions and times are repeated for continuity.)
Between 6:53:30 a.m. and 7:00 a.m.	The intruder turned into the TMI site entrance and passed through the North Gate at an estimated 35-40 miles per hour (56-64 km/h). One of the SPOs at the North Gate of the OCA attempted to have the vehicle intercepted by a roving SPO. The SPO, however, was on break and unable to immediately respond. Meanwhile, most SPOs inside the plant learned of the event and thought it was somewhat unusual.

The offgoing shift foreman passed through the turnstile, spoke with an SPO, and walked out of the PC into the parking lot. The shift foreman observed a vehicle cross the North Parking Lot, approach the PC, and turn towards Gate 1. The SPO in the PC moved to the north door of the PC and also observed the vehicle.

An alarm generated by the intrusion detection system (IDS) recorded the time the vehicle penetrated the PA.

The shift foreman heard a crash, moved toward the corner of the PC, and heard a second crash. He looked around the corner to Gate 1 and also saw the roll-up door which appeared as a "gray lump" inside the Turbine Building. However, he did not see the intruder. The SPO exited the PC, heard the crash, and heard the shift foreman say that the car went through the gate. The SPO notified and directed the Central Alarm Station (CAS) personnel to begin implementing the procedure to limit access to certain vital areas.

Calculations [estimated 30 mph (48 km/h) traveling 189 feet (15.6 m) = 4.3 seconds] indicate this as the time the vehicle hit the Turbine Building roll-up door. The vehicle stopped about 63 feet (19.2 m) inside the Turbine Building trackway after striking a large secondary system condensate Scientific Ecology

Group, Inc. (SEG) resin liner. It was estimated that the individual left the vehicle about 10-20 seconds later (a direct route from the vehicle to the area where the intruder was located would have taken approximately 40 seconds).

Two offgoing maintenance technicians inside the service building near the roll-up door heard a loud crash that lasted for several seconds and stopped. After an additional 15-30 seconds, the technicians entered the Turbine Building at a point about 75 feet (22.9 m) from the door and saw no one. One noticed dust in the air, saw the door "near the aux boilers," and returned to the service building to notify his supervisor that "the wind blew down the door." The second technician moved to within 15-25 feet of the vehicle. He saw no one but could not see the inside of the vehicle. He returned to the service building which was out of sight of the vehicle. After the telephone call, they returned and observed the security response before being instructed to leave the area.

The offgoing shift foreman called the control room from the PC and reached the control room shift foreman. In an excited manner, he announced, "A guy just went through the fence and roll-up door. This is not a drill. Lock the doors to the control room." Then again he said, "A guy just went through the fence. Lock the doors to the control room." The shift supervisor put the call on the speaker but did not recognize the voice. The control room shift foreman responded, "OK." The shift supervisor later stated that the caller was very excited and that he really didn't hear much of the message.

Compensatory measures were implemented to protect against unauthorized access through the degraded PA barrier.

The CAS operator began to implement the procedure to limit access to vital areas.

An SPO entered the control room and announced to the shift supervisor and the control room staff that "This is not a drill, someone crashed through Gate 1 and then drove into the auxiliary boiler door."

An SPO arrived at a certain area within the Turbine Building and assumed a defensive posture.

Site security personnel arrived at the scene of the vehicle to survey and assess the situation.

In the control room, the shift technical advisor and shift supervisor began to performing procedures EPIP-TMI-.01, "Emergency Classification and Basis," and EP-1202-13, "Plant Response to Penetration of the Protected Area." An SPO assumed a defensive posture in another area of the Turbine Building.

TMI Security notified the PSP of the event. The shift supervisor locked the control room fire doors, isolating the control room staff from the shift supervisor's office including the pager callout telephone and the pager callback telephone, normally used to request response from the utility's Initial Response Emergency Organization, and the telephone used to notify the counties and the Commonwealth of Pennsylvania Emergency Management Agency (PEMA).

Between 7:00-9:00 a.m.	Personnel safety considerations prompted a decision not to staff the inplant Technical Support Center (TSC) or Operations Support Center while the intruder was at large. This decision was reconfirmed several times during event.
7:01:15 a.m.	The CAS operator completed the procedure for limiting access to vital areas to only selected personnel.
7:02 a.m.	Site security personnel re-surveyed and re-assessed the position of the vehicle. They observed the driver side door open, the headlights on, no one in the vehicle, and the engine not running. They withdrew, not knowing whether the vehicle contained explosives. The CAS operator called the control room to inform the control room staff of the event. The inplant shift foreman responded, stating that the shift supervisor understood what was happening.
7:04 a.m.	The shift supervisor called the Director, Operations and Maintenance, TMI-1, at home, and they discussed the General Public Utilities Nuclear (GPUN) Corporation Emergency Plan (E-Plan) for Three Mile Island and Oyster Creek Nuclear Station. The Director, Operations and Maintenance believed a Site Area Emergency was appropriate and urged the shift supervisor to classify the event and enter the E-Plan.

7:05 a.m.	The shift supervisor began performing Emergency Plan Implementing Procedure (EPIP)-TMI-.02, "Emergency Direction," with the control room shift foreman's assistance.
7:07 a.m.	The shift supervisor classified the event as a Site Area Emergency as of 7:05 a.m.
	The licensee began calling out for additional security personnel.
7:11 a.m.	The CAS operator contacted the NRC Operations Center to inform the NRC of the PA intrusion, a required report under the NRC regulation, Section 73.71 of Title 10 of the *Code of Federal Regulations* (10 CFR 73.71). The NRC Headquarters operations officer was informed that the control room had declared a Site Area Emergency. The NRC Headquarters operations officer began to notify NRC staff. He began a teleconference between members of the staff in anticipation of the formal notification from the TMI-1 control room.
7:16 a.m.	The control room shift foreman began making offsite notifications to the counties and PEMA. He implemented procedure EPIP-TMI-.03, "Emergency Offsite Notification," by using the manual telephones in the control room instead of the notification line in the shift supervisor's office.
7:XX a.m.	An SPO was sent to cover a certain area of the Turbine Building.
7:XX a.m.	The PSP arrived at the PC in response to the initial report.
7:21 a.m.	The control room shift foreman completed offsite notifications to the counties and PEMA.
7:23 a.m.	The ED (shift supervisor) called the NRC on the Emergency Notification System (ENS) telephone to provide notification of the declaration of the Site Area Emergency. The Headquarters operations officer recorded the information and requested that a continuous open line be maintained. The ED agreed and directed the offsite STA who had returned to the control room, to be the TMI-1 communicator with the NRC.
7:25 a.m.	The Director, Operations and Maintenance, the Plant Operations Director, and Site Security Manager arrived at the PC at approximately the same time. The Plant Operations Director went to the control room. After viewing the roll-up door and vehicle from the

roadway, the other two senior managers proceeded to the CAS where the CAS operator briefed them on the event.

7:31 a.m.	The CAS operator notified the NRC senior resident inspector (SRI) for TMI of the event.
7:33 a.m.	The PSP notified the MPD of the incident.
7:35 a.m.	After receiving an initial briefing from the STA, the NRC Director of the Office for Analysis and Evaluation of Operational Data, a member of the NRC Headquarters Executive Team, and the Regional Administrator of Region I initiated NRC emergency response in the Standby mode. In this Mode, the NRC response is led at the Region's Incident Response Center with support from the NRC Headquarters Operations Center. The Region I Incident Response Center is in King of Prussia, Pennsylvania; and the NRC Headquarters Operations Center is in Bethesda, Maryland. TMI staff manually accounted for site personnel by calling various areas where people were assembled, and successfully accounted for everyone.
7:37 a.m.	MPD officers arrived at TMI and coordinated with the PSP and TMI Security.
7:45 a.m.	The staffing of the NRC Region I Incident Response Center began with the arrival of the first responder (a branch chief, NRC Division of Reactor Projects).
7:XX a.m.	PSP reinforcements arrive on site. The PSP assumed the position of Local Law Enforcement Agency (LLEA) coordinator for the PSP and MPD.
7:XX a.m.	The CAS operator requested assistance from the offsite explosive ordnance disposal (EOD) unit.
7:51 a.m.	The Commonwealth of Pennsylvania representative from the Bureau of Radiation Protection (BRP) called the control room back (PEMA response).
7:52 a.m.	The control room shift foreman began performing procedure EPIP-TMI-.04, "Contact/Callout of Emergency Personnel," using the manual telephones from the control room to brief people and request them to stand by at home.

	The control room shift foreman called the Plant Engineering Director to inform him of a Site Area Emergency and to state that he should respond to the site to support a post-trip response team in case the reactor tripped. He informed the Plant Engineering Director that people were being called selectively to limit the number of people in the plant because of the intruder.
7:XX a.m.	The FBI field office notified the FBI resident office of the event.
8:XX a.m.	More PSP reinforcements arrived on site.
	The TMI Director, Operations and Maintenance, who was in the CAS, assumed the role of ED from the control room shift supervisor by telephone call with the Plant Operations Director who was in the control room. The Plant Operations Director, then assumed the role of Operations Coordinator.
8:10 a.m.	The NRC SRI arrived at the site. He called the resident inspector at home, entered the PC, and received a briefing from the TMI Site Security Manager. He then entered the PA and proceeded to the CAS where the ED (Director, Operations and Maintenance) was located. After a briefing from the ED, the NRC SRI called and briefed the Directors of the NRC Divisions of Reactor Projects and Reactor Safety, who were at the NRC Region I Incident Response Center.
	SPOs prepared to search the Turbine Building.
8:15 a.m.	TMI made the first of several attempts to activate the Emergency Response Data System (ERDS) which transmits control room information from TMI to the NRC. The attempts were unsuccessful because of problems with a telephone line connection.
	Plant staff had arrived at the Emergency Operations Facility (EOF). The Operations Coordinator (Plant Operations Director), who was in the control room and was now responsible for directing callouts, believed that many of the people that responded to the EOF and the Training Center did so as a result of informal (not procedurally initiated) telephone calls.
8:19:45 a.m.	SPOs secure certain other areas of the Turbine Building.
8:30 a.m.	The TMI staff lifted offhour telephone restrictions for some telephones at TMI. (During weekends, the new site telephone system restricted selected telephones from making offsite calls, including

some of those telephones in the areas being used for emergency response.

8:XX a.m.	The EOD team arrived at TMI and coordinated with TMI Security and the LLEA coordinator.
	The NRC resident inspector and the BRP representative arrived at the North Gate.
8:XX a.m.	The first search for the intruder began in the Turbine Building. Certain search personnel entered the area under the condenser pit, could not see because of limited lighting, and stopped. They climbed out of the pit and continued to search the remainder of the Turbine Building.
8:45 a.m.	The Deputy Regional Administrator declared the Incident Response Center activated. At this time, the Protective Measures Team was staffed with the team manager, with others to be called only if needed.
	The Plant Engineering Director was paged in his car while enroute to the plant. He called the control room and learned that the E-Plan was being implemented. The control room staff directed him to drive to the EOF and assume the duties of the Emergency Support Director.
9:00 a.m.	The EOD team surveyed the vehicle for a suspected bomb and observed suspicious packages, containers, and wires.
9:05 a.m.	The Operations Coordinator in the control room directed the communicator to instruct the Initial Response Emergency Organization to report to the Training Center. This required manually recalling the Initial Response Emergency Organization personnel who were previously requested to stand by at home.
9:26 a.m.	The ED urged the Operations Coordinator to enter the shift supervisor's office to activate the emergency pager callout system and put a message on the callback line for responders to report to the Training Center.
9:28 a.m.	The control room fire doors were unlocked, and two control room personnel entered the shift supervisor's office to place a message on the callback answering telephone and then activate the pagers of the Initial Response Emergency Organization.

9:XX a.m.	More PSP reinforcements arrive on site.
9:37 a.m.	Together the NRC resident inspector, a representative from the BRP, and a representative of TMI Public Affairs received an escort, crossed through the Turbine Building, and entered the control room envelope.
9:XX a.m.	The FBI arrived at TMI.
9:55 a.m.	The Emergency Support Director (Plant Engineering Director) declared the EOF operational.
10:01:32 a.m.	Search of the screen house began.
10:04 a.m.	"All Clear" is declared for the screen house.
10:08 a.m.	The TMI emergency managers declared the TSC staffed in the Training Center.
10:20 a.m.	The EOD team entered the vehicle, searched, and found no bomb.
10:22 a.m.	SPOs began the initial search of vital areas.
10:23 a.m.	Special PSP response personnel arrived at TMI to assist in searching the buildings and coordinate with TMI Security and the LLEA coordinator.
10:34 a.m.	Personnel regroup upon completing the first search of Turbine Building because the initial search of condenser pit was limited by the lack of lighting.
10:36 a.m.	The ED and the search team leader discussed the potential effects of the use of firearms in the condenser pit area of the Turbine Building. The team received a site-issued flashlight that was brighter than its previous flashlight and immediately returned to the condenser pit area.
10:40 a.m.	The search-and-clear team began a second search of condenser pit.
10:57 a.m.	TMI security personnel discovered and apprehended the intruder, removed him from the condenser pit, and released him to the custody of the PSP (see Figure 1.8).
11:10 a.m.	The EOD team completed a more detailed search of the vehicle and confirmed no bombs or explosive paraphernalia.

11:12 a.m.	Region I briefed PEMA on the event status.
11:15 a.m.	The SPOs completed the initial search of vital areas.
11:30 a.m.	The EOD team searched the car with an explosive detection dog and found no trace of explosives.
11:38 a.m.	The TMI Security completed a verification of site personnel accountability.
11:45 a.m.	The PSP departed TMI with the suspect in custody.
11:50 a.m.	The FBI representative departed TMI.
1:05 p.m.	The ED moved to the control room from the CAS area.
1:15 p.m.	The Region I branch chief, Division of Reactor Projects, arrived on site and was briefed by the SRI.
1:25 p.m.	Region I representatives briefed the Lieutenant Governor, Commonwealth of Pennsylvania.
1:30 p.m.	The Pennsylvania Lieutenant Governor, PSP, and the utility conducted a press briefing at the TMI Training Center. The NRC attended.
2:00 p.m.	The Deputy Regional Administrator for Region I arrived on site and attended the press briefing.
2:30 p.m.	TMI staff lifted offhours restrictions on all telephones.
2:39 p.m.	PSP Academy cadets arrived at TMI by bus to assist in search operations covering the entire island.
2:42 p.m.	Control room personnel completed the emergency systems checklist to verify safety system availability.
3:40 p.m.	PSP Academy cadets completed a search of Unit 2 and began searching the OCA.
	Operating staff were allowed access to all areas of the plant to check for equipment damage.
4:25 p.m.	The licensee ended the Site Area Emergency.

4:30 p.m.	The EOD team departed TMI.
4:45 p.m.	Special PSP response personnel departed TMI.
4:47 p.m.	TMI management notified offsite agencies that it had terminated the Site Area Emergency.
	Region I briefed the licensee on the IIT.
4:52 p.m.	NRC ended the emergency response Standby Mode.
5:15 p.m.	PSP completed the OCA search.
8:00 p.m.	The senior PSP officer departed TMI.

*Most times listed with seconds were recorded by computer. Some times noted as "estimates" were based on calculations or recreations. All others are approximate times based on testimony or hand-written logs.

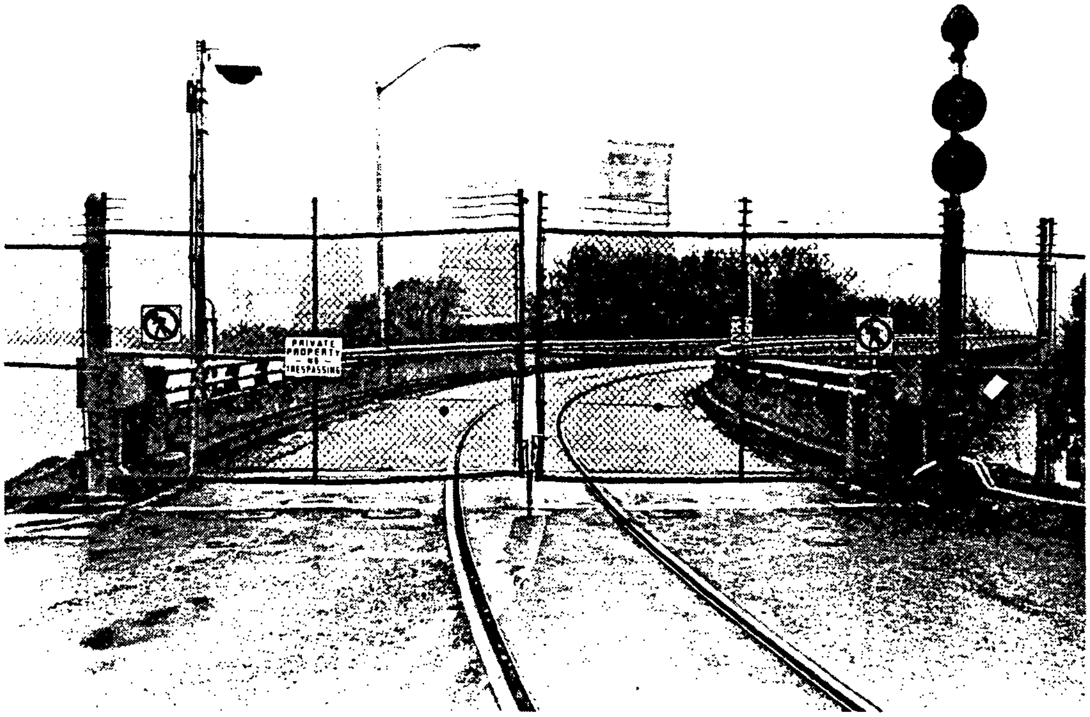


Figure 1.1 View of TMI North Entrance Owner-Controlled Area Gate (gate closed)

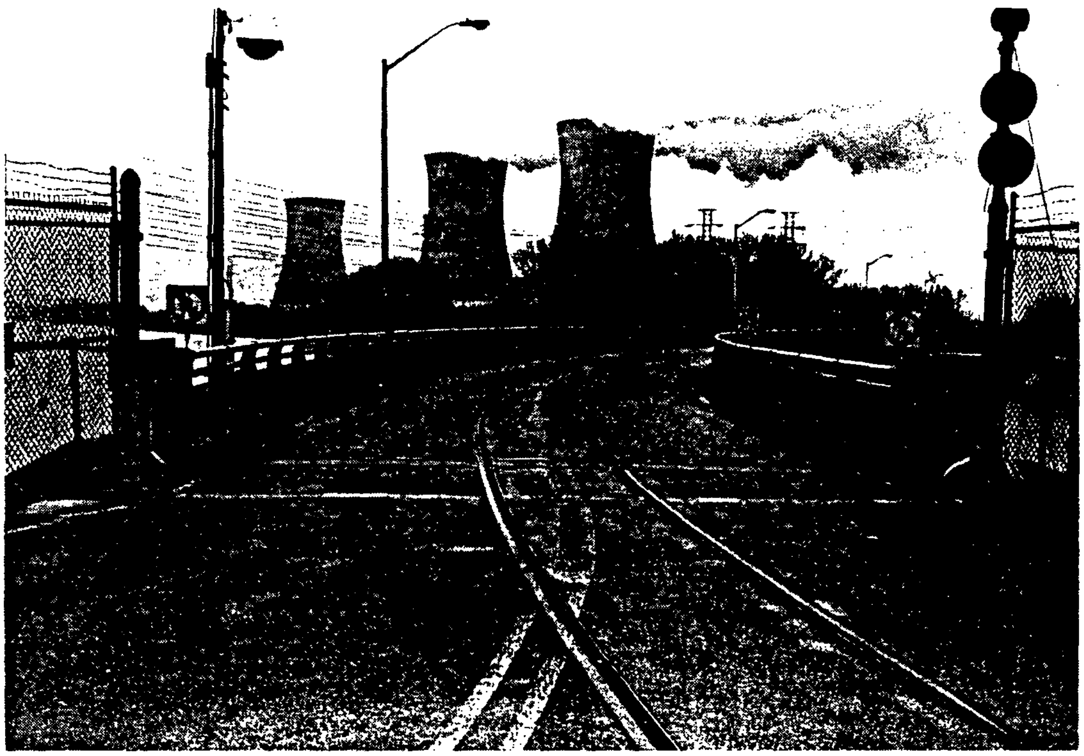
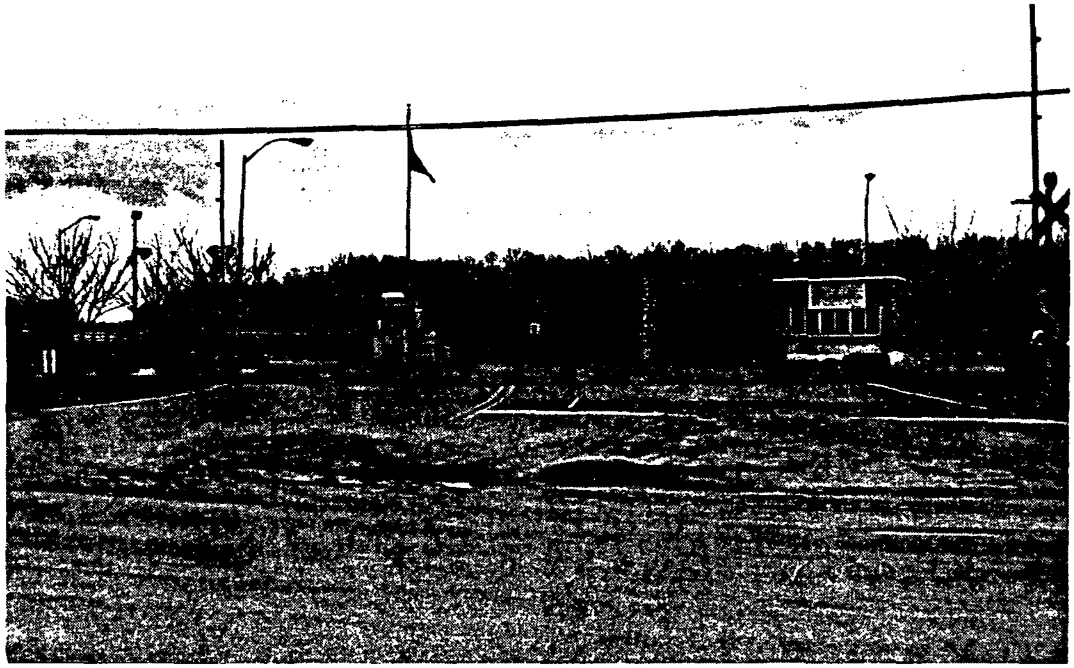


Figure 1.2 View of TMI North Entrance Owner-Controlled Area Gate (gate open)



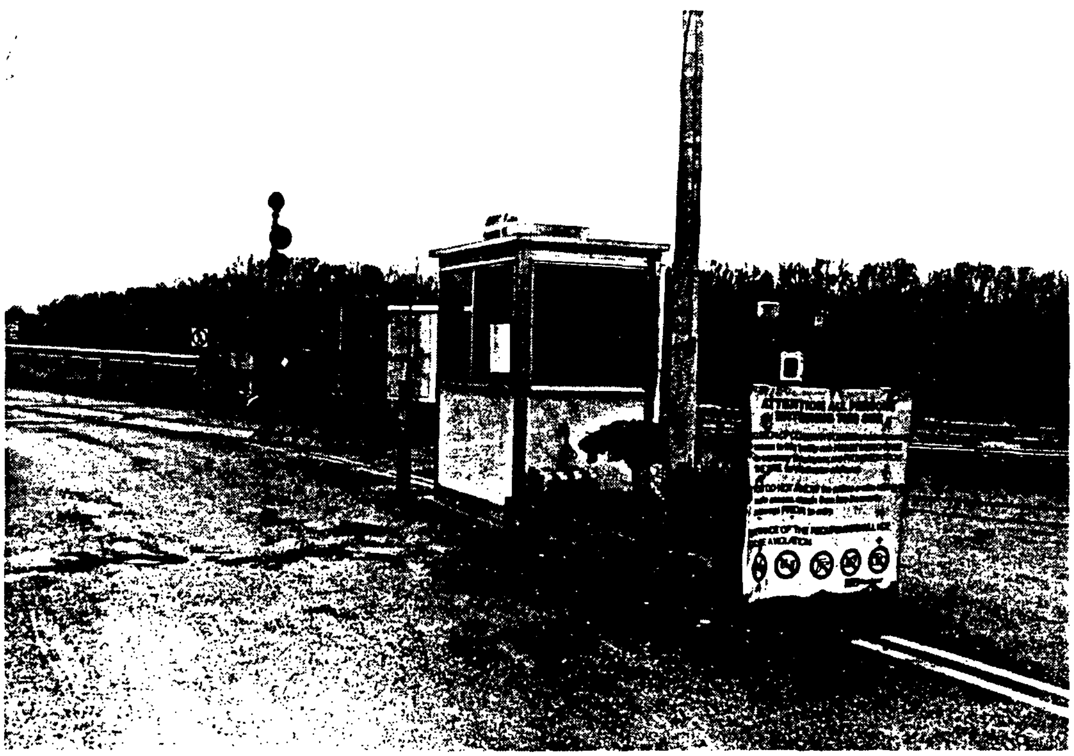


Figure 1.3 Views of TMI North Entrance

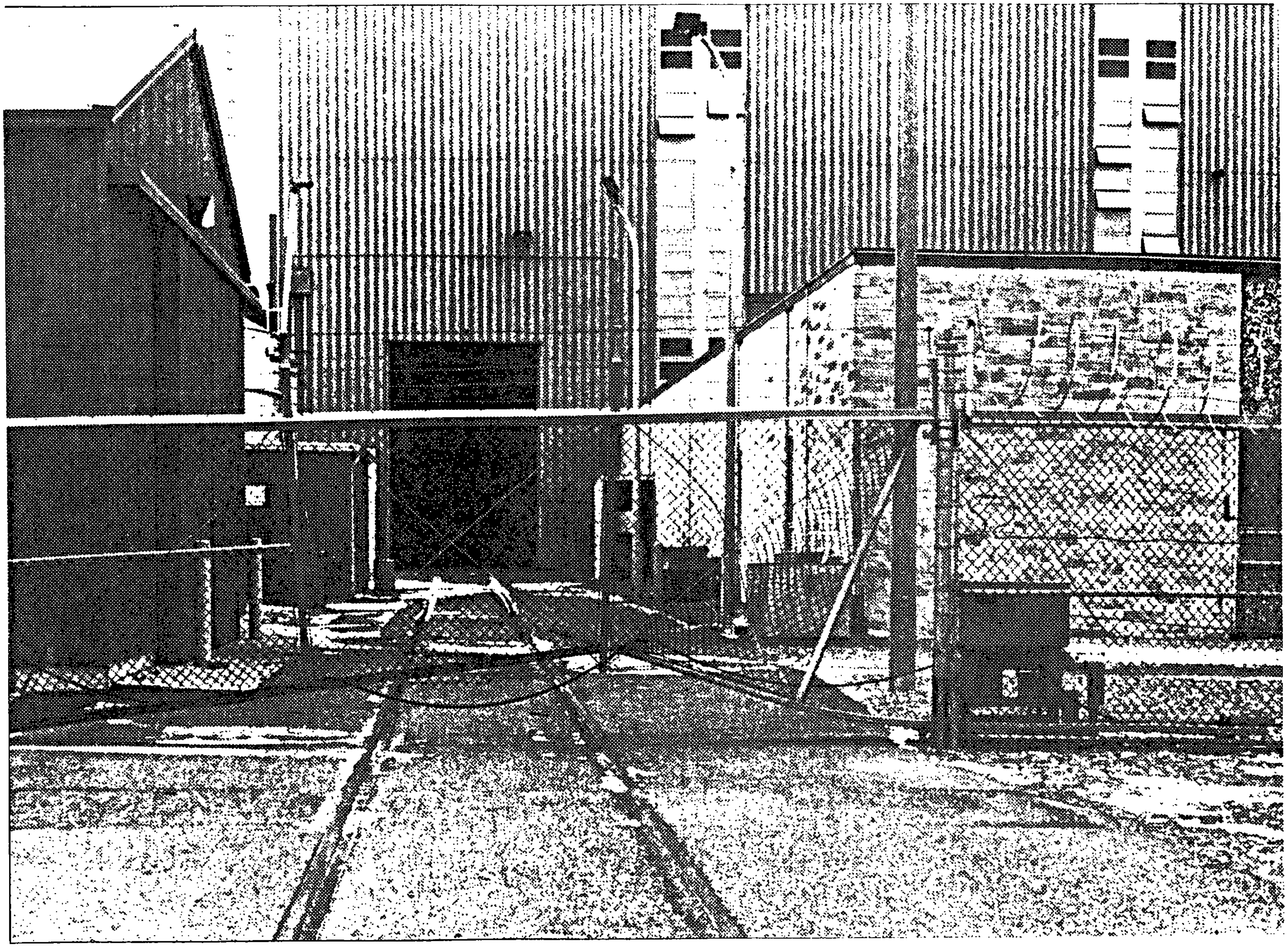


Figure 1.4 View from Owner-Controlled Area of Damaged Gate 1 and Turbine Building Door

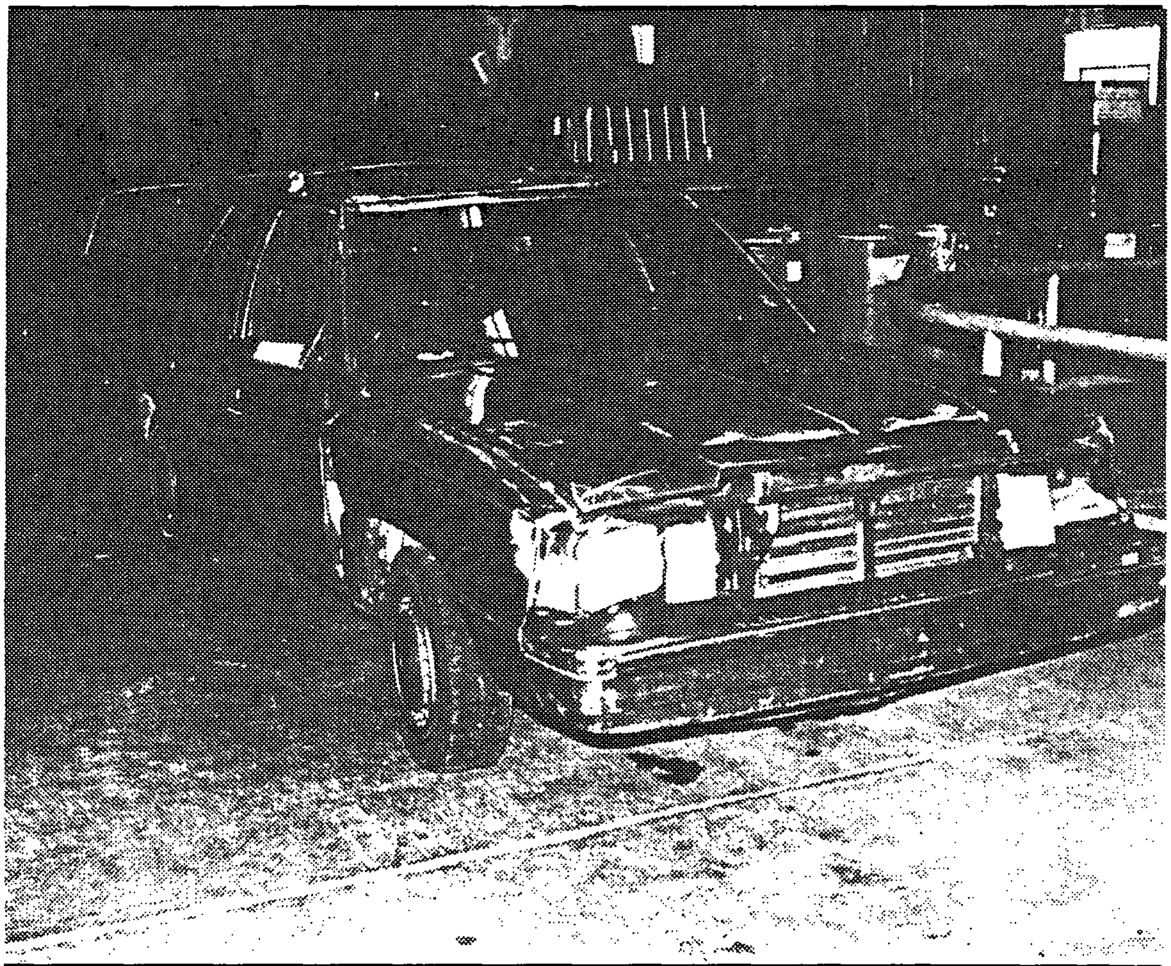


Figure 1.5 Intruder's Vehicle (1984 Station Wagon)

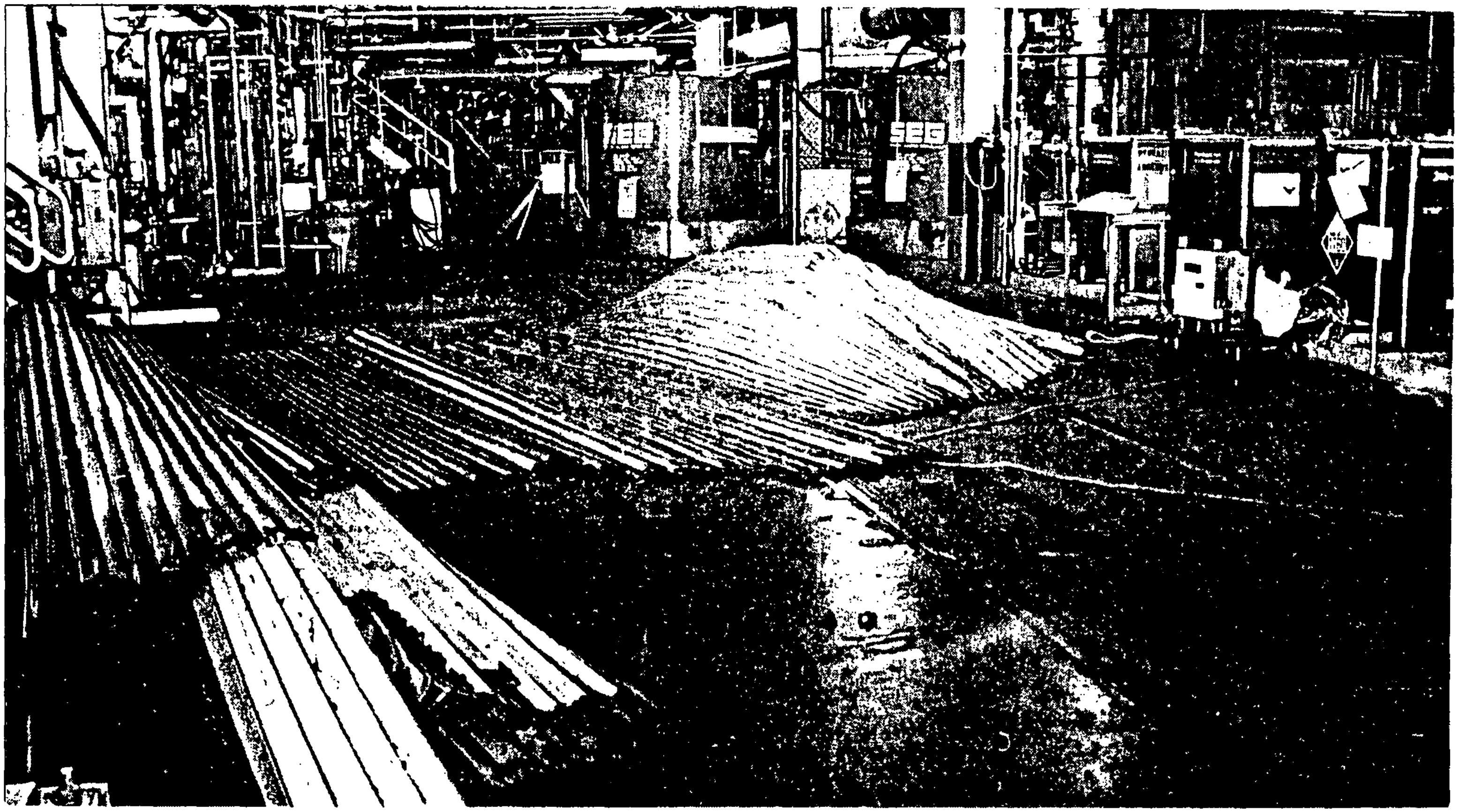


Figure 1.6 TMI Turbine Building Roll-up Door Damage after Intruder's Vehicle was Removed

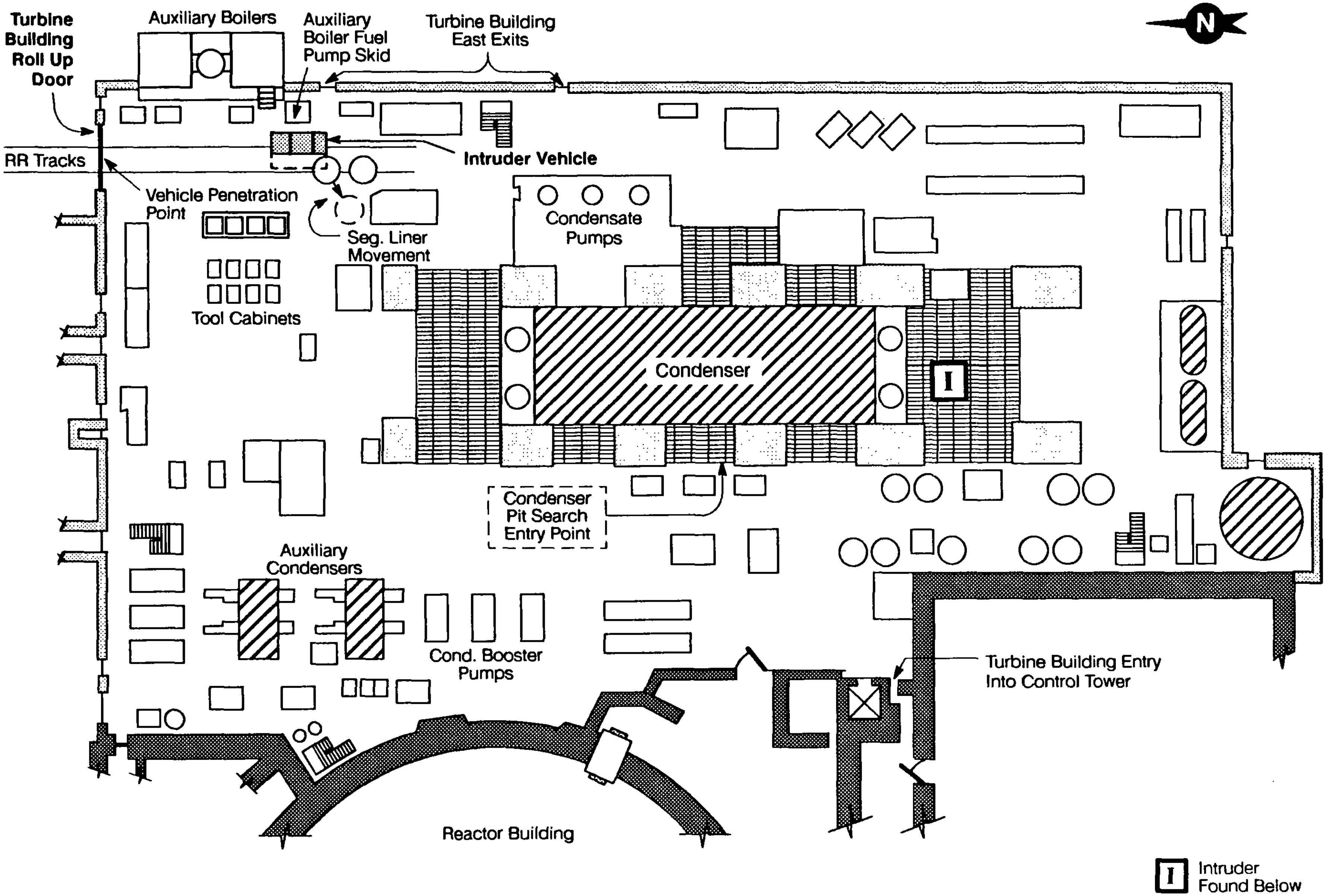


Figure 1.7 TMI Turbine Building [Elevation 305 feet (93m)]

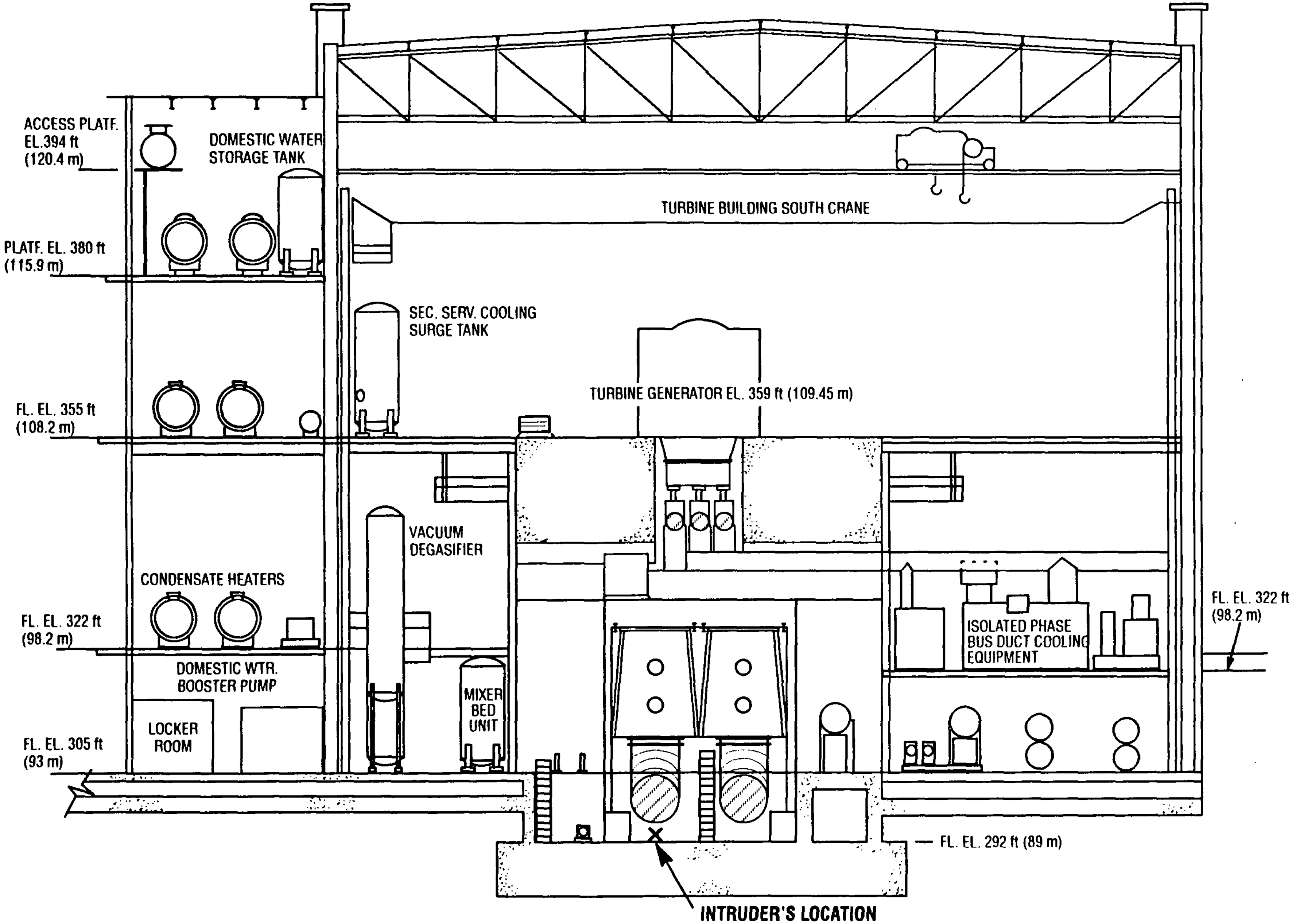


Figure 1.8 TMI Turbine Building (Sectional View)

2 DESCRIPTION AND EVALUATION OF THE FACILITY, SYSTEMS, AND PROGRAMS

2.1 Introduction

This section describes the facility organization, systems, and programs related to the unauthorized forced entry into the PA at TMI-1 on February 7, 1993. Where appropriate, this section includes an evaluation. The descriptions and evaluations follow the major functional areas involved with detection, assessment, and response to the PA intrusion; support for continued plant operations; and emergency response programs for the licensee, State, local and Federal functions.

TMI-1 is operated by GPUN and is located in Middletown, Pennsylvania, about 10 miles southeast of Harrisburg, Pennsylvania. Unit 1 is a pressurized water reactor designed by Babcock & Wilcox and operates with a rated output power of 840 megawatts electric. The ultimate heat sink for Unit 1 is the Susquehanna River. GPUN began operating Unit 1 commercially in 1974. Unit 2 is not operational and is undergoing final decontamination activities.

Figure 2.1 depicts the overall GPUN organization for TMI.

2.2 Security Program

2.2.1 Staffing and Equipment

TMI employs a proprietary security force to protect the plant. Figure 2.2 depicts the management organization for security at TMI. Figure 2.3 depicts a standard, minimum complement for a security shift.

Generally, all site protection supervisors and SPOs are armed. However, certain uniformed but unarmed positions (watchmen) occupy non-responding posts. Additional weapons and equipment are available for responders but are normally not issued.

Personnel processing equipment is located in the PC where normal PA entry and exit is conducted (Figure 2.4).

2.2.2 Owner-Controlled Area

The OCA is property that the licensee owns outside the area required to be protected by NRC regulations. The OCA encompasses plant property, which at TMI is surrounded by water on three sides and is accessible primarily by way of either the North or South Gate access bridges, both from Pennsylvania Route 441.

The OCA is defined by a chain link fence that is not alarmed and that crosses the width of the island about 0.75 miles (1.2 km) south of Unit 2, extends along both sides of the island paralleling the river bank, and joins at the North and South Gates (see Figure 2.5).

The North Gate complex is located approximately 0.7 miles (1.1 km) from the PA and is normally the primary access point to the island and into the OCA. The complex consists of two buildings including an all-weather guard house for visitors and vendors to log their identities and obtain site access approval. This guard house is equipped with communications equipment and an OCA access authorization computer terminal. The smaller vehicle checkpoint, a guard booth which separates entry and exit vehicle lanes, is outside the manually operated, dual paneled, swinging fence gate. This fence gate, which is outside the bridge and is normally open during high traffic hours, is secured by a padlock with chain during offshift periods. The gate was opened for shift change at the time of the event. The guard booth is equipped with communications equipment, two keypads, and associated monitors for the site logging system. The logging system enables security personnel to administratively record the OCA badge number for each person entering or leaving the site.

The South Gate checkpoint guard booth is located on the island side of the South Access Bridge approximately 1.5 miles (2.4 km) from the Unit 2 side of the PA, and is used, during outages or high traffic periods. This checkpoint does not include a badging office, and the fence gate is secured by a padlock and is located on the highway side of the bridge.

2.2.3 Protected Area

The OCA encompasses two fenced PAs at TMI. The main PA encompasses the Unit 1 and 2 reactor containment and support buildings. The second smaller PA encompasses the Unit 1 screenhouse, which contains equipment for the service water source from the river to the plant. Personnel, materials, and vehicles are permitted access to the PAs as needed to perform assigned duties, construction, and maintenance.

Access to and from the main PA is controlled in the PC, which contains personnel and package search areas, administrative security offices, and the equipment issue station. Access to the PA is physically controlled by turnstiles actuated by a key card.

The physical barrier delineating the main PA consists of an 11 gauge chain-link fence fabric, topped by three strands of barbed wire. The overall height of the fence is 8 feet (2.4 m), measured from the ground level to the top strand of barbed wire. The main PA barrier includes 13 motor-powered vehicle fence gates and 1 manual personnel gate.

The physical barrier delineating the screenhouse PA is of similar construction, with one motor-powered gate and one manual personnel gate. All fence gates are padlocked.

Both PAs are monitored by an intrusion detection system (IDS).

Upon observing an alarm, the security staff begins its primary assessment at the perimeters of both PAs by CCTV in the CAS and SAS. The security staff uses the CCTV system to monitor a clear area ("isolation zone") established on each side of the PA fence. After an alarm is generated in a zone, a CCTV camera transmits the scene to a monitor in each alarm station. A CCTV camera also monitors a portion of the North Gate.

2.2.4 Vital Areas

The various VA perimeter barriers consist of building walls of metal, reinforced concrete, and steel doors, which are equipped with tamper-indicating alarms and are secured mechanically. VA barriers and doors to the control room and CAS are bullet-resistant. Vital and protected area doors for vehicle access are constructed of steel and concrete and some roll-up doors are constructed of corrugated metal. VA personnel access points are locked, alarmed, controlled by a key card system, and monitored by alarm stations. Selected personnel have keys and can access VAs during emergencies.

A key card reader system normally limits access to VAs according to designated access levels. Key card doors throughout the system can be placed in an access denial mode during a contingency. This process effectively de-activates the card keys held by "non-essential" personnel.

Upon an unauthorized opening of any vital door, the IDS activate an alarm indication in each alarm station. The IDS also provides a visual indication of door status and circuit tampering.

2.2.5 Federal, State, and Local Functions

This section describes the jurisdictional parameters, organizational capabilities, and inter-organizational functions of the Federal, State, and local law enforcement agencies who were available to respond to the February 7, 1993, event at TMI; including the organization and responsibilities of the United States Army Ordnance Detachment (EOD) team (see Figures 2.6 and 2.7).

2.2.5.1 Law Enforcement Assistance

Pennsylvania State Police

The PSP operates primarily from troop barracks located throughout the State. The PSP is a large, well-trained, and well-respected law enforcement agency. The PSP is the LLEA response organization required by the security plan, as specified in a letter from PSP to GPUN dated May 4, 1992. The PSP is capable of providing the following:

- Routine Vehicular PSP Patrol Units. Receives the initial report of an emergency situation and responds. These units will likely be first on the scene in response.

- Intelligence Unit. Gathers criminal intelligence and coordinates intelligence operations and information.

- Criminal Unit. Conducts the criminal investigation of an incident to identify, apprehend, and prosecute a perpetrator.

- Special Emergency Response Team. Responds to suspected acts of sabotage, terrorism, hostage situations, and other events. The SERT is a rapid deployment team trained and equipped for such incidents and is the element of the PSP which has consistently conducted response training with TMI security personnel.

- PSP Academy Cadets. These trainees are available on call from the PSP Academy to augment other elements in situations requiring larger bodies of response personnel, such as searches of large areas like the OCA at TMI.

Middletown Township Police Department

Although there are other local police departments in the general area, MPD is the closest and is the most likely to respond rapidly to the site.

Federal Bureau of Investigation

Upon request for assistance from TMI, the FBI would review the circumstances and available information to determine if Federal jurisdiction existed. If the FBI found no Federal criminal jurisdiction early in the incident, it may choose to depart the scene or stand by and offer assistance to local law enforcement, as requested. The FBI has a memorandum of understanding (MOU) with the NRC but not with TMI. The FBI/NRC memorandum describes cooperation between the FBI and NRC in achieving a timely, reliable, and effective response to a "nuclear threat incident." It defines such an incident as a threat or act of theft or sabotage in the U.S. nuclear industry, including "sabotage or attempted sabotage of NRC-licensed nuclear facilities." The MOU indicates an understanding that the FBI shall investigate continuing nuclear-related threat situations, establish liaison, and prepare contingency response plans with pertinent LLEAs to ensure that the law enforcement agencies will respond in an effective and coordinated manner. According to the MOU, during a nuclear threat incident, the FBI shall, among other duties

- Coordinate the Federal response to the incident.

- Manage the law enforcement and intelligence aspects of the response.

- Coordinate the incident response with other Federal and local law enforcement agencies and military authorities, as appropriate.

- At the scene of a nuclear threat incident, provide the necessary support, as may be needed by NRC personnel, in performing assigned operations and actions to protect the public from radiological hazards.

- Request military or civilian explosive ordnance disposal resources, as appropriate.

The memorandum also states that "the FBI Special Agent-in-Charge of the responding FBI field office will take command of the field operations in a nuclear threat incident involving NRC-licensed facilities."

The IIT found no contingency plan prepared by TMI and the FBI for command and control other than a brief mention in the TMI Physical Security Contingency Plan. This plan indicates specifically that the PSP have primary law enforcement jurisdiction at the site. In discussing the FBI role, the plan indicates that the FBI has jurisdiction in situations involving violations of Federal laws.

2.2.5.2 Explosive Ordnance Disposal Assistance

U. S. Army Explosive Ordnance Detachment (EOD)

The detachment is responsible to support Federal, State and local law enforcement and emergency management personnel in eliminating the hazards associated with incidents involving explosives or hazardous material.

2.3 Operations

2.3.1 Onshift Organization

On the morning of February 7, 1993, TMI onshift operations organization met the plant administrative procedures and exceeded the TMI technical specification requirements. During the event the operating staff was augmented with two of the offgoing shift personnel (a control room operator and an STA) and the Plant Operations Manager (see Figure 2.8). The TMI onshift operations organization on February 7, 1993, was as follows:

- 1 shift supervisor (SRO)
- 2 shift foremen (SRO)
- 3 control room operators (RO)
- 5 auxiliary operators
- 1 shift technical advisor

2.3.2 Control Room

The operators in the control room took actions to maintain the reactor plant in a safe operational condition. The control room includes the controls needed to start, operate, and shut down the reactor plant with sufficient information displayed and alarms monitored to ensure safe and reliable reactor plant operation under normal, abnormal, and accident conditions (see Figure 2.9). The control room envelope as described in the Updated Final Safety Analysis Report (UFSAR) includes administrative offices and is a leak tight room maintained at a positive pressure by a ventilation system (see Figure 2.10). Two normally unlocked fire doors provide access from the administrative offices to the activity area where the control room operators are located. The operations shift supervisor's office is located in these offices immediately beside to the fire doors (see Figure 2.11). The operations shift supervisor can observe control room activities from his office through a window in the adjacent wall. The EPIP emergency callout and callback telephones and notification telephones are located in the operations shift supervisor's office.

2.3.3 Vital Equipment

Vital equipment is any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by causing exposure to radiation. Equipment or systems that would be required to function to protect public health and safety following such failure, destruction, or release are also considered to be vital. Vital equipment must be operable to protect the public health and safety.

2.4 Emergency Response Facilities

This section describes the facilities and equipment used by TMI, NRC, and the Commonwealth of Pennsylvania in response to emergencies at TMI. The E-Plan states that these facilities are intended to "ensure the capability, efficient assessment and control of situations over the entire spectrum of probable and postulated emergency conditions."

2.4.1 Emergency Control Center

TMI has one Emergency Control Center which is located at the 355-foot (108.2 m) elevation in the Control Tower. The E-Plan describes the Emergency Control Center as the primary location for assessing and coordinating corrective actions for all emergency conditions. The Emergency Control Center consists of the plant control room and the shift supervisor's office. The control room is equipped with displays of meteorological and radiological data, and plant system parameters. These displays are integrated with assessment aids for all critical plant systems. The E-Plan also states that the

> Command and Control of all initial emergency response activities originate from the Emergency Control Center. When the entire emergency response

organization is activated, the Emergency Director retains command and control of all onsite activities from the Emergency Control Center...The Emergency Control Center is activated for all emergency levels.

The control room and shift supervisor's office are located "in seismically rated structures and have adequate shielding to permit safe occupation for extended periods of time."

The shift supervisor's office contains the "EP Pager Call Back Line" telephone for the onshift communicator to use. The onshift communicator calls the voice mail service and records the emergency announcement which is placed in a voice mailbox for callout pager responses (see Figure 2.12).

The notification line is a dedicated line for use by the Emergency Control Center, TSC, and EOF to make official notifications of event classification. This line, which connects to the Commonwealth and all five counties simultaneously, is also located in the shift supervisor's office (see Figure 2.13).

The Emergency Control Center was partially staffed throughout the event of February 7, 1993. The individuals designated as the radiological assessment coordinator and the onshift communicator were available in the plant and were requested not to report to the control room. The shift supervisor's office was not staffed until approximately 9:27 a.m. when the control room personnel began making pager contacts and callouts.

2.4.2 Technical Support Center

The TSC is located at the 322-foot (98.2-m) elevation in the Control Tower. The TSC accommodates engineering personnel who give detailed diagnostic and corrective engineering assistance to the ED. The initial response organization staff is to report to the TSC within 1 hour of notification of a declaration of an Alert, Site Area Emergency, or General Emergency.

The TSC location specified in the E-Plan was not activated during this event. At 10:08 a.m., the TSC was declared staffed at the Training Center.

2.4.3 Operations Support Center

The Operations Support Center (OSC) is located at the 305-foot (93-m) elevation in the Control Tower. Shift personnel muster in the OSC, which is also the location to organize and dispatch emergency response teams including the fire brigade and those response teams responsible for onsite radiological monitoring, rescue operations, damage control, and maintenance. The OSC initial response organization staff is to report to the OSC within one hour of notification of a declaration of an Alert, Site Area Emergency or General Emergency.

The OSC was not formally activated during this event. At 9:01 a.m., the OSC responders mustered at the Training Center. A repair group to repair the protected area fence gate and the Turbine Building roll-up door gathered at the operations support facility.

2.4.4 Emergency Operations Facility

The EOF is located at Commerce Park, Harrisburg, Pennsylvania. The EOF is the primary location for the licensee's management of the overall emergency response. This facility is equipped and staffed to enable the licensee to coordinate emergency response with offsite organizations; assess the environmental impact of the emergency; assess accidents; send data to Federal, Commonwealth, and local agencies; and make Protective Action Recommendations to Commonwealth and local authorities. The Emergency Support Director and other staff will respond to the EOF within 1 hour of notification of a declaration of a Site Area Emergency or General Emergency. Additional support staff (designated members of the Emergency Support Organization) report to the EOF within 4 hours of being notified of a declaration of a Site Area Emergency or General Emergency.

At 8:45 a.m., the decision to activate the EOF was made during a call between the operations coordinator in the control room and the Plant Engineering Director while the Plant Engineering Director was on route to the Training Center. The Plant Engineering Director reported to the EOF, and at 9:55 a.m. assumed the responsibilities of Emergency Support Director, declaring the EOF operational.

2.4.5 Parsippany Technical Function Center

The Parsippany Technical Function Center is located in Parsippany, New Jersey, at the GPUN headquarters and serves both TMI and Oyster Creek plant sites. The senior position at this center is the Group Leader - Technical Support. The staff at this facility have access to plant parameters by means of CRT terminals. This facility contacts the nuclear steam supply system vendor for emergency assistance. The staff of this facility should report within 4 hours of being notified of a declaration of a Site Area Emergency or General Emergency.

During the event this facility was declared staffed at 10:30 a.m.

2.4.6 Training Center

The TMI Training Center is located on Pennsylvania Route 441, between the North and South Gates to TMI. The center includes classrooms, office space, telephones, and a simulator of the Unit 1 control room. The simulator includes set of controlled procedures similar to those kept in the control room. A terminal in a room next to the simulator can be connected to the plant process computer by modem and telephone line. This line gives access to plant parameters and to data from the Safety Parameter Display System and the ERDS. Neither the E-Plan nor the Emergency Plan Implementing Document (EPIPs)

identify the Training Center as an alternate Technical Support Center or Operations Control Center.

Although the Training Center was not preplanned as a backup TSC, the responders to the TSC and OSC mustered at the Training Center and staffed it during the event.

2.4.7 NRC Incident Response Program

The NRC regulates civilian nuclear activities to protect the health and safety of the public and to preserve the quality of the environment. To fulfill its legislated mandate, NRC prepared Revision 2 of NUREG-0728, "NRC Incident Response Plan," and specific procedures that describe the Agency's response to incidents involving NRC-licensed activities. In its incident response plan, the NRC recognizes that two organizations are the primary decision makers in a radiological emergency: the individual licensee or plant operating company, and the affected State or local government. The licensee has primary responsibility for mitigating the consequences of an event by taking the necessary and appropriate actions inside the plant and by recommending appropriate offsite protective actions. The offsite authorities (i.e., State or local government) have the primary responsibility for evaluating the licensee's protective action recommendation and then implementing those protective actions which they deem appropriate.

The NRC major emergency response roles are to (1) monitor and assess the licensee's actions to ensure that appropriate protective actions are being implemented on site and are being recommended to offsite officials; (2) support offsite authorities and the licensee by facilitating any requests for Federal assistance; and (3) keep other Federal agencies and entities (e.g., Congress, White House) and the media informed of the status of the incident.

The level of NRC response is determined by senior NRC management, located in the NRC Headquarters and the affected regional office, in conjunction with technical specialists at the time of the event notification. Four incident response modes may be considered in making the initial decision: Normal, Monitoring, Standby or Initial Activation. The fifth mode, Expanded Activation, can not be considered until the NRC site team has arrived at the site and been fully briefed by the licensee, NRC resident inspector, the executive team, and the Operations Center response teams (see Table 2.1).

NRC initiated the Standby Mode at 7:35 a.m. during the February 7, 1993, event. For situations that are uncertain or that present a potentially serious condition, a decision may be made by the regional administrator in conjunction with a Headquarters executive team member to place the NRC in the Standby Mode. These events would be monitored continuously over the ENS. The executive team consists of the NRC Chairman or acting Chairman, the Executive Director for Operations, and each of the Headquarters program office directors or their alternates. The Headquarters operations officer will inform an executive team member of the event. The notified executive team member, in conjunction with the regional administrator, will then decide which actions the Agency should take.

In the Standby mode, the Regional Incident Response Center will be staffed (see Figure 2.14). Similarly the NRC Operations Center will be staffed by members with expertise specific to the particular event (see Figure 2.15). The Headquarters response effort is led by an executive team member in the NRC Operations Center. The base team manager, usually the regional administrator or his deputy, directs the overall NRC response effort from the Regional Incident Response Center. During the Standby Mode, the region has the lead for all communications with the licensee over the ENS and the Health Physics Network (HPN). In response to the February 7, 1993, event, the Region I Incident Response Center was considered operational at 8:45 a.m.

2.4.8 Emergency Response Data System

On September 23, 1991, the NRC published Generic Letter 91-14, "Emergency Telecommunications," in which it explained the emergency telecommunications system that the Agency was to implement at nuclear power reactor sites (Table 2.2). The ERDS channel is one of the seven essential emergency communication functions and is the channel over which the raw reactor, radiological, and meteorological data is transmitted from the site. For the NRC to fulfill its role during emergencies, it must have accurate and timely data on a selected set of plant parameters. These parameters fall in four areas:

- the core and coolant system conditions
- reactor containment
- radioactive release rates
- meteorological information

To assist in collecting the data the NRC needs to fulfill its evaluation responsibilities, the NRC established the ERDS. The ERDS enables the licensee to electronically transmit selected parameters directly from the electronic data systems installed at operating nuclear power reactors to the NRC Operations Center. The ERDS is not on line continuously, but it is to be activated by the licensee within an hour of a declaration of an Alert or higher emergency class.

At TMI the ERDS function is initiated from the control room, the TSC, or another location with access to the plant computer. The process has been automated so that the operator need only press two keys.

During the event, TMI staff attempted repeatedly to initiate the ERDS without success; therefore, the NRC was not receiving ERDS data. About 2:00 p.m. the licensee staff isolated the problem to the telephone line. On Wednesday, February 10, 1993, the problem was traced to a loose connection on the licensee's side of the demarcation point. On December 7, 1992, the licensee had a new telephone system installed and, although the problem can not be directly attributed to it, it is probable that the ERDS line wire connection was inadvertently loosened when the new telephone system was installed (see Figure 2.14).

2.4.9 State, Local, and Federal Facilities

The Commonwealth of Pennsylvania has its Emergency Operations Center (Commonwealth Emergency Operations Center) in Harrisburg. This center has provisions and accommodations to support Commonwealth emergency operations. The communications system at this center connects to all county emergency operations centers. During an emergency, representatives from selected Commonwealth agencies assemble in the Commonwealth Emergency Operations Center to manage and coordinate response activities. In the Commonwealth of Pennsylvania, the Commonwealth has the authority for making protective action decisions. The Pennsylvania Emergency Management Agency (PEMA) is the designated lead agency for planning radiological emergency responses and the agency through which the Governor of Pennsylvania exercises control and coordination during the emergency. Other agencies responding to the Commonwealth Emergency Operations Center include the Department of Environmental Resources, Bureau of Radiation Protection, and the Commonwealth Department of Agriculture.

Each of the counties in the Plume Exposure Pathway Emergency Planning Zone has a county emergency operations center. During the event of February 7, 1993, PEMA and each of the Plume Exposure Pathway Emergency Planning Zone counties were notified of the declaration of the Site Area Emergency by 7:21 a.m.

Table 2.1 NRC Response Modes		
NRC Response Mode	**Lead[1]**	**Response Manager Title**
Monitoring	Regional Incident Response Center	Base Team Manager
Standby	Region Incident Response Center	Base Team Manager
Initial Activation	NRC Operations Center	Executive Team Director
Expanded Activation	Site Team (normally in plant EOF)	Director of Site Operations

1 "LEAD" refers to lead for NRC response and not overall response to the emergency.

TABLE 2.2 Emergency Telecommunications Network				
	number of lines			
Communication Channel	**CR**	**TSC**	**EOF**	**Principal Users**
Emergency Notification System (ENS)	1	2	2	Utility & NRC
Health Physics Network (HPN)	0	2	2	Utility & NRC
Reactor Safety Counterpart Link (RSCL)	0	1	1	NRC
Protective Measures Counterpart Link	0	1	1	NRC
Management Counterpart Link	0	1	1	NRC
NRC Local Area Network Access Line	0	1	1	NRC
Emergency Response Data System (ERDS)[1]	—	—	—	NRC

1 The line for ERDS terminates in the room housing the computer that provides the data to ERDS. The ERDS data is used by the NRC at the NRC Operations Center and the regional incident response center.

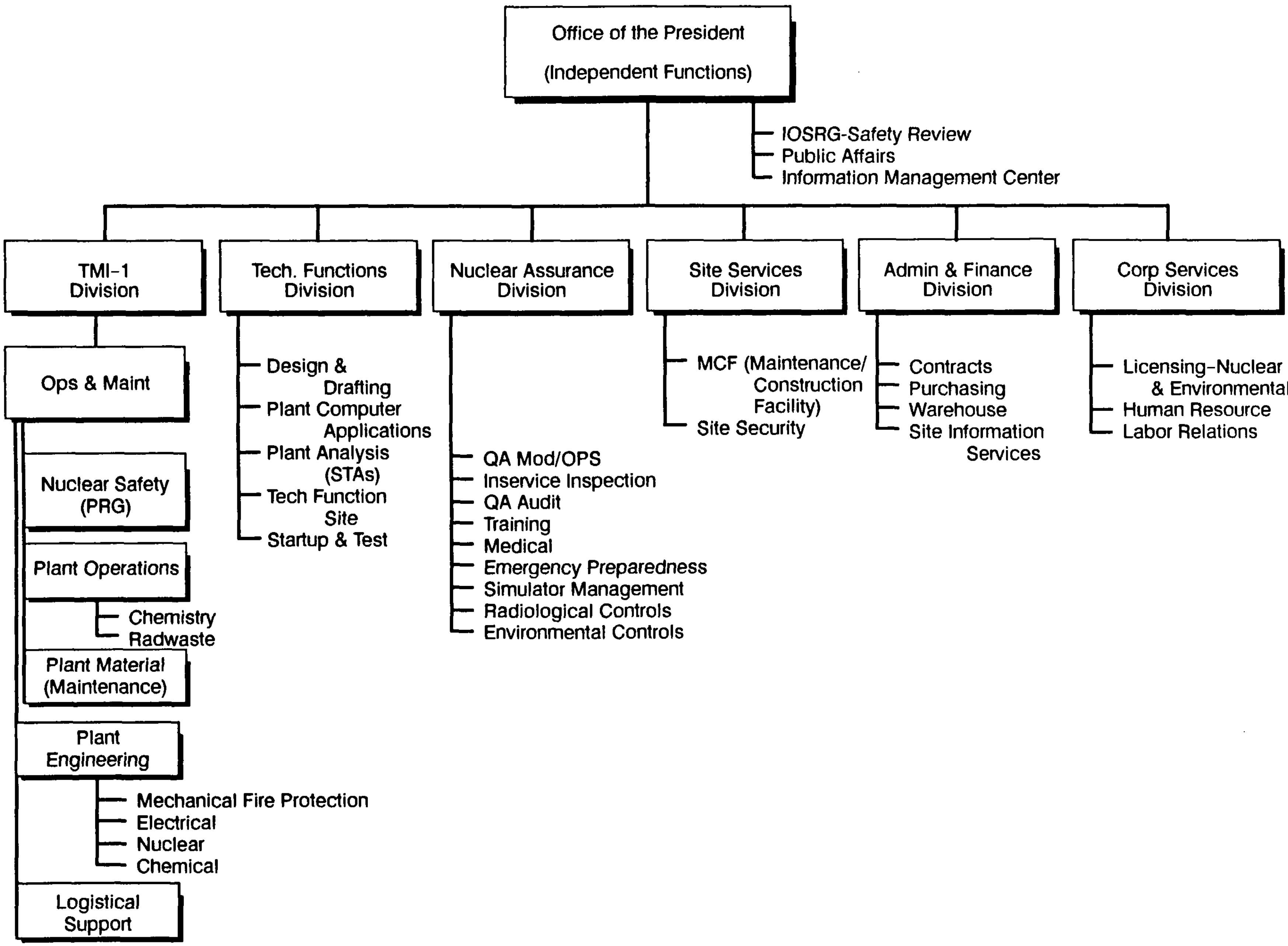


Figure 2.1 GPU Organization

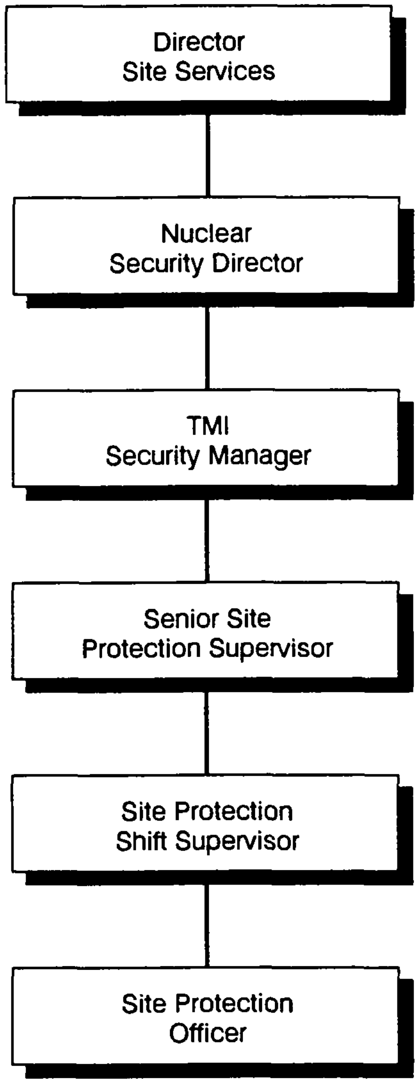


Figure 2.2 GPU TMI Security Organization

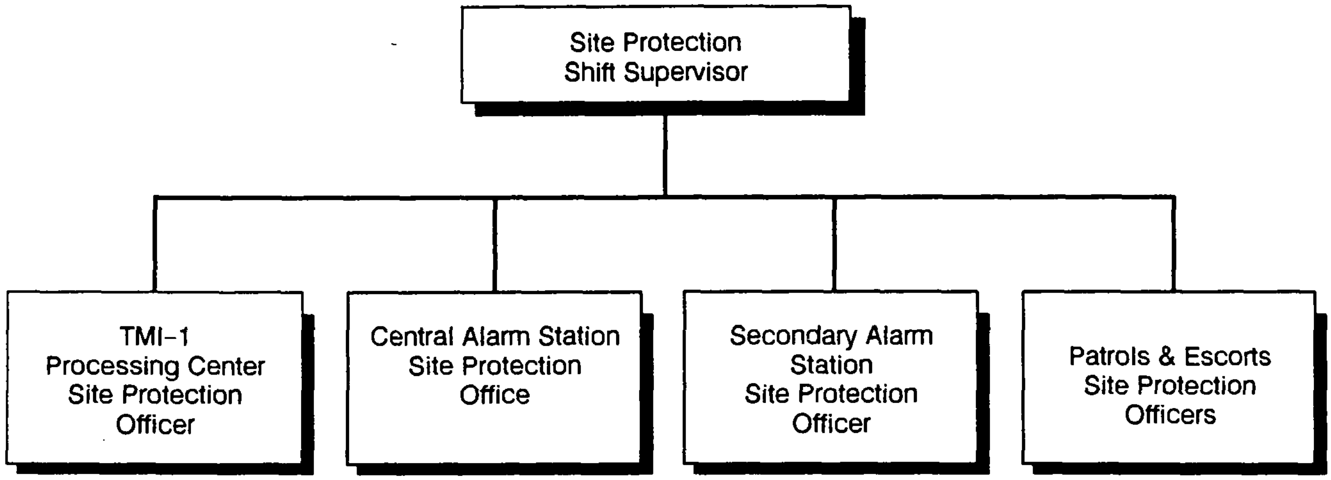
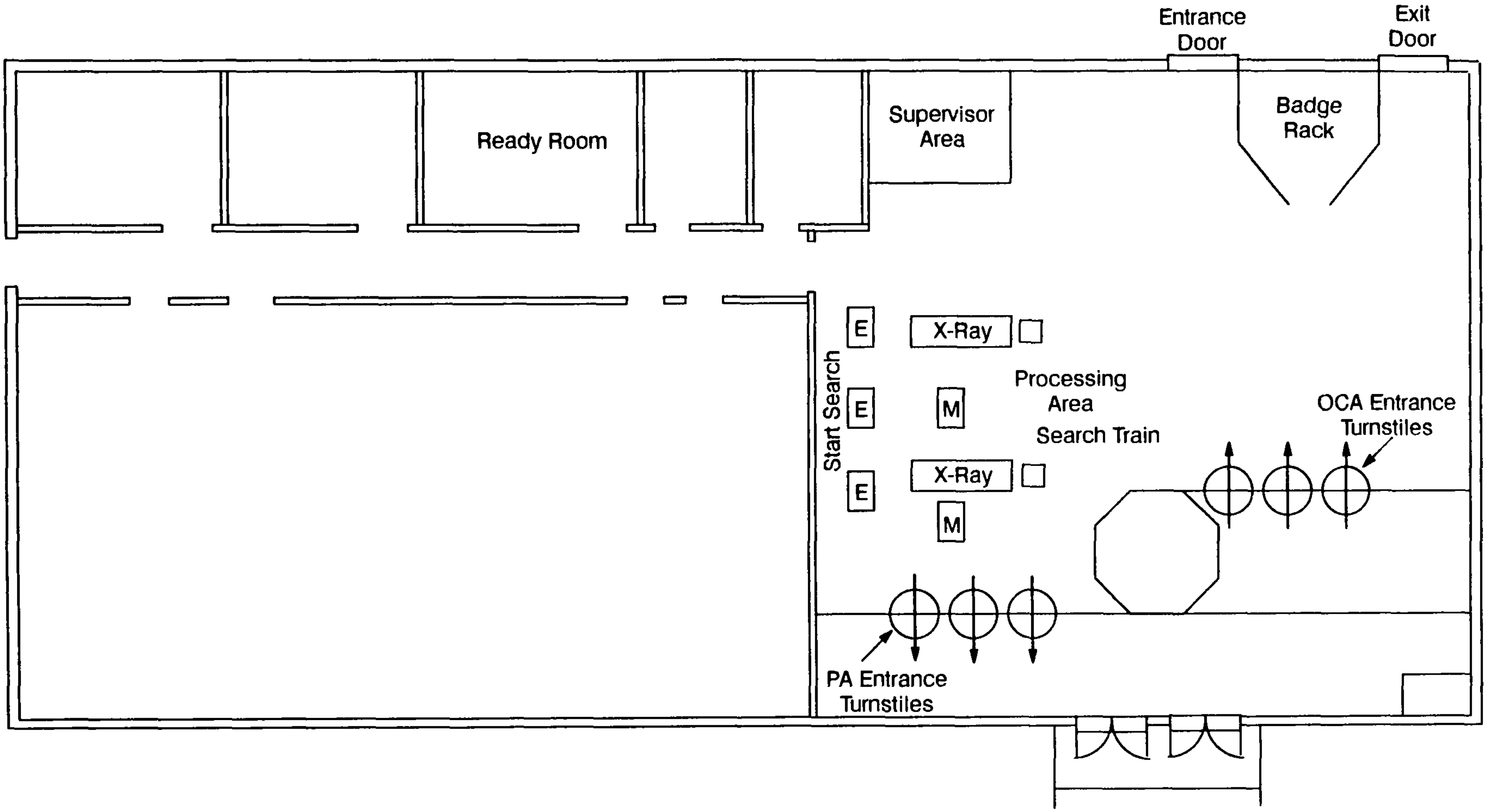


Figure 2.3 TMI Normal Site Security Shift



E - Explosive Portal
M - Metal Portal

Figure 2.4 Processing Center (PC)

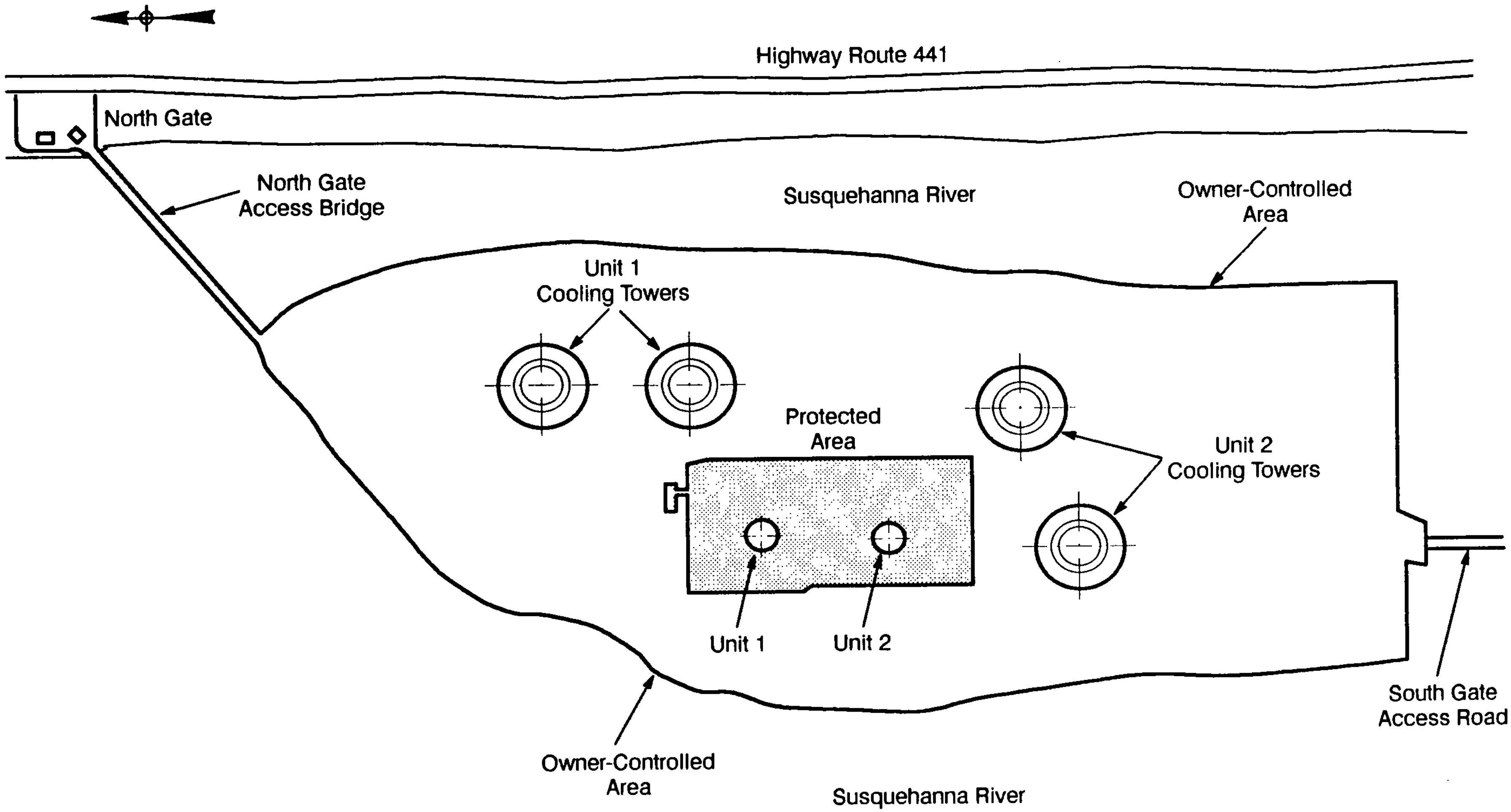


Figure 2.5 TMI Owner-Controlled Area

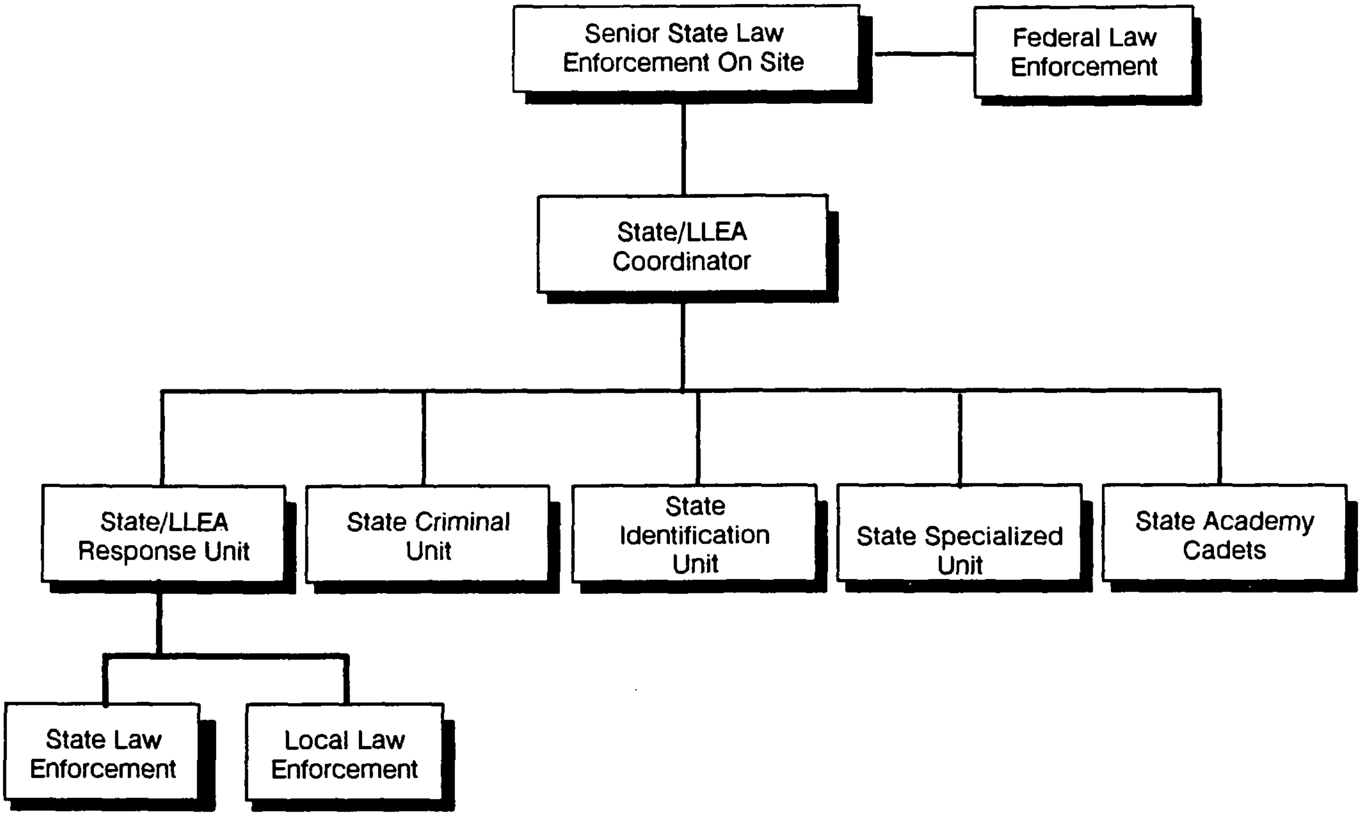


Figure 2.6 Local Law Enforcement Agency Response Organization

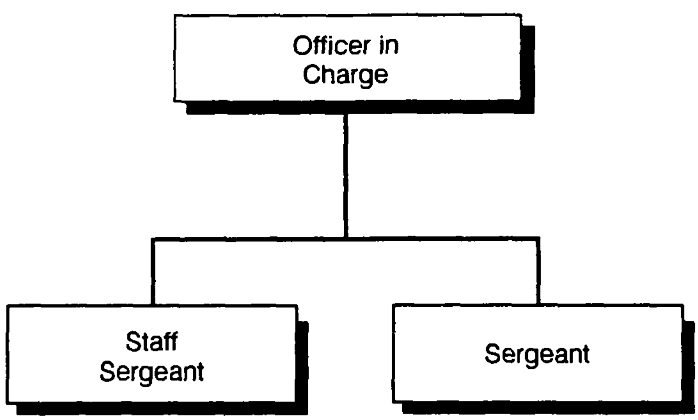
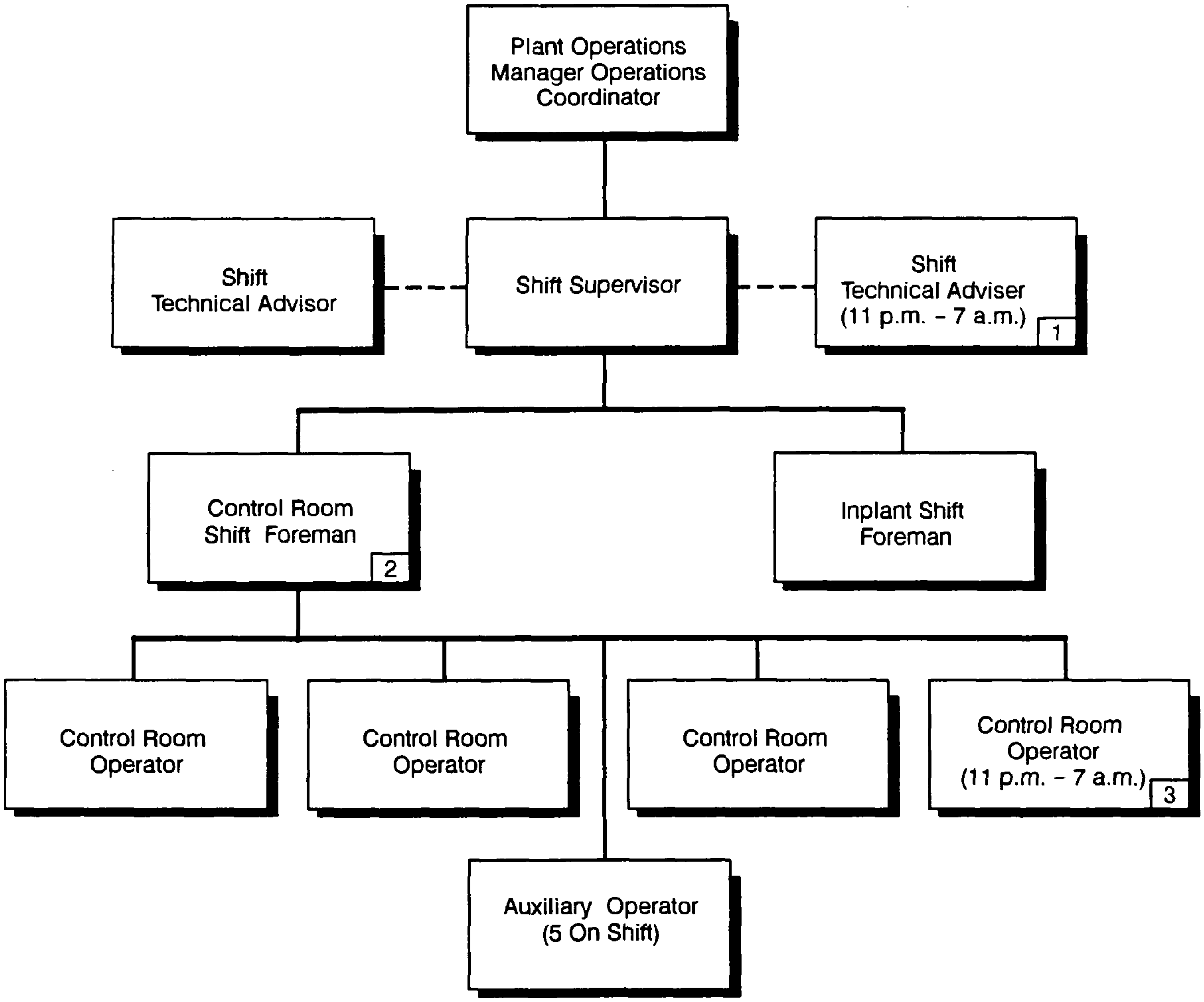


Figure 2.7 Explosive Ordnance Disposal



1 Stayed over from 11 p.m. - 7 a.m. and staffed ENS (NRC) telephone and tech. functions line.

2 Made notifications according to EPIP-TMI-.03, "Emergency Offsite Notifications," and EPIP-TMI-.04, "Contact/Callout of Emergency Personnel".

3 Stayed over from 11 p.m. - 7 a.m.

Note: Initially left the control room (after being relieved). He was detained in the PC and returned to the control room with the Plant Operations Director.

Figure 2.8 Shift Complement for the 7 a.m. - 3 p.m. shift on February 7, 1993

Figure 2.9 TMI-1 Control Room

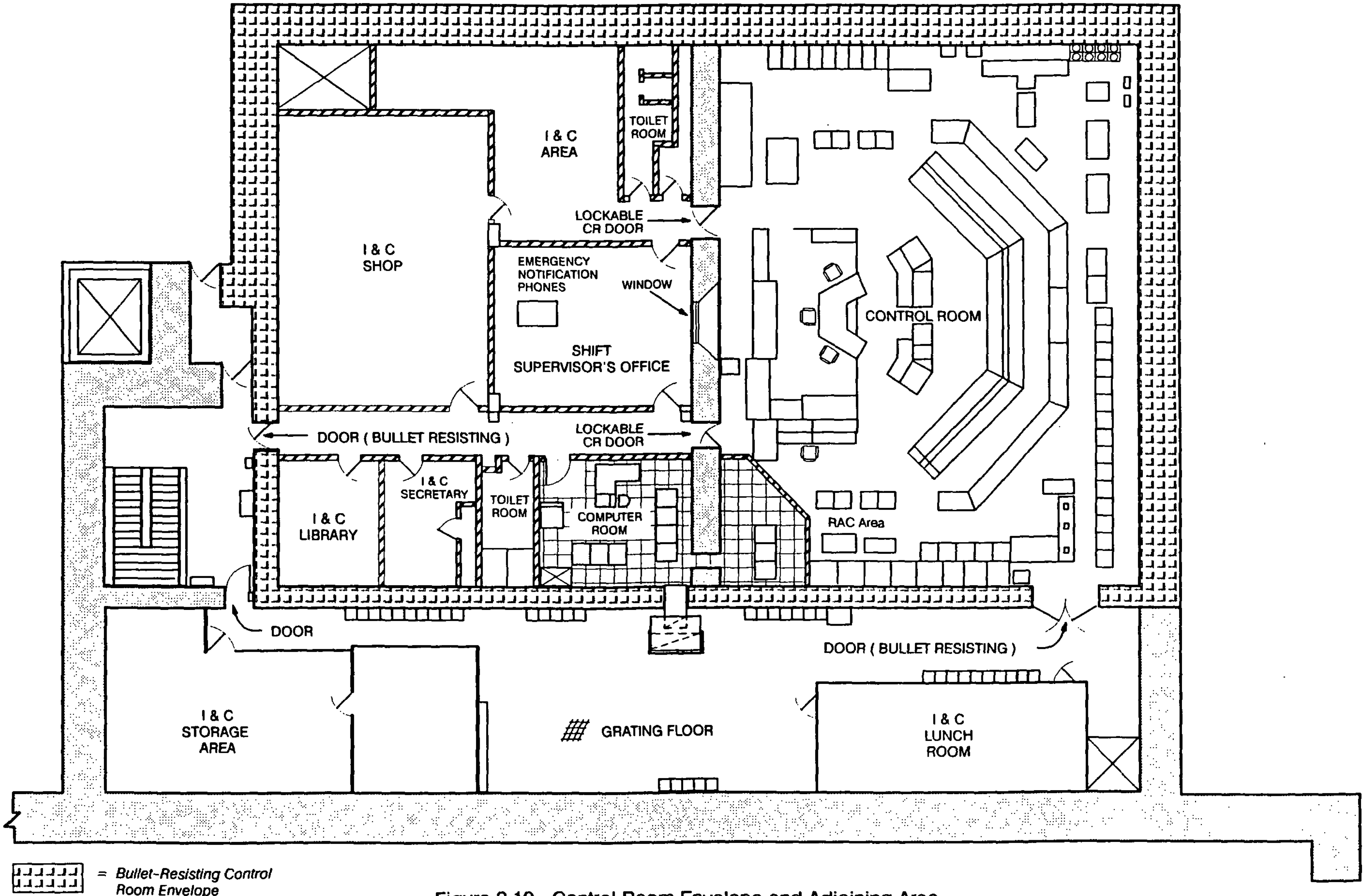
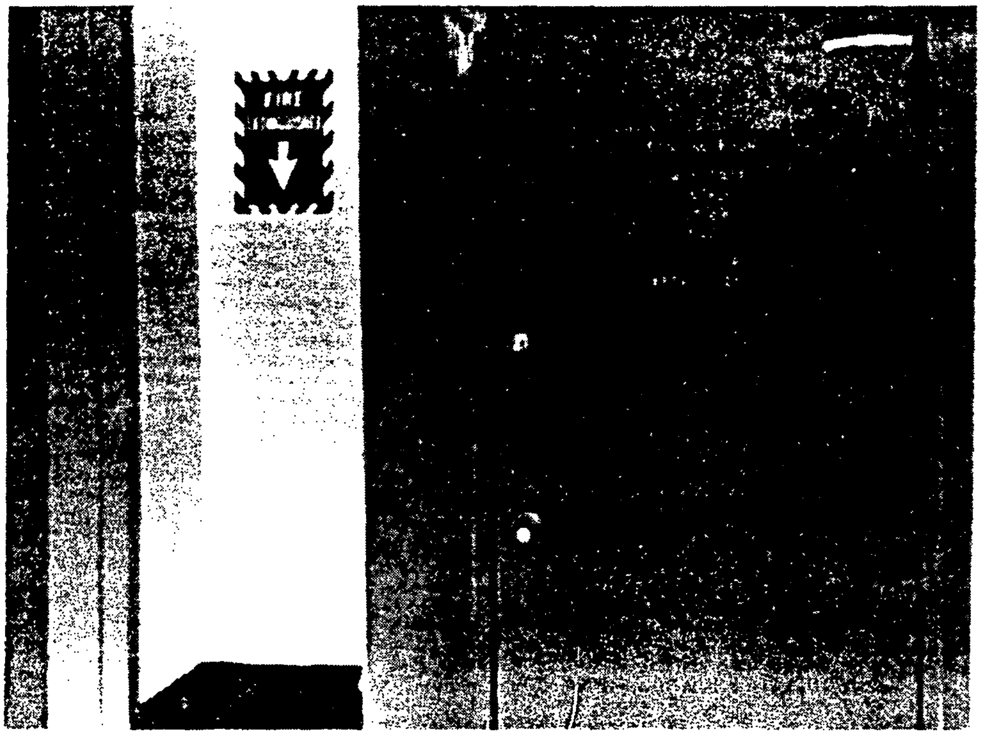
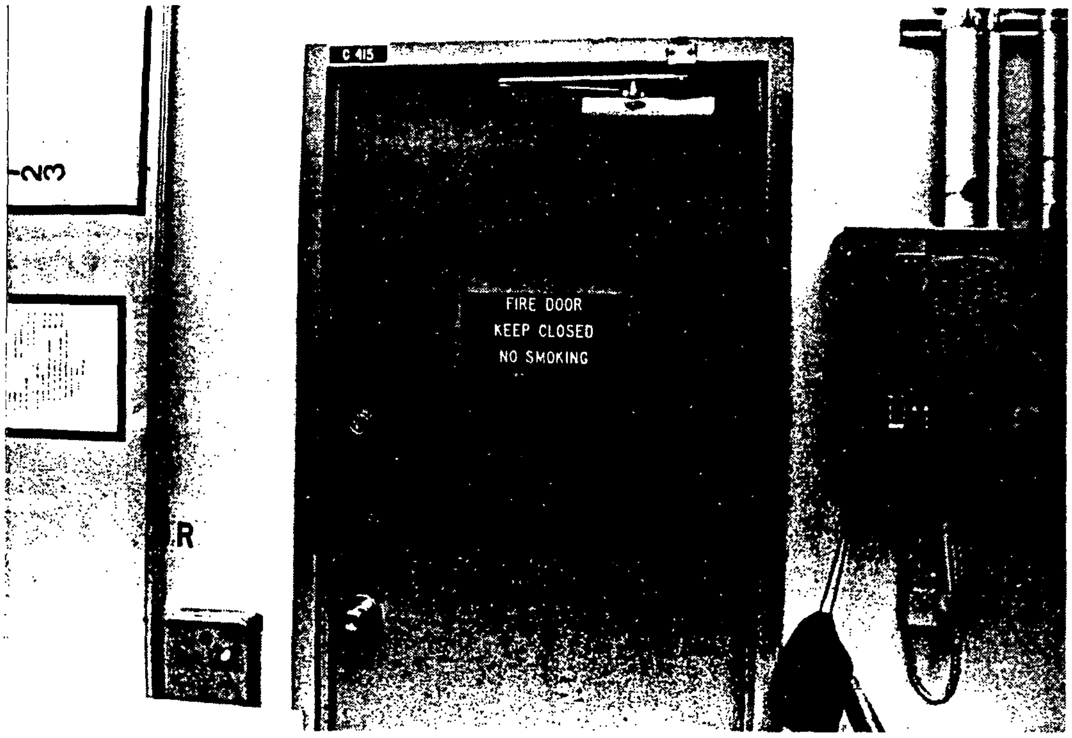


Figure 2.10 Control Room Envelope and Adjoining Area



View Entering Control Room



View Leaving Control Room

Figure 2.11 Fire Door Between Control Room and Shift Supervisor's Office

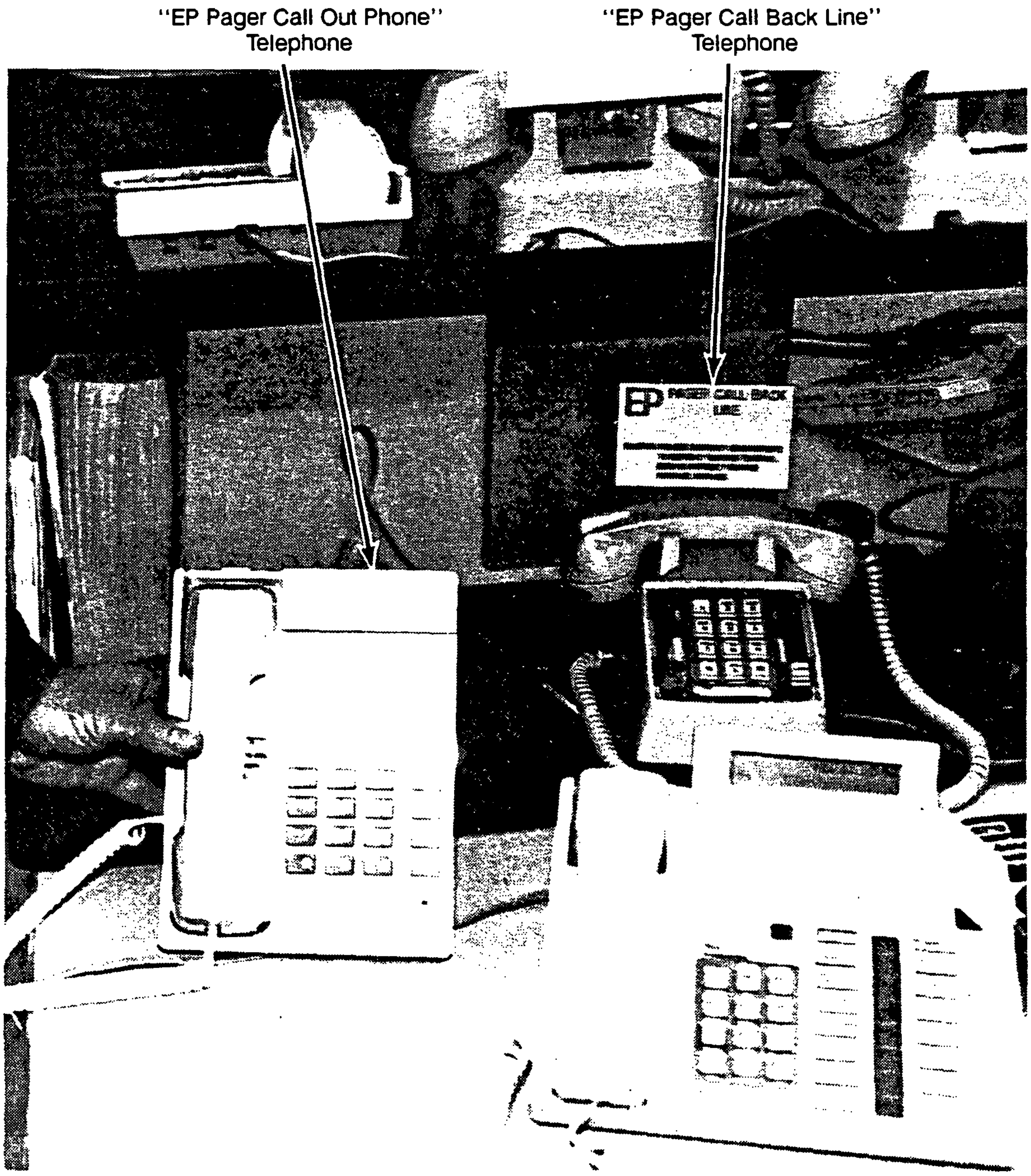


Figure 2.12 EP Call Back Answer Telephone (Pager Call Back Line) and Call Out Telephone (Pager Call Out Phone) Located in the Shift Supervisor's Office

Notification Line Telephone

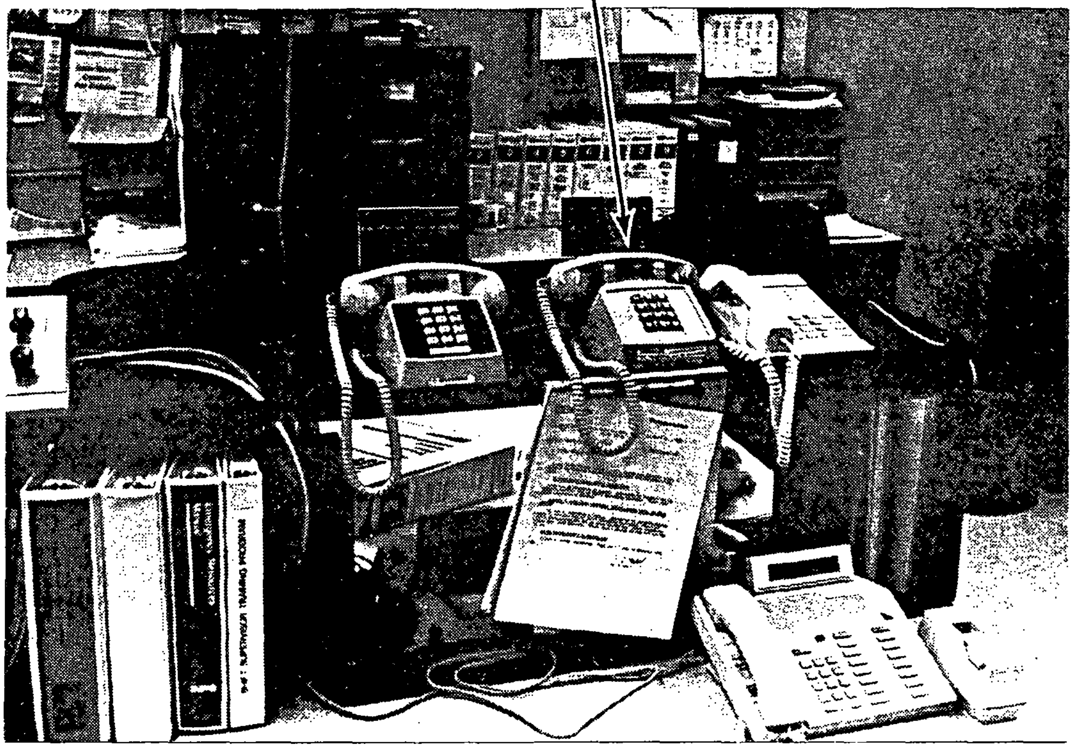


Figure 2.13 Notification Line Telephone Located in the Shift Supervisor's Office and used to notify the Commonwealth and Counties of Emergency Classifications

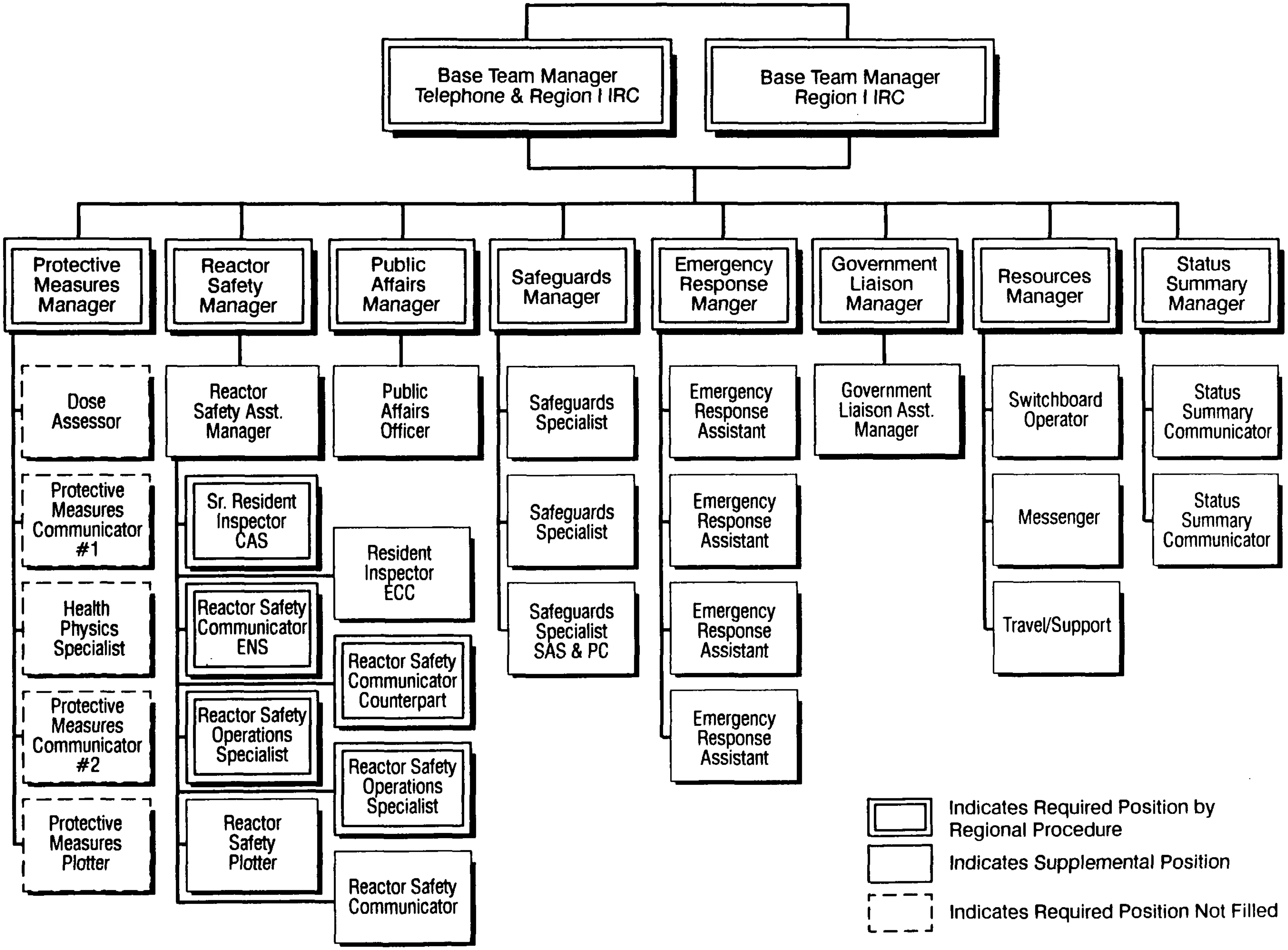


Figure 2.14 NRC Region I Response Organization for TMI-1 Event of February 7, 1993

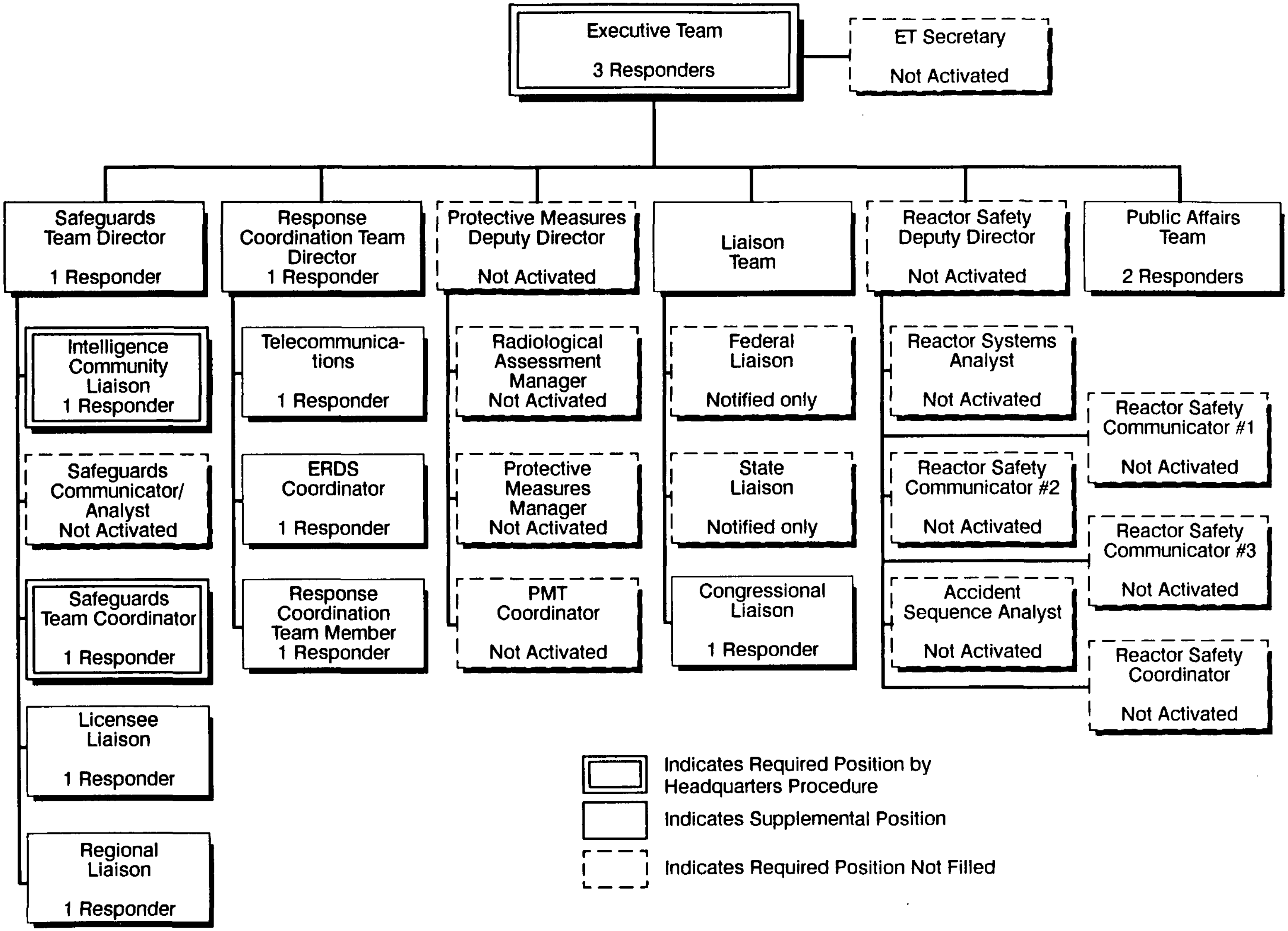


Figure 2.15 NRC Operations Center Response Organization for TMI-1 Event of February 7, 1993

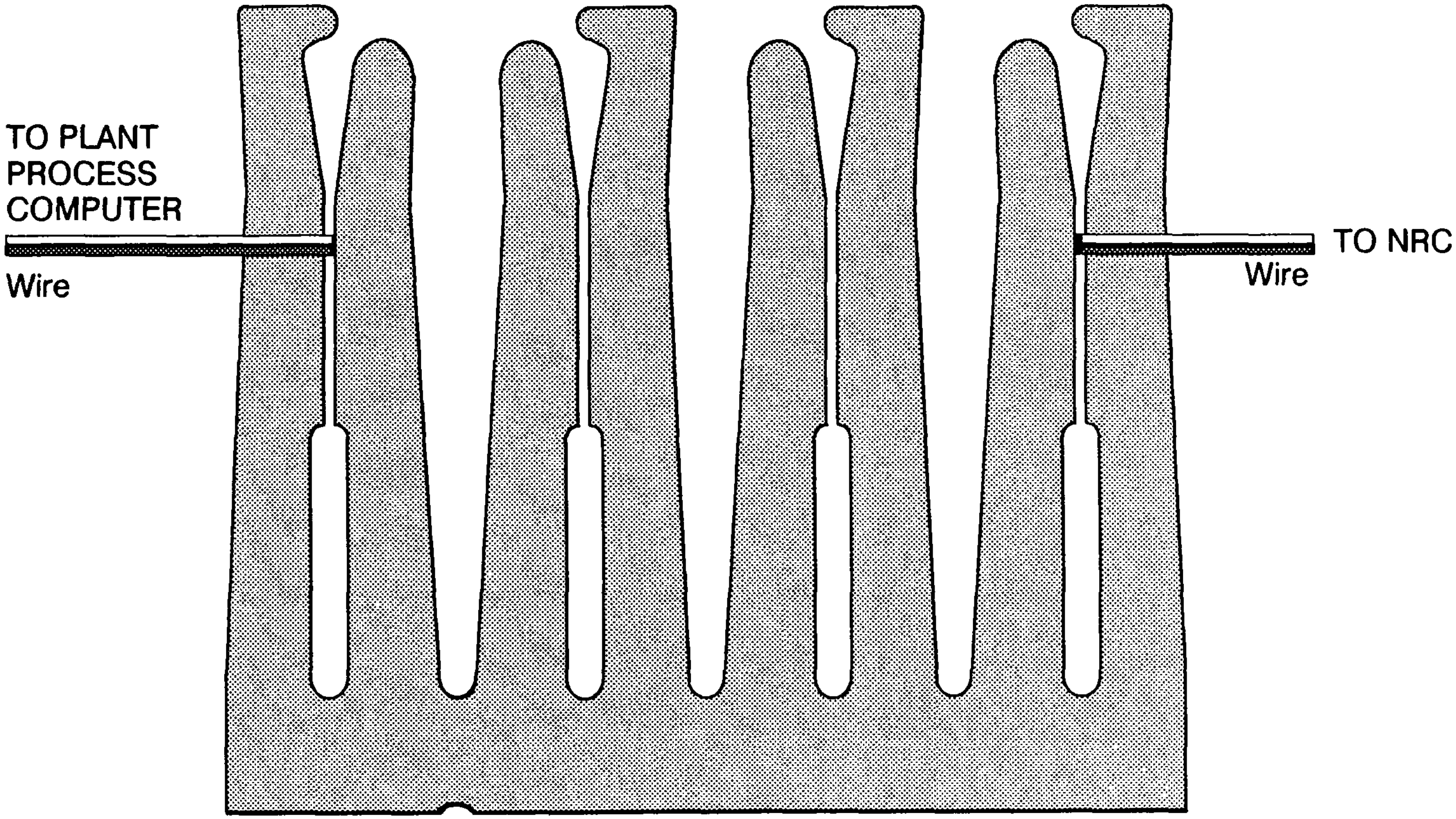


Figure 2.16 Cross Sectional View of 66 Block Showing Location of ERDS Telephone Demarcation Point

3 HUMAN FACTORS CONSIDERATIONS

This section discusses the human factors associated with the event as they pertain to personnel performance, procedures, and training in the functional areas of IIT review. Where appropriate this section includes an evaluation.

3.1 Security Program

The IIT considered key actions taken by security officers, the timeliness and appropriateness of these actions, and the human performance factors that influenced these actions. Among the factors affecting security performance were responder positioning, threat identification, reaction to the threat, contingency procedures and training, and interaction with security systems and equipment.

In Section 73.55 (h)(4) of Title 10 of *Code of Federal Regulations* (10 CFR 73.55), the NRC requires the licensee's security organization to "[d]etermine whether or not a threat exists, assess the extent of the threat, if any, and take immediate concurrent measures to neutralize the threat."

The TMI Contingency Plan requires the security force to take action to protect the plant from sabotage which could result in a radioactive release. This mission is performed by the security organization and aided by security systems.

3.1.1 Protected Area Alarm Assessment System

An important element of an intrusion detection system is the assessment capability associated with perimeter intrusion alarm system. In NUREG/CR-5721, "Video Systems for Alarm Assessments" (1991), the NRC stated

> The basic functions of a physical protection system are (1) detection, (2) delay, and (3) response. Detection is the discovery of an adversary action and is completed only when the sensor alarm is communicated to the security control center, and the system operator assesses the cause of the alarm. The detection function relies on assessment to affirm quickly if the alarm is a real threat or a nuisance alarm.

The design and application of the TMI CCTV assessment system appears to be consistent with design specifications; however, the design capabilities of the system were not sufficient to assess this particular threat (vehicle). This inability was notable because the alarm station operators could not confirm and assess the intrusion and determine the threat, and thus

dispatched an SPO to assess the threat. Although NRC regulations require the licensee to determine whether or not a threat exists, the regulations do not specify the mode of entry. The CCTV system functioned as designed and approved by the NRC, and SPOs took appropriate assessment actions.

The following is an evaluation of factors which could have affected surveillance and assessment by alarm station operators:

- The field of view of the camera alarm scene was limited by building structures in close proximity to the isolation zone covered by CCTV. Once the intruder's vehicle was through the isolation zone, it was quickly concealed by interior buildings.

- The location of the camera which was monitoring the area where the intruder's vehicle entered limited the capability of the camera to discern certain objects.

3.1.2 Contingency Response

The TMI Contingency Plan requires that vital area portals be secured if there is a breach in the PA barrier. To meet this plan requirement, the licensee prepared implementation Procedure A420-IMP-1530.06, "Physical Protection of Protected and Vital Areas." This resulted in the licensee deploying SPOs to establish defensive positions at certain vital area access portals while the CAS operator began to implement a procedure to limit access through vital area access portals.

The protective security strategy in the contingency plan was limited and did not appear to ensure protected interdicting positions for all appropriate vital area portals. Although security personnel reacted promptly and complied with site procedures, it was apparent that only selected vital area portals were physically protected. Security forces were available to cover additional vital area entrances. However, the SPOs were placed on activities to protect the plant trip capability and to search for the intruder. The following is an evaluation of factors that could have affected contingency response:

- No vehicle was available at the North Gate, which could have allowed officers to pursue and intercept the intruder vehicle.

- Of the SPOs dedicated to armed response, some were positioned outside the PA. The effectiveness of one SPO was severely limited by his distance from the Unit 1 side of the PA because he was on break.

- A security compensatory measure was implemented which, to some degree duplicated a security measure that was already in place. This was significant because additional response assets were needed within the PA to supplement protection and search functions.

- The initial response by the SPOs to cover designated vital area doors was timely and appropriate.

3.1.3 Response Weapons, Equipment, and Positions

During the event, initial responders did not have contingency response weapons when they arrived at their defensive positions. The following is an evaluation of factors which affected response weapons, equipment, and positions:

- Response weapons were stored in isolated locations and were not readily available to armed responders.

- The SPOs had to retrieve additional armament and make it ready for use while deploying to response positions which could be untimely and create a personnel safety hazard.

3.1.4 Search-and-Clear Operations

Once initial VA guards were in position, search-and-clear operations were delayed for over an hour because a sufficient number of offsite SPOs had not yet responded to the site call-up. In addition, there was some initial confusion as to who would assume command and control of search operations. However, once the responders were organized, all levels of the Turbine Building were searched. The SPOs opened doors, entered rooms, and cleared them appropriately while observing noise abatement tactics and communications discipline. The following is an evaluation of factors that affected search-and-clear operations.

- The licensee did not establish a clear command structure to control search-and-clear operations. This created delays and resulted in some areas not being thoroughly searched.

- The reluctance of officers to use certain response weapons could have placed the officers at a disadvantage if they had confronted an intruder armed with a weapon having capabilities associated with the design basis threat.

- Before special PSP response personnel arrived, site security forces were searching for the intruder and for explosives as specified by the Contingency Plan; however, they had not received training in explosives recognition.

- After search-and-clear operations were completed in some areas, these areas were not posted and secured by an armed officer.

- The TMI security staff did not contact operations personnel to obtain information about where the intruder might be located.

- Lax procedures were noted including those for maintaining standoff distances from possible explosives, improper use of communications equipment near a possible explosive source, and escorting individuals close to the possible explosive source.

- The illumination in the condenser pit was not sufficient for the security personnel to complete the first search. Although the security department had flashlights located in the "ready-room," they were not used during the initial search in the area where the intruder was found during a second search.

- Site security personnel demonstrated high motivation and professional demeanor during search operations.

3.1.5 Command, Control, and Communications

The command and control of security operations were critical during the first few hours of the event. By agreement with the licensee, PSP normally would assume command and control functions upon arriving at the site; however, PSP could not assume these functions during the event because of limited initial resources and their unfamiliarity with onsite operations. The following is an evaluation of factors affecting command, control, and communications:

- Initial command and control of onsite forces were degraded because the security shift supervisor was engaged in the response.

- Some officers vacated assigned posts and reported to the area where the intruder was found without being directed.

- After establishing a defensive position, an SPO began intermittently performing command and control functions to supplement the security shift supervisor.

- No primary command post was established for security and LLEA functions, which were separated during the event.

- Communications equipment used by law enforcement agencies and that used by TMI were not compatible with each other.

- Communications discipline appeared poor at times. The alarm stations received inconsistent responses about the movements of the LLEA and those conducting the search effort.

- Communications equipment was not provided for tactical search environments.

3.1.6 Emergency Access Procedures

In response to the security event of February 7, 1993, the licensee suspended normal security entry processing into the protected area to allow the offsite response personnel to have free access to the vehicle and to conduct the associated investigations. The licensee also suspended routine security checks and rounds. The NRC regulations provide for the suspension of safeguards measures in an emergency in 10 CFR 73.55 by the provisions of 10 CFR 50.54(x) and (y) which state.

> (x) A licensee may take reasonable action that departs from a license condition or a technical specification (contained in a license issued under this part) in an emergency when this action a immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent.
>
> (y) Licensee action permitted by paragraph (x) of this section shall be approved , as a minimum, by a licensed senior operator prior to taking the action.

The reporting requirements for the use of this regulation are stated in 10 CFR 50.72 and 73.55(a).

During interviews, site managers and Region I personnel stated that the provisions 10 CFR 50.54(x) had been invoked. The team also could not determine if this action was approved by a senior licensed operator as required in Section 50.54(y) or by the ED as specified in site procedures.

3.1.7 Contingency Response Training

The response officers performed rapidly and diligently and demonstrated strong motivation. However, the IIT noted inconsistencies in existing contingency training methods and in the frequency of this training. The following is an evaluation of factors affecting contingency response training:

- The licensee performed the required quarterly onsite drills primarily in the Unit 2 portion of the plant. This was significant because the Turbine Building of Unit 2, which has three levels, differs considerably from the Turbine Building of Unit 1, which has six levels.

- Quarterly drills conducted in 1992 did not incorporate an armed intrusion of the PA.

- In conducting use-of-force training at the site, the licensee did not use guidance available in NRC Information Notice 89-05, "Use of Deadly Force by Guards Protecting Nuclear Power Reactors against Radiological Sabotage."

- The licensee did not conduct drills in radiological areas such as the Auxiliary Building.
- During some security drills, response gear was delivered to officers who initially assumed defensive positions. This practice could unnecessarily place individuals in a threatening environment during an actual event and limited the number of officers available for response.

- Previous drill critiques listed weaknesses in the deployment of weapons, including the practice of storing weapons in locations which were not conducive to timely response.

- During search-and-clear operations for the intruder, specific personnel benefitted from the specialized offsite tactical training they had recently received.

- Recent emergency plan drills included scenarios which challenged the security force; however, the critiques did not include a detailed evaluation of security performance.

- The licensee gave no specific training on vehicle interdiction for officers assigned to mobile patrols.

3.2 Operator Interface

The IIT reviewed the actions of the operations staff to determine if they were timely and appropriate and to evaluate the human factors which influenced these actions. Among the factors affecting operator performance were the positions of the operations staff, the real and perceived threats to personal safety and associated stress, their understanding of the effectiveness of security and security devices, and operating and emergency procedures.

The NRC licenses both senior reactor operators and reactor operators to operate TMI-1 in a manner such that the health and safety of the general public are protected, and in a manner consistent with the rules and regulations in 10 CFR Parts 20, 50, and 55. The operators are trained to control the facility consistent with plant procedures to handle normal, abnormal, and emergency situations.

3.2.1 Control Room Activities

From the beginning of the event, concern for personal safety affected the decisions made in the control room. The shift supervisor's first priority, after receiving a call from the offgoing shift foreman and after an SPO reported the intrusion into the PA to the control room, was to lock the fire doors to the control room. The locking of the doors appeared to

be at the direction of the SPO. The shift supervisor focused on this task and had difficulty locating the correct key. It is part of the facility training and a requirement of TMI-1 Emergency Procedure 1202-13, "Plant Response to Penetration of the Protected Area," to lock the fire doors when a security event occurs; however, the basis for the procedural requirement has not been established. The locked fire door was a personnel barrier inside the control room VA boundary.

The control room staff found it difficult to support the emergency response actions because the fire doors had been locked and because the shift supervisor was distracted by the security nature of the event. Both of these factors limited the ability of personnel in the control room to communicate with the outside emergency response groups.

The shift supervisor assigned one of the two shift foreman to be a communicator rather than assigning one of the control room operators who would normally make the initial notifications to the Commonwealth and the five risk counties. The shift supervisor did not want to reduce the number of reactor operators monitoring the reactor consoles because of possible transients the intruder could induce. The communicator would normally use the designated notification telephone in the shift supervisor's office; however, this area was isolated by the locked fire doors. With the control room isolated, the need to manually call each of the five counties ultimately distracted the attention of both shift foremen away from plant status. Using a shift foreman as a communicator was not consistent with training and procedures.

Concern for personal safety affected the command and control functions of the shift supervisor and the operations coordinator. Only thirst or personal needs prompted the operating staff to unlock and open the control room fire doors. The key to the control room fire doors was maintained inside the control room at all times to prevent it from falling into the hands of the intruder.

The IIT considered use of a double-cylinder dead bolt to lock the fire doors to be a hazard to personnel safety because the only key was kept in the control room. This practice could hinder personnel attempting to exit the control room in the event of an evacuation of the control room and could prevent or delay emergency or support personnel from entering the control room to provide assistance.

3.2.2 Continued Facility Operation

Maintaining reactor power during the security event did not affect reactor safety because no plant transients occurred, all emergency systems were operable, and the reactor containment was not challenged.

Upon considering plant procedures, the shift supervisor made the initial decision to maintain reactor power. Later in the event, discussions concerning continued reactor operation at power were held between the Director, Operations and Maintenance (ED), the Plant Operations Director (Operations Coordinator), the Plant Engineering Director (Emergency

Support Director), and the shift supervisor. During the event, facility representatives discussed their rationale for maintaining plant operations with the Regional Administrator for Region I.

The following is an evaluation of the factors which could have affected the ability to achieve an orderly plant shutdown:

- If necessary, the operations staff could have shut down the reactor without using the auxiliary operators in the Turbine Building; however normal shutdown support functions, such as securing feedwater heaters, starting the auxiliary boilers, and performing normal shutdown activities associated with the steam turbine could not be done without auxiliary operators entering the Turbine Building. Although safe shutdown could be achieved from a reactor trip, challenges to secondary side equipment would occur without auxiliary operator actions.

- The team reviewed the factors considered in determining the need to change the plant operating status which required certain members of the operations staff to fill multiple roles. The team determined that if an emergency were to occur while changing plant status, an adequate number of shift staff members were available to support the transition between normal shutdown conditions, plant emergency operating procedures, and the E-Plan.

3.3 Licensee Emergency Response

3.3.1 General

The IIT evaluated the response of the utility to this event to determine whether or not it met the objectives of the E-Plan. The prime objectives of the E-Plan are as follows:

> (1) develop a plan and implementing procedures that will provide the means for mitigating the consequences of emergencies (including very low probability events) in order to protect the health and safety of the general public and site personnel and to prevent damage to property and (2) ensure operational readiness of emergency preparedness capabilities.

The E-Plan includes two basic elements: mitigation of continuing events and preparation for known or unforeseen, but future events. The E-Plan also states that

> declaration of an emergency is not a prerequisite for activation of GPUN emergency response organizations and facilities. However, activation and mobilization must occur if a prescribed emergency level is declared.

3.3.2 Discovery and Classification of the Event

At 6:55 a.m. on February 7, 1993, an offgoing shift foreman in the PC notified the control room shift foreman in the TMI-1 control room that a vehicle had penetrated the PA through Gate 1 and crashed through the Turbine Building roll-up door. The onshift shift supervisor had monitored a portion of the call when an SPO entered the control room, announced the security emergency event, and emphasized that the control room fire doors should be locked. The CAS operator also called the control room to relay event information. The inplant shift foreman told the CAS operator that the control room staff already knew of the situation. The initial process of locating the key and locking the control room doors distracted the shift supervisor from evaluating the information and classifying the emergency.

The shift supervisor believed the information was credible and was referred to the security Emergency Action Levels by the offgoing STA, who had returned to the control room. They discussed whether there was a threat to the PA (Alert) or the VAs (Site Area Emergency). The shift supervisor believed that the situation warranted placing the plant in at least an Alert status. The shift supervisor then called the Director, Operations and Maintenance, TMI-1, at home. They discussed which portion of the E-Plan applied to the current situation. The Director, Operations and Maintenance believed that a Site Area Emergency was appropriate because of all the unknown factors. The Director, Operations and Maintenance urged the shift supervisor to enter the E-Plan immediately. He told the shift supervisor that he would contact him when he got closer to the site, and left immediately. It is noted that this telephone call is not required by procedure. In summary, although the shift supervisor was distracted by the need to lock the fire doors and the need to call plant management, the licensee appropriately classified the event.

At 7:07 a.m. the shift supervisor declared that the event was a Site Area Emergency as of 7:05 a.m. The E-Plan states that

> The Site Area Emergency class includes accidents in which actual or likely major failure of plant functions needed for protection of the public have occurred. Although immediate protective actions are not automatically required, declaration of a Site Area Emergency will set into motion all personnel on-site and off-site that would be required to perform actions in preparation for a potential evacuation of off-site areas. The Site Area Emergency class includes accidents which have a significant radiation release potential.

The shift supervisor then appropriately declared himself the Emergency Director. The E-Plan states that

> The ED has the authority and the responsibility to immediately and unilaterally initiate any emergency action, including providing protective action recommen-

dations to authorities responsible for implementing off-site emergency measures.

The following is an evaluation of factors which could have effected the emergency response and the event classification:

- The policy of calling site management is not clear and could delay the timely classification of an emergency.

- The link between security events that require automatic actions and the E-Plan emergency classification of the event is not clear and requires the shift supervisor to interpret the significance of the security information.

3.3.3 Notifications and Callouts

The E-Plan states that

> The Initial Response Emergency Organization shall report to the duty station within 1 hour of notification of declaration of an Alert, Site Area Emergency or General Emergency. The Emergency Support Organization shall be fully manned within 4 hours of notification of declaration of a Site Area or General Emergency; however, the Emergency Support Director and designated members of the Emergency Operations Facility staff will respond within one (1) hour.

The utility's Initial Response Emergency Organization normally uses a pager system to call out to personnel. This pager system requires placing a message on a callback answering telephone and then placing a call (group page) to activate the pagers. Upon being paged, the person would call the callback number and receive an emergency message and instructions to report to his or her emergency duty station. The person could then leave a message in a voice mailbox regarding his disposition, arrival time, or both.

After the emergency classification was made, the ED (operations shift supervisor) recognized that by locking the control room fire doors, he had isolated himself and control room staff from the telephones used to notify Commonwealth and county officials and the utility's initial response emergency organization.

The ED (operations shift supervisor) called the maintenance supervisor and asked if someone could make the initial response emergency organization callouts from the maintenance area. This was not possible because there were no E-Plan procedures there. The process of making these calls is ordinarily assigned to a shift instrumentation and controls (I&C) technician who is trained in the use of EPIP-TMI-.04, "Contact/Callout of Emergency Personnel" The control room staff believed that the I&C technician could not get to the control room because of locked doors and the lack of SPOs to assist movement. However,

an I&C technician was in the I&C shop which is immediately adjacent to the control room and can be accessed through the "back door" of the control room.

Not having access to the normal callout telephones, the ED (operations shift supervisor) directed the control room shift foreman, who was not trained on the procedures, to use the telephones in the control room to manually notify the Commonwealth and the five risk counties and call out to the response emergency organizations. The team could not account for the time interval between approximately 7:07 a.m., when the Site Area Emergency was declared, and 7:16 a.m., when the shift foremen began making the notification calls to the Commonwealth and the counties. By 7:21 a.m., the shift foremen had completed the required notification calls to the Commonwealth and the five risk counties from the control room using the telephone numbers specified in the procedure.

When making the initial response emergency notification calls, the shift foremen noted that the telephone numbers were not available in the control room. Since the emergency duty roster was hanging on the bulletin board in the shift supervisor's office, a shift foreman decided to quickly unlock one of the control room doors, go into the shift supervisor's office, and retrieve the telephone numbers. He did not stay in the shift supervisor's office long enough to place the recorded message on the callback voice mail and activate the pagers. The control room shift foreman then started the initial calls to the emergency response organizations over 45 minutes after the emergency classification.

During the initial phase of callouts, people were told to stand by at home. Thus, the licensee could not activate the OSC, TSC, EOF or the control room dose assessment function staff. However, one individual in the plant could have performed an initial dose assessment if he had been able to enter the control room. Two factors influenced the decision to have the response staff stand by at home:

- The ED (operations shift supervisor) knew that access to these locations was difficult because movement around the plant was restricted while the intruder was at large. If people were assembled in the PC, they would require armed escorts to cross the plant to their emergency facility.

- The ED believed that the event involved only security concerns, and he did not focus on possible radiological sabotage or the possible future need to perform E-Plan functions such as (1) dose assessments or projections to support Protective Action Recommendations, (2) plant engineering support which would be performed from the TSC, and (3) event mitigation activities which would be coordinated from the OSC.

The following is an evaluation of factors which could have effected the emergency response:

- Focusing narrowly on only the security aspects of this event, the licensee did not fully recognize that the event could quickly and dramatically escalate, requiring resources

beyond the security and corrective maintenance needed to repair the gate and roll-up door.

- The decision to initially request people to stand by at home was not consistent with the requirements of the E-Plan for a Site Area Emergency.

- The licensee's approved E-Plan permits an interval of 1 hour from the time of notification of an emergency for the licensee staff to report to the duty station rather than 1 hour from emergency classification. Control room personnel spent several hours making these notifications, significantly delaying the staffing of the facilities.

3.3.4 Initial Emergency Response Actions

The Plant Operations Director and the Director, Operations and Maintenance both arrived at the PC at approximately 7:25 a.m. They were joined shortly thereafter by the (TMI) Site Security Manager. The Director, Operations and Maintenance determined that since this was a security event, he would remain in the CAS with the Site Security Manager, and the Plant Operations Director would go to the control room. He focused on the security response that could be monitored and directed from the CAS by means of cameras, alarms, and communication systems. The security procedures also were being implemented and signed-off at the CAS. He believed that the event did not involve a problem with the reactor plant and that, if needed, the operators could trip the unit and implement the operational procedures.

The Director, Operations and Maintenance and the Site Security Manager initially walked to the road leading to the Turbine Building and observed the dislodged roll-up door and the back of the car. The Director, Operations and Maintenance considered the possibility of a bomb; then they went to the CAS, where they discussed the security status of the plant. They concluded that the vital areas were locked, that there had been no alarms, that the event would probably involve a bomb threat, and that they should call in more staff to the plant. The Director, Operations and Maintenance then asked to have SPOs protect certain areas within the Turbine Building. He also asked about accountability status, and the Site Security Manager confirmed that they knew the location of everyone.

3.3.5 Accountability and Control

At approximately 7:35, the ED (operations shift supervisor) and security personnel began calling various locations where people had assembled and asked that the supervisor in the area to account for everyone. The ED (operations shift supervisor) recognized that security precautions prevented some personnel from going to their accountability stations and that the security force could not assist in implementing the accountability procedure which requires the SPOs to collect key card from those at their accountability stations and return the badges to the PC where the cards are read by the computer. Since the event occurred early on a Sunday morning, few people were on site, and thus the practice of verifying accountability by telephone appeared to be effective. However, a problem could have resulted if a security

event occurred during a normal workday or an outage with many more people on site. At 11:38 a.m., the TMI staff had completed a second verification of accountability.

The Plant Operations Director and an offgoing control room operator proceeded to the control room under armed SPO escort and went into the shift supervisor office so they could be seen by the control room staff before being admitted. Upon arriving at 7:43 a.m., the Plant Operations Director was briefed by the ED (operations shift supervisor) on the status of the event and plant operations. The Plant Operations Director intended to relieve the shift supervisor of the ED function and proceeded through the turnover checklist with him. However, the Director, Operations and Maintenance then determined that he would personally assume the ED functions in the CAS.

3.3.6 Establishment of an Alternate Emergency Control Center

At about 8:00 a.m., the Director, Operations and Maintenance called the Plant Operations Director, and they completed the turnover checklist for the ED over the telephone. The Plant Operations Director told the Director, Operations and Maintenance that he would complete the ED's forms for legal records because he knew that the Director, Operations and Maintenance did not have the E-Plan forms and procedures in the CAS. The Plant Operations Director assumed the position of the Operations Coordinator, although that was not discussed with the Director, Operations and Maintenance. The E-Plan states that the Operations Coordinator "Coordinates plant operations, maintenance and chemistry through the Shift Foreman and Operations Support Center Coordinator." The Plant Operations Director believed that the position of the Operations Coordinator is the tie between the ED and the operations shift supervisor and is fundamentally responsible for control of the plant while the ED has a more general responsibility for implementing the E-Plan. During the call between the Director, Operations and Maintenance and the Plant Operations Director, they agreed to direct the Manager of Maintenance and the senior maintenance staff to report to the Training Center. The maintenance personnel later established a *de facto* OSC in the Operations Support Facility, just outside the PA. The ED and the Operations Coordinator again discussed that this event primarily involved security concerns and that the ED would need to interact with many people, including offsite organizations such as the PSP and the EOD unit.

With the ED located in the CAS and several adjacent offices and conference rooms, this area became a *de facto* Emergency Control Center, which is normally located in the control room and adjacent offices. The Emergency Control Center is the primary location for initially assessing and coordinating corrective actions for all emergency conditions. The E-Plan states that the

> Command and control of all initial emergency response activities originate from the Emergency Control Center. When the entire emergency response organization is activated, the ED retains command and control of all onsite

activities from the Emergency Control Center. The Emergency Control Center is activated for all emergency levels.

Establishing the Emergency Control Center in the CAS instead of the control room represented a significant departure from the E-Plan. Having the ED close to security-related activities benefited the command and control of intruder-related activities but may have detracted from implementing the E-Plan.

The ED (Director, Operations and Maintenance) believed that he could best understand and coordinate security response from the CAS location. He interacted with the Site Security Manager and the law enforcement agencies such as the MPD, PSP, and FBI. However, the CAS and adjacent areas did not have access to procedures and did not have sufficient communications capability, including commercial telephone lines and an ENS line, to adequately support the E-Plan, especially if the event had escalated. The new telephone system installed in 1992 also restricted the use of these telephones for outgoing calls on weekends. At about 8:30 a.m., a technician manually lifted this restriction for some, but not all of the telephones, and problems resulting from these restrictions continued until past 2:30 p.m. In summary, moving the Emergency Control Center to the CAS produced a generally positive effect within the bounds of this event.

The ED (Director, Operations and Maintenance) remained in the CAS and surrounding area, including the PC, with the Site Security Manager and NRC SRI. The licensee discussed the possible effects of a bomb, a plant trip, and firefighting, and continued to emphasize not initiating any plant transients and the need to stand clear of the area of the vehicle. During the remainder of the event, the ED (Director, Operations and Maintenance) maintained firm control and directed overall security activities. The ED left direct control of the security force activities to the security supervisor, who was in the plant directing searches and who led one of the search teams. There was also a discussion with the Director, TMI-1, who was in the CAS, concerning his assuming the position of ED. Such an action would permit the Director, Operations and Maintenance, the most experienced licensed operator at TMI-1, to go to the control room. This course of action was rejected because the Director TMI-1 needed to attend a press conference at the Training Center.

During the next several hours, the Operations Coordinator in the control room continued to review the implementation of EPIP-TMI-.02, "Emergency Direction," and the status of the plant and security. The Operations Coordinator and the control room staff discussed actions to take in the event of a fire, steam line failures, explosions, or plant trip. The Operations Coordinator instructed the operators to pay close attention to the indications on the panels and to review their emergency procedures.

The Operations Coordinator and the ED periodically conversed by telephone concerning the status of the plant and the security aspects of the event. These conversations, however, were difficult at times because of the communications capability in the CAS. In general, the

Operations Coordinator focused on the plant, and the ED focused on security activities. The Operations Coordinator also spoke with the Corrective Maintenance Manager about corrective maintenance such as repairing the security gate and the roll-up door and about the maintenance that might be needed if the plant tripped.

At approximately 1:05 p.m., over 2 hours after the intruder was apprehended, the ED moved from the CAS to the control room. At this time, the ED moved from overseeing detailed security activities to overall site activities since he believed that the security staff and PSP were now conducting a very well organized search effort and that he would not need to make immediate decisions.

The following is an evaluation of factors which could have affected the emergency response:

- The decision by the ED to focus the command and control and the emergency response organization at the CAS, instead of at the Emergency Control Center in the control room, affected normal implementation of the E-Plan and created confusion with the emergency response positions, duties, and locations. It was unclear if this action met the second prime objective of the E-Plan, which was to ensure operational readiness of emergency preparedness capabilities.

- If the event had escalated requiring the declaration of a General Emergency and an offsite Protective Action Recommendation, it was unclear as to who would have made these decisions and how the staff would move from the CAS back to the control room.

3.3.7 Establishing Emergency Response Facilities

By 8:15 a.m., staff members had arrived in the EOF, and several spoke with the Operations Coordinator by telephone. These people probably reported voluntarily upon receiving calls from senior managers who had been contacted by personnel in the control room and other parts of the plant. The Operations Coordinator, the ED, and the Director, TMI-1, decided not to staff the TSC and the OSC while the intruder was loose. The Operations Coordinator did not know if the NRC had been notified of the decision.

At approximately 9:05 a.m., TMI emergency managers decided to assemble the staff to perform emergency functions at the Training Center. They made this decision about 2 hours after the event declaration and chose an *ad hoc* location. The E-Plan states that

> declaration of an emergency is not a prerequisite for activation of GPUN emergency response organizations and facilities. However, activation and mobilization must occur if a prescribed emergency level is declared. The Initial Response Emergency Organization shall report to the duty station within 1 hour of notification of declaration of an Alert, Site Area Emergency or General Emergency. The Emergency Support Organization shall be fully

manned within 4 hours of notification of declaration of a Site Area or General Emergency; however, the Emergency Support Director and designated members of the EOF staff will respond within one (1) hour.

The licensee apparently did not discuss or formally consider that this action deviated from these commitments.

The control room staff continued manually calling out to members of the utility's Initial Response Emergency Organization until approximately 9:26 a.m., when, at the prompting of the ED (Director, Operations and Maintenance), the control room staff unlocked the control room fire doors and sent two people into the shift supervisor's office to use the normal callout and callback telephones and equipment to request staff to report to the Training Center.

By 9:37 a.m. an NRC resident inspector entered the control room after reporting to the site and waiting at the PC for an armed escort to the control room for approximately 30 minutes. At the same time, a representative from the Pennsylvania Department of the Environment BRP and a TMI Public Affairs representative entered the control room envelope.

The control room shift foreman initially called the Plant Engineering Director, who later became the Emergency Support Director in charge of the EOF. They discussed the Site Area Emergency and the fact that they were assembling a post-trip response team in case the plant tripped. The Control Room Shift Foreman stated that people were being called selectively to avoid bringing more people than needed into the plant. While enroute to the plant, the Plan Engineering Director received a page which prompted him to call the control room. Upon learning that the E-Plan was being implemented, he turned around and drove to the EOF, arriving around 9:00 a.m. At 9:55 a.m., the EOF was declared operational. After arriving at the EOF, the Plant Engineering Director completed the turnover checklist with the Operations Coordinator to become ESD and assume certain E-Plan functions such as making Protective Action Recommendations and holding briefings with State officials and the media. There was some confusion by the ESD at this time whether the ED was positioned in the control room or the CAS.

Between 10:00 and 10:30 a.m., the functions performed in the OSC, TSC, and JIC and those performed by the Radiological Assessment Coordinator were established in the Training Center. The Operations Coordinator was officially notified that the Parsippany Technical Functions Center was staffed by 9:41 a.m. although the utility time line recorded that it was staffed at 10:30 a.m. The President - General Public Utilities Nuclear Corporation remained at the Parsippany facility and was personally briefed on several occasions by the ED, ESD, and Operations Coordinator. Many of the people who responded to these facilities apparently did so as a result of informal (not procedurally initiated) notifications.

The following is an evaluation of factors which could have effected the staffing of the emergency support organization:

- A combination of restricted access to the site and emergency response positions, and the focus on the security aspects of the event precluded the utility from fully staffing the emergency support organization in a timely manner.

3.3.8 Event Termination

NRC Region I and GPUN discussed the criteria to provide for event deescalation. Upon completing a verification of emergency system checklists to verify safety system availability and searching the vital areas a second time, the licensee terminated the event at 4:25 p.m.

3.4 NRC Emergency Response

3.4.1 Initial Response

The NRC Headquarters operations officer's (HOO's) log for February 7, 1993, indicated that the HOO shift change occurred at "00:00 hours," midnight. The turnover was normal, and no emergencies were in progress. The regional duty officer for Region I had last been contacted after 11:05 a.m. on February 6, for a routine 10 CFR 50.72 event notification at another site. At about 1:00 p.m. on February 6, the HOO had last contacted the headquarters emergency officer (EO) to inform him that an Unusual Event at another site had been terminated. The offgoing HOO remained through the morning in the NRC Operations Center to work on a project for which he was responsible.

At 7:11 a.m., the onduty HOO answered a call from the security officer on duty as CAS operator at TMI-1. The CAS operator informed the HOO that an intruder had entered the PA at TMI. After obtaining the name and callback telephone number, the HOO inquired if this was a security report under 10 CFR 73.71 which the CAS operator confirmed. The CAS operator also stated that the intrusion time was 6:54 a.m., the Unit was at 100-percent power, and the control room staff was just declaring a Site Area Emergency. The CAS operator then informed the HOO that a vehicle passed through Gate 1, entered the Turbine Building, and came to rest about 100 feet (30.5 meters) inside the building. TMI did not know the number of occupants but found the vehicle was unoccupied. When asked if they had searched the PA, the CAS operator incorrectly stated "we are doing that now." The CAS operator further informed the HOO that the PSP had been notified and was responding, that the Site Security Manager had been notified, and that the CAS operator did not know of any tampering or damage to safety equipment. The CAS operator declined a request to remain on the line because she needed to make additional notifications.

The HOOs started making notifications and established a teleconference line so that all individuals being notified could be briefed. At about 7:35 a.m., the following NRC personnel were participating in the teleconference call:

the regional duty officer
the Headquarters emergency officer
two members of the NRC Information Assessment Team
the Director of the Office of Analysis and Evaluation Operational Data (AEOD)
the Regional Administrator for Region I
the Reactor Projects branch chief for TMI
a Region I Public Affairs Officer

After notifying the Commonwealth of Pennsylvania and local counties, at about 7:23 a.m., the shift supervisor of TMI-1, acting as the ED, contacted the NRC Operations Center (NRCOC) and made the official Site Area Emergency notification. The HOO requested to place the ED call on the teleconference line so that other NRC people could discuss the event with him. The ED agreed to keep the line open but proposed to place the STA from the offgoing shift on the line instead of himself.

The STA supplied the following information. The intruder was a male, wearing a grey sweater or T-shirt, and possibly having a beard. The FBI had not been notified. The control room doors had been locked. All traffic in and out of the island, with the exception of upper level management, had been stopped. Each department was maintaining its own personnel accountability because the security staff was committed to other tasks. The licensee had verified that the VA had not been penetrated. The intruder drove a station wagon through a PA gate, through a roll-up door by the auxiliary boilers, and into the Turbine Building, and brought the roll-up door down on top of the vehicle. All of this happened at about 6:57 a.m. The control room staff did not yet know the intruder's vehicle license number. The NRC resident inspector had been informed. A PSP vehicle was at the site.

Upon considering this information, the Director of AEOD, an executive team member, and the Regional Administrator, Region I, placed the NRC on the Standby Mode of response at 7:35 a.m.

The NRC emergency response procedures for the Standby Mode call for the Regional Incident Response Center to be staffed. The NRC Operations Center would be staffed by members with expertise specific to the particular type of facility. The Headquarters response effort is led by an executive team member in the NRCOC. The base team manager, usually the regional administrator or his deputy, directs the overall NRC response effort from the Regional Incident Response Center. During the Standby Mode, the region has the lead for all communications with the licensee over the ENS and the HPN.

The staffing of the Region I Incident Response Center was not performed by the established regional procedure but by individuals calling selected people. The Regional Administrator stated that he "wanted a custom set of people" for this safeguards event rather than those called for a more general type of reactor incident. At about 7:45 a.m., the first people arrived at the Region I Incident Response Center, which was considered fully activated at 8:45 a.m.

The size of the response organization at the Region I Incident Response Center was significantly greater than the minimum required by the Region I procedure, IRS/4115, "Emergency Callout (Off-Duty Hours)." However, the protective measures team was staffed with only the manager. Other members of the team would be alerted to come to the facility as they were needed. The Region I Incident Response Center staff did not include members for the positions of Dose Assessor, Protective Measures Communicator - HPN, Health Physics Specialist, or Protective Measures Communicator - Counterpart Link. If the event had escalated until the NRC needed to evaluate or propose Protective Actions Recommendations, qualified individuals performing other duties could have been directed to perform these tasks. However, the effect of reassignment on the regional response would be difficult to evaluate.

3.4.2 Communications

Upon being notified of the event the HOOs began activating the NRCOC. One of the initial staff notifications they made after the NRC entered Standby Mode was to the oncall response coordination team (RCT) member. The RCT member joined the established teleconference at about 7:38 a.m., and requested guidance on which NRCOC team to activate. Following discussion and staff notifications, the resulting NRCOC response organization lacked a reactor safety team and a protective measures team, among other positions. If the event had warranted the NRC escalating from the Standby Mode to the Initial Activation Mode, the lack of a full protective measures team could have hampered the NRC response. The team noted that RCT procedures did not clearly describe the process by which NRCOC staffing levels and expertise may be varied.

The first NRC responder to the TMI site was the SRI, who entered the CAS, where the ED was located. The SRI called and made an initial briefing directly to the Region I Incident Response Center without calling the NRCOC for conference capability. Throughout the response to the event, the SRI, RI, and security specialist made direct calls to the region from the offices and conference room near the CAS, instead of relaying the information through the NRCOC. This process bypasses the designated conference lines between the NRCOC staff and the regional Incident Response Center staff.

The NRC emergency response centers and the utility communicated together primarily through the ENS. For this emergency, the *de facto* Emergency Control Center was established at or near the CAS. Because of the limited telephone capability, information was relayed to the control room before it was transmitted to the NRC and communications between the Region I Incident Response Center, the NRCOC, and the onsite responders were fragmented because of the appropriately limited NRC onsite response. These means of communication were reasonably successful. However, if continuous information had been needed for both operations and security, this mechanism may not have been adequate.

3.5 Law Enforcement and Explosive Ordnance Disposal Functions

As the incident progressed, the various law enforcement agencies and the EOD team responded to the site. The following is a description of their actions and the manner in which they interacted with TMI security and management.

3.5.1 Law Enforcement Response

Pennsylvania State Police

The licensee notified the PSP of the intrusion at TMI. Minutes later, the first PSP units arrived at the scene. The troopers coordinated with the TMI Site Security Manager and eventually joined other response personnel in the search for the intruder. Other PSP troopers arrived at various times during the day and participated as needed.

About a half hour after the arrival of the first PSP units, a PSP trooper arrived at TMI and began coordinating the actions of all PSP elements and the units from the MPD which were the only other LLEA elements on site. This LLEA coordinator worked together with the TMI Site Security Manager and the TMI security shift supervisor to orchestrate operational response actions.

Minutes later, a PSP Criminal Investigator arrived onsite and began a criminal investigation under the LLEA coordinator. He was joined by another trooper and began processing the crime scene area, as it was cleared by the EOD team and search personnel.

Approximately two and a half hours into the event, a senior PSP trooper arrived at TMI and assumed overall administrative command of the LEAA personnel on site. Operational coordinator remained with the LLEA coordinator, while the senior PSP trooper maintained coordination and liaison with the TMI Site Security Manager and the responding FBI Special Agent when he arrived on site shortly thereafter.

A special PSP Response Team arrived after the senior PSP trooper and also began searching for the intruder. This team operated under the coordination and control of the LLEA coordinator and the TMI security shift supervisor.

In mid-afternoon a contingent of PSP cadets from the PSP Academy arrived at TMI and assisted the LLEA coordinator and the TMI security shift supervisor with a search of the entire island for additional intruders.

The following factor could have affected the response by law enforcement:

- Of all of the responding PSP personnel, the special PSP response team was the only group had conducted contingency response training at TMI.

Middletown Township Police Department

The MPD, who has not been designated as a response force by TMI, was the only LLEA, other than the PSP, to respond to the incident. At about 7:33 a.m., the PSP notified the MPD. Shortly thereafter, MPD vehicle patrol units responded. They coordinated with the TMI site protection shift supervisor and were eventually joined other response personnel in the search for the intruder.

The following factors could have affected the emergency response:

- Although members of the MPD force participated in the search, TMI Security had not involved the MPD force in contingency response training at TMI.

- As the search teams conducted door-to-door searches in the Turbine Building, TMI Security personnel expeditiously gave all response personnel tactical intelligence information about the plant configuration beyond secured doors.

Federal Bureau of Investigation

About an hour after the event began, the FBI was notified of the intrusion incident. The onduty Agent then notified his Senior Resident Agent and proceeded to TMI, arriving shortly after the senior PSP trooper arrived. He coordinated with the senior PSP trooper, the PSP LLEA coordinator and the TMI Site Security Manager. He concluded that this incident did not qualify as a "nuclear threat incident" based on the circumstances and his observations upon arriving at the site. He concluded that this incident was more appropriately in the purview of the PSP. Specifically, the responding FBI Special Agent concluded that the incident was a result of the actions of an individual who was either intoxicated or otherwise incapacitated, and not an act of sabotage or terrorism, as defined under Federal statutes or the NRC/FBI Memorandum of Understanding. He contacted the FBI Senior Resident Agent, who concurred in his assessment.

Other FBI Agents arrived at the site during the day. Some of those dispatched to respond were called back by the Senior Resident Agent after access to the site had been restricted because of the bomb threat and after the jurisdictional decision had been made. The responding FBI Special Agent remained on the site to observe the situation and await any new information that would indicate the need for a more active FBI role.

During this incident, the FBI Senior Resident Agent travelled to the PEMA Headquarters in Harrisburg and coordinated with the Director, PEMA, and the PSP Liaison Officer, in case further developments required more extensive FBI involvement or support.

3.5.2 Explosive Ordnance Disposal Response

- The EOD team arrived at TMI and coordinated with the TMI ED. They were assigned the TMI security shift supervisor as liaison, and TMI security personnel for protection. The EOD team conducted an initial reconnaissance of the vehicle inside the Turbine Building, and eventually cleared the vehicle as having no explosive devices. This team continued to stand by in case it was needed during further searches for intruders and any suspected explosive devices.

The following factors could have effected the response by the EOD unit:

- The TMI security staff has conducted contingency response training exercises with the Army EOD unit.

4 PRECURSORS AND RELATED EXPERIENCE

4.1 Operating Experience Information Issued by NRC

The IIT reviewed the database for NUREG-0525, a "Safeguards Summary Event List (SSEL)," database and found the following:

- Before this incident, 10 incidents, which occurred between 1976 and 1989, involved vehicles penetrating the exterior boundaries of nuclear power plants. In five of these incidents, a vehicle penetrated the PA. Four others involved a vehicle entering only the OCA, and the one remaining incident was the result of an entry processing procedure error. Three of the five vehicle entries into PAs resulted from malfunctioning brakes, the fourth occurred when a vehicle accidentally hit a fence, and the fifth was the result of an intoxicated driver hitting the main gate. Two of these ten events occurred at TMI (in 1976 and 1980) with vehicles entering the OCA but not the PA (see Section 4.2.1).

- The NRC SSEL indicates that the licensee received six hoax bomb threats between March 1977 and March 1984, each of which prompted the licensee to call for a search. No bombs were found.

The IIT reviewed information notices, bulletins, and generic letters issued by the NRC and found no similar concerns or activities relating to this event.

4.2 TMI Experience

4.2.1 Events

- On January 27, 1976, at about 6:50 p.m. a vehicle drove through the North Gate without stopping. The SPO at the gate reported to the onduty sergeant. Fifteen minutes later a construction worker observed an individual climb the then unalarmed PA fence. About 35 minutes after the intrusion at the North Gate, plant workers reported to security that they had heard someone singing near the top of the reactor building. Searches were conducted without locating the individual.

  At about 8:00 p.m. the North Gate was opened to allow a vehicle to leave which failed to stop and exited the site. The SPO who had witnessed the vehicle enter recognized it as the same vehicle exiting.

  The shift supervisor was notified of the event for the first time after the intruder left. The PSP later identified the vehicle's registered owner, who was determined to be a

contractor employee who subsequently admitted entering the site. The individual was later voluntarily admitted to a local mental hospital.

This incident demonstrated weaknesses in the communications and searching procedures for the plant and prompted the NRC to institute escalated enforcement.

- At about 4:25 p.m. on April 23, 1980, a contract watchman observed a vehicle enter the OCA at the North Gate without stopping. The watchman reported the incident to the roving vehicle patrol. The licensee declared a security alert, notified the PSP, and conducted an extensive search.

  About 4 hours after the intrusion, the driver was identified as a plant employee who had exited the North Gate and returned within 2 minutes, believing the watchman knew he would be returning immediately. As the individual reentered the site, the watchman was distracted by other duties, and did not recognize the incoming vehicle, and believed it to be an unauthorized entry.

  This event is similar in that it focused on the ability to search for an intruder with a vehicle and the process to intercept a vehicle after entry.

4.2.2 NRC Reviews

- In June 1986, the NRC conducted a regulatory effectiveness review (RER) at TMI. One of the purposes of the RER was to determine if TMI's implemented security program gave the level of protection intended by the NRC in 10 CFR 73.55. The RER team focused on the methods and procedures used to protect vital equipment. This review was not part of the routine inspection program and was conducted to evaluate the performance of hardware systems rather than compliance with security plan commitments.

  The RER team found two "Potential Sabotage Vulnerabilities," nine "Significant Safeguards Inadequacies," four "Safeguards Program Concerns," four "General Observations," and five "Notable Safeguards Strengths." The RER team also noted two concerns with response ammunition and lack of LLEA resources, both of which were also noted by this IIT.

  The RER team's evaluation methodology did not include analysis of vehicle penetration of the PA, the availability of onsite response forces, or the response to an intruder inside the Turbine Building. The RER team made no finding concerning assessment capabilities at Gate 1.

- The IIT reviewed reports for NRC inspections conducted during the last three SALP periods and found no significant indications of precursors. The SALP evaluation process also revealed no significant indications of precursors. However, during the most recent inspection (January 1993), the NRC staff found that the licensee had

voluntarily begun a program to upgrade its contingency response program and capabilities.

4.2.3 TMI Security Drills

The security organization conducted "limited scope" response drills between February and November 1992. These drills were part of a program to train SPOs in tactical and contingency response.

The onduty security shift participated in the drill scenarios. Examples of scenarios were (1) a disgruntled employee bringing a bomb into the PA and (2) an individual entering the PA over the fence and then breaching a vital area door. None of these drills in 1992 involved armed individuals or design basis threat (DBT) scenarios.

SPOs also listed findings in the "Recommendations" or "Problems Encountered" sections of drill critiques reports. Many of these possible precursor findings were repeated and were similar to experiences in the February 7, 1993, event as noted below:

- The lack of planning for searches and poor briefings (four occasions)
- Poor communications and the ineffective transfer of information between operations and security
- Supervisors participating as responders rather than performing supervisory duties
- The speed with which an individual could climb the north fence and enter the PA.
- The practice of storing response weapons in areas that were not conducive to rapid deployment
- A problem in defending the control room
- Several problems with security response, tactical cover and concealment, and defensive positions

4.2.4 Emergency Response Drills

Introduction

The licensee's emergency response drill program indicated several security-related precursors similar to this event. The team reviewed reports of nine emergency drills conducted from 1987-1992 which included scenario elements for response to security events. Most involved the simulated disruption of operations and plant damage caused by bomb detonations in vital and other areas.

The purpose of the drills was generally to test the ability to properly classify an emergency, expeditiously perform emergency actions, and protect the health and safety of the general public and plant personnel. Although the emergency planning drills included some aspects of security response, they did not focus on the implementation of the contingency plan. Both security findings and emergency response findings are discussed below.

Two of the nine scenarios involved vehicles penetrating the North Gate and crashing through PA gates and into vital areas.

- On February 18, 1988, a drill was conducted that involved a scenario very similar to this event. The scenario included a single individual, soon to be laid off from Unit 2, who simulated crashing through Gate 1 in a van and entering the Unit 1 Turbine Building near the auxiliary boilers. The intruder attacked an SPO and took a key card. The security staff found the intruder one hour and twenty minutes later slightly injured in the Turbine Building.

- In a similar drill on December 4, 1991, two armed intruders drove through the North Gate in a pickup truck. They simulated crashing through Gate 13, which is located about 200 feet (61 m) west of Gate 1. The intruders ran through the machine shop and into the Turbine Building before SPOs arrived. The intruders in the scenario simulated prying open a vital area door 30 minutes after entry. The PSP arrived 60 minutes after entry and captured the armed intruders 3 hours after entry.

Security Findings

The IIT reviewed the nine drills and noted the licensee's security findings from the drills in the following general areas:

(1) inappropriate use of the plant paging system, resulting in plant workers receiving confusing information (elements found in 7 of 9 drills)

(2) actions which jeopardized personal safety during security events (elements found in 5 of 9 drills)

(3) the improper use of communications equipment in areas in which known or suspected explosives were located (elements found in 4 of 9 drills)

(4) lack of understanding of mission or role in a security event (elements found in 4 of 9 drills)

(5) difficulties in the command and control of operations or security activities during security event (elements found in 6 of 9 drills)

Emergency Preparedness Findings

In reviewing the nine drills, the IIT noted the following "identified deficiencies" in emergency response that pertain to this event.

(1) In the September 24, 1987, Full Scale Practice Drill, TMI-2 communicators did not place a proper message on the Code-A-Phone answering machine.

(2) In the September 24, 1987, Full Scale Practice Drill, the initial response emergency organization was not activated until 7:07 p.m. although it should have been activated at 6:15 p.m.

(3) In a March 16, 1989, Quarterly Drill, the control room doors were locked during the security event. Thus, the initial response emergency organization may not have been able to enter the control room without a security guard at the door. The proposed solution was to define and document actions necessary to secure and control access to the control room.

(4) In the December 19, 1990, Quarterly Drill, no security supervisor was in position at the Security Command Post as would be needed to analyze the situation. The proposed solution was to establish a method to ensure that a security manager was in position at the Security Command Post for all security events.

(5) In the December 4, 1991, Quarterly Drill, the onshift communicators were unfamiliar with the equipment used to contact personnel and call them out as needed. Therefore, the communicators did not page the emergency response personnel for approximately 90 minutes. The hesitation and inability to effectively use the equipment detracted from their response and from the ability to notify emergency response personnel. This item was a repeat item from previous drills.

(6) In the December 4, 1991, Quarterly Drill, essential personnel and senior managers had to traverse areas of the plant without escort, placing them and the facility at risk.

(7) In the July 30, 1992, Quarterly Drill, contrary to procedure EPIP-TMI-.02 the onshift emergency director directed the inplant shift supervisor to make the initial offsite notifications. He was neither qualified nor familiar with the process and thus did not complete the notifications within the 15-minute time limit.

4.3 External Evaluations

The external threat environment was evaluated for TMI on the day of the event, February 7, 1993.

The most recent Threat Environment Evaluation was completed on February 3, 1993, and covered the period from July 1, 1992, to December 31, 1992. In unclassified text, the report on this evaluation stated that there were no significant incidents involving NRC licensed facilities or materials during the reporting period.

The IIT interviewed personnel from the FBI and the PSP intelligence unit. When this incident occurred, neither agency had intelligence information to indicate TMI unit as a target for any acts of terrorism or sabotage, by vehicle or otherwise.

5 REGULATORY ASPECTS

This section presents the team's description and evaluation of the regulatory requirements and licensee commitments for those programs associated with the February 7, 1993 intrusion event at TMI-1.

The purpose for all NRC rules, licensee commitments, and resulting programs is to ensure the health and safety of the public and common defense and security.

The NRC established a tiered system of regulation, which begins with the legislation that gives direction for the operation of nuclear power plants and is translated into a series of rules for the safe operation of plants. Several of those rules require the licensee to prepare site-specific commitments that include more detailed descriptions of the actual systems and programs that will be used to meet requirements, including those for specific plant functions such as security, operations, and emergency planning.

Several of the rules allow flexibility in developing detailed systems and procedures for accomplishing the mandated activities. The licensee is responsible for developing and implementing those detailed functions. The NRC is responsible for reviewing and analyzing the licensee's programs and methods to determine whether or not they meet regulatory requirements and guidance. The NRC is also responsible to verify the licensee's activities by inspection. These processes are generally referred to as the "licensing" and "inspection" processes.

5.1 Security Program

5.1.1 Vital Area Protection

In 10 CFR 73.55, the Commission's regulations state that "[t]he physical protection system shall be designed to protect against the design basis threat of radiological sabotage as stated in Section 73.1(a)."

The TMI site physical security plan discusses both industrial and radiological sabotage and does not distinguish between the two or focus on the prevention of radiological sabotage. For example, the site managers stated that violently entering the Turbine Building would not be considered industrial sabotage and that a radiological event is controlled by the E-Plan. The TMI Physical Security Contingency Plan discusses the prevention of radioactive releases as may be caused by industrial sabotage.

In 10 CFR 73.55(h)(4)(iii)(A), the Commission's regulations require the licensee to

> Take immediate concurrent measures to neutralize the threat by: (A) requiring responding guards or other armed response personnel to interpose themselves between VAs and material access areas and any adversary attempting entry for the purpose of radiological sabotage or theft of special nuclear material and to intercept any person exiting with special nuclear material,

The licensee's strategy in responding to an intruder as described in the TMI Physical Security Contingency Plan includes various terms to describe the intended response of the guards to an intruder, including "intercept," "neutralize," or "delay" while the security plan procedures include only the terms "search" and "intercept." The licensee's verbally stated protection strategy is to deploy armed guards between the adversary and the VAs by establishing defensive positions at VA doors. The February 7, 1993, event revealed that paths into all VAs were not protected by armed guards. Instead, the licensee implemented its procedures during the event by positioning guards to protect selected VA doors, some of which were in close proximity to each other, but not visible from one position. Other VA doors were not physically protected by SPOs.

5.1.2 Offsite Responders

Section 73.55(h)(4)(iii)(B) of the Commission's regulations requires the licensee's security organization to "inform local law enforcement agencies of the threat and request assistance." The TMI Physical Security Contingency Plan specifies that

> State Police personnel, upon arrival at the site, will assume authority and responsibility for engaging and apprehending intruders. TMI security personnel serve to deter, detect, and intercept adversaries, employing firearms only in accordance with State Law.

The February 7, 1993, event demonstrated problems with the licensee's reliance on offsite responders to supplement the TMI security initial response. The security plan states that the PSP has the capability to provide an effective response force. The Safeguards Contingency Plan states that the offsite response is the initial response and is responsible for engaging and apprehending the intruders. On February 7, 1993, the initial offsite responders were not familiar with the Turbine Building and reactor complex. The only offsite response group that trained at TMI, arrived significantly late after the event and hours after TMI began the first search of the Turbine Building. The group had participated in drills at the site but not in the Unit 1 Turbine Building.

5.1.3 Physical Protection Program Procedures

Appendix C to Part 10 CFR 73, "Licensee Safeguards Contingency Plans," states in part,

> Each licensee safeguards contingency plan shall include five categories of information: (1) Background; (2) Generic Planning Base; (3) Licensee Planning Base; (4) Responsibility Matrix and (5) Procedures.

Category 5, "Procedures," states,

> In order to aid execution of the detailed plan as developed in the Responsibility Matrix, this category of information shall detail the actions to be taken and decisions to be made by each member or unit of the organization as planning in the Responsibility Matrix.

The IIT reviewed the Responsibility Matrix in the TMI Physical Security Contingency Plan and found that the SPOs had not received guidance on the decisions and actions appropriate in their response. In addition, the site had not developed contingency plan procedures as required by Appendix C to 10 CFR Part 73.

Procedures for the security plan were not detailed as would be expected for a security program. They consisted of a simple list of actions but were complete.

5.1.4 Procedures Requested in Generic Letter 89-07

In Generic Letter 89-07, "Power Reactor Safeguards Contingency Planning for Surface Vehicle Bombs," the NRC stated, "In response to this letter, the licensee should modify their safeguards contingency procedures to address the possibility of a land bomb."

In responding to the generic letter, the utility wrote a common corporate procedure which was disseminated to its two nuclear facilities. At TMI, this procedure was not incorporated into any response implementing document or manual and was not included under the requirements of the technical specification for review and approval and periodic review.

5.1.5 Immediate Availability of Responders

In 10 CFR 73.55(h)(3), the NRC requires the licensee to have armed responders immediately available to prevent or delay attempts at radiological sabotage. In a letter of March 20, 1987 (Stoltz to Hukill), NRC advised the licensee that a 10 CFR 50.54(p) security plan change submittal was partially acceptable and stated the NRC staff position that TMI could not post members of the response force outside the PA. The reason was that the responders would not be "immediately available" as required by 10 CFR 73.55(h)(3). In Revision 26 to the security plan (June 10, 1987), the licensee increased the number of designated armed guards in response to an NRC analysis of response force requirements. However, the NRC did not change its previous position that the response force members should remain within the PA.

Immediately before the February 7, 1993, event, at least one designated armed response guard with immediate response duties was stationed outside the PA while performing assigned duties, and one designated armed response guard was stationed in the PC.

5.1.6 Protected Area Assessment

In 10 CFR 73.55 the NRC requires the licensee

> To facilitate initial response to detection of penetration of the protected area and assessment of the existence of a threat, a capability of observing the isolation zones and the physical barrier at the perimeter of the protected area shall be provided, preferably by means of closed circuit television or by other suitable means which limit exposure of responding personnel to possible attack.

The February 7, 1993, event revealed that the surveillance devices did not enable security personnel to visually verify a fast moving object such as a vehicle. When the PA alarms were received, the CCTV view of Gate 1 did not reveal to the CAS operator that the gate had been penetrated and damaged. The CAS operator sent a response guard to assess the cause of the alarm.

5.1.7 Design Basis Threat

In the "Purpose and Scope" of 10 CFR Part 73, "Physical Protection of Plants and Materials," the Commission's regulations require the licensee to establish a security system capable of protecting against acts of radiological sabotage. "Radiological sabotage" means any deliberate act against a licensed plant (or component thereof) or any activity which could directly or indirectly endanger the health and safety of the public by exposure to radiation. The design basis threat for radiological sabotage includes

- A determined violent external assault of several persons
- These persons are well-trained in areas including military tactics and skills
- These persons receive active or passive inside assistance
- These persons have suitable weapons, up to and including hand-held automatic weapons equipped with silencers and having long range accuracy
- These persons have hand-carried equipment including explosives for use as tools of entry or for destroying reactor equipment

The design basis threat is a standard for judging the adequacy of physical protection systems. The NRC interpretation of the design basis threat for radiological sabotage of reactors does not preclude adversaries' use of vehicles, other than truck bombs, for transportation and for breaching PA barriers. The protection system is designed without regard for the type of

surface vehicle. The vehicle, whatever its type, would be detected by intrusion alarms when it crosses the barrier. No delay time is credited for the barrier.

The intruder event of February 7, 1993, challenged the physical security features of TMI which include prevention, detection, assessment, and response. The intruder was not prevented from entering the OCA but was observed as the vehicle approached the North Gate area; and again as the vehicle approached and penetrated the PA fence. The speed of the vehicle prevented the security personnel from performing a normal assessment at the PA fence using the CCTV. The speed of the vehicle used as the mode of entry also limited the response time available to the security force to respond to the intruder entry into the PA.

Although the licensee's immediate response in covering assigned VAs was noteworthy, the strategy would not have precluded an individual(s) with design basis threat capabilities from reaching and attempting to penetrate the VA before being interdicted by the armed response personnel.

5.2 Emergency Response

5.2.1 Deviation from Emergency Plan

The utility management has stated that the E-Plan presently permits deviations from the written requirements of the plan and associated implementing procedures without reference to the requirements of 10 CFR 50.54(x) and (y). The E-Plan is a condition of the license and the EPIPs are a part of the technical specifications. The licensee's policy includes making deviations from the plan and procedures without notifying the operations shift supervisor, the ED, or both. As an example, the licensee's commitments in the E-Plan and the requirements of Appendix E to 10 CFR Part 50 require the licensee to have its staff report to the TSC within 1 hour of notification of a declaration of an Alert, Site Area Emergency, or General Emergency. During the February 7, 1993, event, concerns for the personal safety of the licensee's employees while the intruder, with unknown intentions, was loose in the PA, resulted in the TSC not being activated. In deviating from the E-Plan the licensee did not invoke 10 CFR 50.54(x) and (y) which would have required approval by a licensed senior operator and consideration of adequate or equivalent protection such as alternate emergency response facility locations and staffing methods.

5.3 NRC Inspection and Assessment Programs

5.3.1 Inspection Program

The NRC's program for inspecting operating nuclear power plants is described in NRC Inspection Manual Chapter 2515, "Light-Water Reactor Inspection Program - Operations Phase." The objectives of the inspection program are (1) to obtain information through direct observation to ascertain whether the facility was being run safely, management control was effective, and regulatory requirements were being met; (2) to gather information to support systematic assessment of licensee performance (SALP) evaluations and (3) to provide for the effective allocation of NRC resources.

The program had three major elements:

Core inspections
Discretionary inspections
Areas-of-emphasis inspections

The inspection program enables the NRC to manage resources and establishes a minimum level below which inspection must not be decreased. Inspection Manual Chapter 2515 explains that the decision to perform only core or additional inspections should be based on past inspection results, recommendations by the staff, SALP ratings, recent events, and results of probabilistic risk assessments. The core program includes a minimum examination of licensee performance to find any problems that may arise.

Each regional administrator (RA) is allocated discretionary resources to apply to licensee facilities or activities that require additional effort. The program indicates that the RA determines specific inspection activities and plants to receive more detailed inspections. The RA is to use the results of the latest SALP evaluation as the primary basis in determining the amount and direction of discretionary resources. The program further explains that a SALP rating is an important factor in defining the inspection program. A plant rated as having SALP 1 performance in a functional area may need only the core inspection in that area and any area-of-emphasis inspections. Normally, the region would perform other regional initiative inspections only to address events or previously reported potential problems.

The region must prepare a site-specific inspection plan that is consistent with the Master Inspection Planning System (MIPS).

Security Inspection Programs at TMI

Between January 1989 and February 1993 the NRC performed six security inspections at TMI under the core inspection program. Those inspections were conducted primarily by a Region I security inspector who was accompanied on four of the inspections by a second security inspector.

The security inspection program implemented at TMI was the minimum allowed in the NRC Inspection Manual, and was considered by the NRC security inspectors to be an overview rather than a detailed review of all aspects of the security program. As implemented the program focused on compliance with the requirements of the security plan and changes from the basic plan. The inspectors in Region I typically implemented the core inspection program for SALP 1 facilities (including TMI) by conducting two inspection trips during the SALP period. Each of these inspections covered portions of the assigned security inspection procedure to be completed during the SALP period.

The team reviewed reports which documented inspections performed between November of 1989 to January 1993. While conducting the inspections, the inspectors reviewed some aspects of the security program which were challenged during the February 7, 1993, event. The areas reviewed included implementing procedures, detection and assessment aids, alarm station activities, and guard training and qualification. The inspectors also performed a limited review of the preparation of guard response time lines and observed the licensee perform drills, including site response force training drills. The inspectors documented one violation and noted that the licensee's site security program was directed towards protecting the public health and safety.

Emergency Preparedness Inspection Program at TMI

The NRC conducted five emergency preparedness inspections at TMI between October 1989 and May 1992. Four of these inspections were team inspections, and the fifth inspection was conducted by two inspectors. All inspections were lead by regional emergency preparedness specialists.

The emergency preparedness inspection program implemented at TMI during the last two SALP cycles was the minimum required by the NRC Inspection Manual for a SALP Category 1 facility. The NRC performed one onsite emergency preparedness inspection during the SALP cycle to review the implementation of the program and conducted one for each annual emergency preparedness exercise. When the event occurred, the NRC had not yet conducted an inspection to review the emergency preparedness program as implemented for the current SALP cycle.

None of the exercises observed between October 1989 and May 1992 included a scenario for an emergency initiated by a security event. In the inspections conducted during this period, the inspectors found two exercise weaknesses as discussed in Inspection Report 50-289/90-80, and neither weakness pertained to the February 7, 1993, event. The inspectors did not document any other safety inadequacies, violations of regulatory requirements, or issues involving the relationship between the safety, safeguards, and emergency preparedness. These issues may be inspected as part of the core program.

The inspection program implemented for emergency preparedness at TMI for the last two SALP cycles was consistent with the core inspection program which involves a minimum

examination of licensee activities to confirm the licensee's performance and to find any problems in the early stages. The core inspection program is not a detailed review.

5.3.2 Assessment Programs

Systematic Assessment of Licensee Performance

The SALP is an integrated effort by the Agency to collect and evaluate the Agency's information for each site in a structured manner in order to assess the licensee's performance.

The SALP process has four objectives: (1) provide a mechanism for focusing NRC management's attention on areas of concern; (2) establish a basis for dialogue between NRC and licensees directed towards problem areas; (3) focus attention on the overall effectiveness of licensee's management; and (4) assist NRC management in allocating NRC resources.

The NRC assigns a SALP rating upon evaluating the licensee's performance with the established criteria. The rating in each functional area is a composite rating of the specified attributes and is weighted according to the significance of individual items.

Category 1 performance is defined as follows: "Management attention to and involvement in nuclear safety and safeguards activities resulted in a superior level of performance. NRC will consider reduced levels of inspection effort." The following is a description of the licensee's SALP ratings for security and emergency preparedness during the last SALP cycle.

- The licensee was rated Category 1 in security. The rating was based on a sustained level of performance and a "very effective and performance-oriented security program" as evidenced by (1) appropriate management attention to and support for the program, (2) allocation of resources necessary for program upgrades, (3) an aggressive audit program, (4) an excellent enforcement history, (5) and an effective training program. The body of the SALP report indicated that the licensee committed a significant amount of resources to make capital improvements and that this commitment indicated support to maintain an effective program.

- The licensee was rated Category 1 in emergency preparedness. The report states that this rating was based on an effective emergency preparedness program, as demonstrated by the following Managers who participated in onsite and offsite emergency preparedness activities and the staff maintained program readiness. The licensee actively maintained the relationship with State and local governments and assigned well-qualified personnel to the emergency response organization. These personnel responded during the annual exercise and actual events in a manner that was timely and appropriate, although no events prompted the licensee to implement the E-Plan. The NRC rated the emergency preparedness performance as generally "strong and effective."

The IIT did not conduct a detailed review of the SALP or inspections programs. The IIT noted that the assessment terms used in issued inspection reports and the SALP report in the areas of security and emergency preparedness were not clearly consistent with the description of Category 1 performance found in the NRC Inspection Manual chapter on the SALP. However, the SALP report did not describe a decline in performance from the previous rating period during which the licensee's performance was also rated as Category 1.

5.4 Relationships Between Safety, Safeguards, and Emergency Preparedness

On July 24, 1989, a change became effective to Emergency Procedure 12202-13, "Plant Response to Penetration of the Protected Area," to maintain plant stability and remain at power as long as the plant remained stable, but requiring a manual trip of the unit if the intruder caused the plant to become unstable. The original procedure required an immediate trip of the unit. The TMI staff determined that the procedural change did not require a safety review as an unreviewed safety question. This change may involve questions about the criteria to be used to evaluate "stable" plant conditions and judgements to determine whether the level of plant safety is maximized by continued plant operation or timely plant shutdown.

The event of February 7, 1993, presented a unique set of problems to the licensee in operating the facility and implementing the E-Plan. These problems were primarily as follows:

- The inability of the plant personnel to freely move about the facility prevented the onshift personnel from staffing inplant emergency response facilities and hindered the ability to respond to plant equipment, alarms, and failures.

- The potentially hostile environment prevented the licensee from bringing the augmented (1-hour) response personnel into the plant.

- The licensee relocated the emergency command function from its normal location in the control room to the CAS, which was the hub of activity for the event and was not equipped with the procedures, communication equipment, and instruments needed for the function.

- Site personnel could not implement procedures in the normal manner because of factors such as restricted movement and limited access to critical locations and equipment such as telephones and procedures.

- The emergency prompted the licensee to control access through VA doors including implementing the policy to restrict key card access.

These problems were neither anticipated by the regulatory process nor addressed in the licensee's plans and procedures. The IIT concludes that other events such as a large fire, flood, natural disaster, or toxic release could result in the same challenges.

6 FINDINGS AND CONCLUSIONS

The results of the team's review follow in numbered sections which list the topic area, selected supportive findings, and conclusions.

6.1 Safety Significance of the Event

Finding

The event involved an intruder who challenged the TMI-1 security barriers and programs, and disrupted normal site operations on February 7, 1993. The unarmed intruder entered only the PA and did not breach a VA boundary.

Conclusion

The event resulted in no actual adverse reactor safety consequences and was of minimal safety significance.

6.2 Intruder Background and Threat Characterization

Conclusion

Whether the intruder acted at random or to obtain attention, the IIT did not obtain sufficient information to establish a motive for his actions on February 7, 1993.

6.3 Continued Plant Operation

Findings

- Before the event, the reactor was stable and operating at full rated power. No emergency systems were out of service. The operating crew was staffed according to plant procedures and technical specification requirements.

- Control room operators appropriately focused on monitoring reactor and balance-of-plant conditions to detect plant parameter trends while the intruder was loose within the Turbine Building.

- The reactor systems, emergency safety features, and balance-of-plant power production equipment were not challenged.

- If required, the reactor could have been shut down and cooled down from the control room.

Conclusion

Maintaining power operations was an appropriate decision for this event.

6.4 Site Security Response

Findings

- Security hardware systems at the time of the intrusion were functional and were in compliance with NRC regulations and licensee procedures.
- The security shift was staffed in compliance with licensee-approved procedures in both numbers and assigned duties. However, the licensee's policy to station armed responders outside the PA may not meet the requirements for immediate response capability.
- Security personnel were well motivated and aggressive in responding to the event.
- The PA fence and associated detection and assessment systems, the VA barriers, and security access restrictions functioned as designed during the event.
- The response to guard VAs was consistent with approved procedures and was timely.
- Selected officers recently received specialized tactical training that benefited them in conducting search-and-clear operations and in controlling the intruder once found.

Conclusion

The security force responded appropriately to the specific challenge presented by the intruder.

6.5 Operations, Emergency Response, and Security Interface

Findings

- The concern for personal safety dictated actions by the control room staff and Operations Coordinator.
- The perceived threat to personnel prompted the operations shift supervisor to immediately lock the fire doors which isolated the control room from both the staff and

equipment needed to fully implement the emergency response organization. This action resulted in no clear safety benefit to protect control room staff.

- Use of double-cylinder dead-bolt locks to secure normally occupied areas could be a safety hazard to personnel.

- The computer command procedure of reducing the number of key cards that would open VA doors reduced the possibility of an intruder entering a VA but resulted in only one member of the onshift operations crew maintaining a valid key card to enter the VA. Although the control room personnel and other selected crew members possessed VA keys, they were isolated during the event.

Conclusion

There were conflicts between operations, emergency response, and security actions that resulted from limited key card access, the locking of the control room fire doors and personal safety concerns.

6.6 Emergency Response

6.6.1 Licensee Response

Findings

- Information on the event was quickly relayed to the control room. The event was appropriately classified as a Site Area Emergency, and the Emergency Director position was established.

- The shift supervisor was initially distracted from making the event classification and emergency declaration by personal safety concerns and the need to confer with TMI management.

- TMI-1 managers promptly reported to the site and assumed control.

- During the event, the Emergency Director was located at the CAS, which had the effect of relocating the Emergency Control Center from the preselected and appropriately equipped control room area to the service building. This action created confusion and complicated the implementation of the emergency response plan.

- Emergency notification could not be performed in the normal manner, the alternate method was cumbersome and time consuming, and the people performing it were not trained. This licensee resolved this problem by using alternate methods of making offsite notifications and callouts.

- During the first hour of the event, the licensee did not consider staffing emergency facilities at normal or alternate locations. The licensee required approximately 3 hours to establish and staff selected alternate emergency facilities.

- The licensee appropriately ended the Site Area Emergency event upon locating the intruder, verifying the status of equipment, and searching site areas.

Conclusion

The licensee focused on re-establishing the security of the facility and eliminating the intruder threat. TMI management departed from the E-Plan and procedures to address the immediately known conditions and did not fully consider the possibility of radiological sabotage which could warrant full scope emergency response capabilities.

6.6.2 NRC Response

Findings

- The NRC staff on duty at the Operation Center and Region I received the event notification, promptly evaluated it, and notified NRC senior managers.

- The NRC senior managers promptly evaluated the event and activated the Region I and Headquarters response centers.

- The NRC appropriately responded to the site.

- The NRC kept other Federal agencies and Commonwealth of Pennsylvania authorities informed of the status of the event.

- The protective measures team of the Region I Incident Response Center was not fully staffed.

- The NRC Headquarters Operations Center was not staffed with reactor safety or protective measures teams.

- The NRC did not follow established procedures in calling out to its emergency response personnel.

Conclusion

The NRC focused its response on security concerns and did not fully staff response facilities in preparation to address the broader implications of any radiological sabotage.

6.7 Precursors

Findings

- As a result of an intrusion in 1976, the licensee obtained information indicating the difficulty of conducting an adequate search for an intruder.
- The circumstances of an intrusion in 1980 demonstrated weaknesses in intercepting vehicles which have passed by the North Gate and in searching for an intruder.
- Several past drills provided indications of a lack of understanding of the plant staff's role in a security event.
- Difficulties in the command and control of security and operations were found during security events and drills.

Conclusion

Previous TMI events, drill critiques, and other reports identified weaknesses that also were evident during the February 7, 1993, event.

6.8 Regulatory Aspects

6.8.1 Vehicle Entry into Protected Area

Findings

- The performance objectives of 10 CFR Part 73 for establishing and maintaining a physical protection system do not effectively address the use of a vehicle for entering the PA in a manner similar to the February 7, 1993, event.
- PA barrier design specified in 10 CFR Part 73 is not required to prevent a vehicle from entering the PA.
- Current NRC licensing reviews and NRC evaluations do not require consideration of vehicle entry into the PA.
- The method of entry into the PA significantly affected the security program response strategy toward protecting the VAs and preventing radiological sabotage.
- The NRC staff has not effectively defined and communicated its expectations for the licensee's security program performance in response to vehicle intrusions.

Conclusion

The NRC requirements for establishing and maintaining a physical protection system and as used during the security program licensing process do not consider use of a vehicle to breach a PA barrier. In this event, the use of a vehicle reduced the amount of time the security force had to assess and respond to the threat.

6.8.2 Security Inspection Program

Findings

- The NRC had conducted the minimum inspection program for TMI because the facility was assessed with SALP 1 ratings for superior performance in the security area. The current program guidance discourages inspectors from requesting demonstrations of integrated program capabilities for inspection purposes. The types of findings noted as a result of this event may have been more evident if the NRC had conducted performance-based assessments.

- The NRC has not performed a performance-based assessment of the security program at TMI since June 1986, at which time the staff evaluated security system hardware but did not evaluate the protection strategy.

- The current inspection program does not provide for a routine, focused integrated review of the performance of the licensee's security program.

Conclusion

The NRC's security inspection program was not effective in revealing and evaluating the types of challenges demonstrated by this event.

6.8.3 Procedure Guidance on Plant Operation

Finding

Before GPUN revised emergency procedure EP 1202-13 in 1989, the procedure required an immediate shutdown by tripping the reactor if the intruder posed a threat to the security of the unit. The revised procedure specifies remaining at power and maintaining plant stability unless instability is caused by the intruder, then manually trip the unit. The licensee performed a safety determination and concluded that the procedural change did not require a written safety evaluation to determine if an unreviewed safety question exists.

Conclusion

The decision to maintain stable, steady-state reactor operations was in accordance with an established emergency procedure (EP 1202-13); however, this procedure does not contain qualifying guidance to the operators and may not be appropriate in all security event conditions covered by the GPUN procedure.

6.8.4 Deviations from Procedures and License Conditions

Findings

- The licensee's E-Plan permits the ED to approve and direct deviation from establish procedures, equipment operating limits or technical specifications without invoking the requirements of 10 CFR 50.54(x) and (y). As an example, the ED deviated from emergency plan implementing procedures, which are required by the technical specifications, when the members of the initial response emergency organization were directed to stand by at home instead of responding and staffing the emergency response facilities at their predesignated or a specified alternate location.

- Site managers and Region I personnel stated that the licensee invoked 10 CFR 50.54(x) for the suspension of security measures. It is unclear if this action was appropriately implemented and if an SRO approved this action before it was implemented, as required by 10 CFR 50.54(y). The licensee did not report to the NRCOC that it had suspended certain security measures in accordance with the provision of 10 CFR 50.54(x).

Conclusion

The need to deviate from the security and emergency plan implementing documents may have been appropriate during the February 7, 1993, event. However, compensatory alternatives were not considered and the use of 10 CFR 50.54(x) and (y) was not properly implemented.

6.9 Communications

Findings

- SPOs improperly used electronic equipment near the intruder's vehicle before a determination had been made if the vehicle contained an explosive device.

- Security managers did not give guidance on proper communications discipline.

- Only certain telephones were specified by procedure to be used for emergency notifications and callbacks, and these telephones were not accessible because the control room fire doors were locked.

- The individuals making notifications and callbacks were not trained in the procedures they were to follow.

- The CAS was used as the Emergency Control Center for this event. The CAS communications capability was not designed to support both emergency preparedness and security functions.

- The licensee telephone system had an offhours restriction that did not permit outgoing calls from certain telephones. This restriction was not completely lifted until 2:30 p.m.

- The NRC staff did not have access to ERDS data because of a telephone line failure at TMI.

Conclusion

The event exhibited numerous issues which delayed communications or inhibited the necessary flow of information.

APPENDIX A

Memorandum from James M. Taylor, Executive Director for Operations, to the Commission Transmitting the Charter for the Investigation of the February 7, 1993, Incident at Three Mile Island Nuclear Generating Station, Unit 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 8, 1993

MEMORANDUM FOR: The Chairman
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
Commissioner de Planque

FROM: James M. Taylor
Executive Director for Operations

SUBJECT: INVESTIGATION OF THE FEBRUARY 7, 1993 UNAUTHORIZED FORCED ENTRY INTO THE PROTECTED AREA AT THREE MILE ISLAND UNIT 1

On February 7, 1993 at 7:11 a.m. EST, the licensee for the Three Mile Island Nuclear Generating Station Unit 1 (TMI-1) notified the NRC that they had declared a Site Area Emergency for Unit 1 at 7:05 a.m. when an intruder drove a motor vehicle through the plant's protected area fence and crashed through the turbine building's rollup access door. The vehicle came to rest approximately 75 feet inside the turbine building. TMI-1 was operating at 100 percent power at the time of the forced entry. The licensee instituted security response measures including a lockdown of all vital areas and notified State and local law enforcement agencies. NRC notified the Federal Bureau of Investigation (FBI). State Police, a U.S. Army explosives ordinance team and a FBI representative from the Harrisburg, Pennsylvania field office responded to the site. Pennsylvania State Police and TMI site security officers in coordination with the FBI initiated a search of the plant for an intruder. The NRC entered the standby response mode at 7:25 a.m. because the situation was sufficiently complex and uncertain to require additional plant monitoring. At approximately 11:00 a.m. an unarmed intruder was apprehended inside the Unit 1 turbine building. After initial questioning, the individual was escorted offsite by State Police. TMI security personnel and State Police continued to search the plant's protected and vital areas but did not identify any other intruders or explosives or abnormal conditions. At 4:35 p.m. the licensee de-escalated from the Site Area Emergency. The plant remained at 100 percent power throughout the security event.

Because of the potential physical security significance and the potential regulatory questions that the event raises, I have requested AEOD to take the necessary actions to establish an Incident Investigation Team (IIT). Arrangements are being made under the provisions of a Memorandum of Agreement with the Institute of Nuclear Power Operations for industry participation. The team is to fact find as to what happened and make appropriate findings and conclusions which will form the basis for any necessary follow-on actions.

The team will report directly to me and is comprised of: Samuel Collins, (RIV) IIT Leader; James Creed (RIII); Charles Gaskin (NMSS); Emilio Garcia (RV); Lee Miller (AEOD); Mike Warren (NRR) and William Hutchinson (OI). All team

members are relieved of all normal duties while assigned to the IIT. Enclosed is the charter for the IIT to use in the investigation of the event.

The IIT was selected on the basis of their knowledge in the fields of physical plant security and safeguards, emergency planning, plant systems and operations, and criminal investigation. Team members have no direct involvement with the Three Mile Island Nuclear Generating Station. The IIT leader and members are currently on route to the site.

The licensee has agreed to preserve plant equipment and records in accordance with their discussions with the Regional Administrator on February 7, 1993. The licensee has also agreed to make plant documents and personnel involved in the incident available to the team.

The IIT report will constitute the single NRC fact finding investigation report. It is expected that the team report will be issued within about 45 days from now.

James M. Taylor
Executive Director
for Operations

Enclosure:
Incident Investigation Team
Charter

cc w/encl:
SECY
OGC
ACRS
OPA
OSP
OCA
Regional Administrators

ENCLOSURE

Incident Investigation Team Charter

UNAUTHORIZED FORCED ENTRY INTO THE PROTECTED AREA AT THREE MILE ISLAND UNIT 1

The scope of the IIT investigation should include: plant and security conditions preceding event; security event chronology; site security response; operational mode of the plant; local and State law enforcement and FBI response; emergency response (licensee and NRC); safety significance; background and threat characterization of the intruder; precursors to the event; and whether the regulatory process and activities preceding the event contributed to it. Within the framework of this overall scope the IIT should specifically:

With respect to conditions preceding the event: Evaluate the condition of the physical security systems and security forces at the time of the forced entry. Identify whether these physical security measures were appropriate.

With respect to the security event chronology: Develop and validate a detailed sequence of events associated with the entry of the intruder into the owner controlled and plant protected area (turbine building). Include in the chronology: the response of the licensee's (and State, local and Federal authorities) security forces from initial detection to capture of the intruder; site security searches and walkdowns of the owner controlled, protected and vital areas; and establishment of compensatory security measures.

With respect to the site security response: Evaluate whether the actions taken by the licensee's security forces were appropriate. Evaluate the licensee's use of security systems, contingency plans, procedures, and training in response to the incident. Review the response of the State, local and Federal authorities.

With respect to emergency response: Develop and validate a detailed sequence of events associated with implementation of the emergency plan implementing procedures. Examine the emergency response of the licensee and the NRC with respect to security aspects.

With respect to regulatory process and activities preceding the event: Evaluate the regulatory requirements and licensee commitments for security systems and contingency plans and procedures associated with the intrusion event.

The scope of the investigation does not include: 1) assessing violations of NRC rules and requirements; 2) reviewing the design and licensing basis for the facility except as necessary to assess the cause for the event under consideration; and 3) assessing reasonable assurance of offsite emergency response capabilities of State and local agencies.

APPENDIX B

Description of Team Activities

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DESCRIPTION OF TEAM ACTIVITIES

GENERAL APPROACH

The investigative methods used by the Three Mile Island Unit 1 (TMI-1) Incident Investigation Team (the team) were developed from the experience gained during previous NRC incident investigations at other NRC licensees and incorporated into NRC's "Incident Investigation Manual" (NUREG-1303, Revision 2). Since the Commission approved establishment of the NRC Incident Investigation Program in October 1985 and assignment of overall development and administrative responsibilities to the Office for Analysis and Evaluation of Operational Data (AEOD), the NRC Executive Director for Operations has chartered eight prior IITs (see Table B.1).

The TMI team investigated the event to determine what happened and make appropriate findings and conclusions which would form the basis for any necessary follow-on actions.

The team placed a high priority on interviewing personnel who were directly involved in response to the incident or who had expert knowledge of security system designs and responses, program functions, plant conditions, and emergency preparedness. The team interviewed individuals on site early in the investigation while the events were still fresh in the minds of those involved. The team also met with personnel from the General Public Utilities Nuclear Corporation (the licensee) to obtain information, agree on the status of quarantined equipment and material, and receive presentations on the status of the licensee's self-initiated review of the event.

After leaving the site, the team interviewed U.S. Nuclear Regulatory Commission (NRC) staff members concerning a number of possible regulatory issues that the event raised, to obtain information on regulatory oversight activities and the sequence of events.

Stenographers created a transcript of each interview and meeting significant to the documentation of the event. The IIT also periodically gave status briefings to the Commonwealth of Pennsylvania. Media briefings were held at the beginning and end of the IIT onsite review period including a joint briefing with a U.S. Senator. Table B.2 lists all interviews and significant meetings held by the team.

Issues not directly related to the event and those determined to be outside the scope of the IIT Charter (Appendix A) were referred to NRC's Region I for appropriate consideration and resolution.

RECONSTRUCTING THE EVENT

The team wrote the sequence of events and descriptions in this report from several sources including operations, security, and emergency response logs; security computer logs; notes taken by plant personnel, post-event statements, and interviews with those persons involved in the event, including NRC inspectors and emergency response personnel.

DETERMINING FACILITY SYSTEMS AND PROGRAMS DESCRIPTIONS

The team evaluated the systems and programs which were challenged or relied upon during this event. The team reviewed the plant system and program history, including precursor events, related to security equipment functions, equipment to support continued plant operation and emergency response facilities, programs, and staffing.

DETERMINING HUMAN FACTORS CONSIDERATIONS

In coping with the event, the plant staff carried the burdens of integrating the security intruder event, implementing the emergency plan, and giving consideration for continued plant operation. The team evaluated the emergency procedures used by control room personnel during the event to classify the event and evaluate its effects on continued plant operation. The team also evaluated the implementation of the security plan and emergency response organizations using onsite, call-in and offsite organizational support. The team based its evaluations in this area on interviews with plant staff and offsite support personnel to assess the adequacy of training and procedures in coping with the event. The team explored the basis for implementing the radiological sabotage design basis threat capability specified in 10 CFR 73.1 and evaluated the licensee's application of the general performance objective and requirements of 10 CFR Parts 73.1 and 73.40 and the performance capability requirements of 10 CFR 73.55 (b)-(h).

The team also conducted limited reviews of the intruder's background including activities before and after the security intrusion. The team conducted extensive interviews and reviewed records with the cooperation of the intruder's family, the Pennsylvania State Police, and the Middletown law enforcement agencies. Legal proceedings were observed by a team member with the cooperation and approval of the Dauphin County District Attorney's office. At the time of report issuance, the individual was under court-mandated observation and treatment in a Commonwealth of Pennsylvania facility.

DETERMINING PRECURSORS

The team reviewed licensee and NRC documents and conducted interviews to establish the facts and receive opinions on similar events. The team evaluated the applicability of past similar security intrusion events the Safeguards Summary Event List (SSEL) (NUREG-0525), and the team industry consultant obtained precursors from the Institute of Nuclear Power Operations (INPO) database. The team reviewed licensee security and emergency response

exercise records, NRC inspection and generic communication documents and industry experience documents to find any preceding occurrences or information that apply to the IIT evaluation of the February 7, 1993, event and subsequent response.

DETERMINING REGULATORY ASPECTS

The scope of the IIT charter (Appendix A) included a review of the regulatory process and activities preceding the event, and an evaluation of the regulatory requirements and licensee commitments for security systems and contingency plans and procedures associated with the intrusion event. The scope did not include a review of the design and licensing basis for the facility.

To determine the implications of the regulatory aspects of the February 7, 1993, event at TMI-1, the team reviewed licensing requirements and the application of the NRC regulatory oversight process in the areas of operations, security, and emergency preparedness. The team reviewed NRC and licensee documents and interviewed personnel from the NRC program offices, NRC Region I, and the licensee's organization.

The team focused on obtaining an understanding of the regulatory criteria and licensee obligations under 10 CFR Part 73, which prescribes requirements for establishing and maintaining a physical protection system at fixed sites.

Issues identified as possible violations of NRC requirements were referred to NRC's Region I for appropriate consideration and resolution.

DETERMINING FINDINGS AND CONCLUSIONS

Within the scope of the IIT Charter, the team compiled a list of principal findings and conclusions from the February 7, 1993, event at TMI-1. A finding is defined as what the team learned based on factual information collected during the investigation. A conclusion is a judgment and specifies the significance or implications of a finding. The basis for each finding and conclusion is contained in the IIT report sections. This area also addresses the team's conclusion regarding the possible safety significance of the event.

Table B.1 List of Incident Investigation Team Activities

Year	Event Description and Report
1985	"Loss of Main and Auxiliary Feedwater Event at the Davis-Besse Plant on June 9, 1985" (NUREG-1154)
1985	"Partial Loss of In-Plant Electrical Power and Feedwater Hammer, November 21, 1985" (NUREG-1190)
1985	"Loss of Integrated Control System Power and Overcooling Transient at Rancho Seco on December 26, 1985" (NUREG-1195)
1990	"Inadvertent Shipment of a Radiographic Source from Korea to Amersham Corporation, MA." (NUREG-1405)
1990	"Loss of Vital AC Power and the Residual Heat Removal System during Mid-Loop Operations at Vogtle Unit 1 on March 20, 1990" (NUREG-1410)
1991	"Potential Criticality Accident at the General Electric Nuclear Fuel and Component Manufacturing Facility, May 29, 1991" (NUREG-1450)
1991	"Transformer Failure and Common-Mode Loss of Instrument Power at Nine Mile Point Unit 2 on August 13, 1991" (NUREG-1455)
1992	"Loss of an Iridium-192 Source and Therapy Misadministration at Indiana Regional Cancer Center, Indiana, Pennsylvania, on November 16, 1992" (NUREG-1480)
1993	"Unauthorized Forced Entry into the Protected Area at Three Mile Island Unit 1 on February 7, 1993" (NUREG-1485)

Table B.2 Interviews and Meetings the Incident Investigation Team Conducted

Date	Time	Meeting/Interview
02/08/93	5:45 p.m.	Team Leader Onsite Meeting with NRC Region I Representatives
02/09/93	10:00 a.m.	Entrance Meeting
02/09/93	2:00 p.m.	Media Briefing
02/09/93	3:10 p.m.	TMI Site Emergency Review Group Status Meeting with IIT
02/10/93	8:20 a.m.	Senior Site Protection Officer, GPUN
02/10/93	9:29 a.m.	Resident Inspector at TMI, NRC
02/10/93	10:30 a.m.	Site Protection Officer, GPUN
02/10/93	10:10 a.m.	Senior Site Protection Officer, GPUN
02/10/93	1:07 p.m.	Site Protection Officer, GPUN
02/10/93	1:10 p.m.	Plant Operations Director, TMI-1, GPUN
02/10/93	3:00 p.m.	Site Protection Officer, GPUN
02/10/93	3:30 p.m.	Site Protection Officer, GPUN
02/11/93	8:11 a.m.	Site Protection Officer, GPUN
02/11/93	8:12 a.m.	Nuclear Engineer, Pennsylvania Bureau of Radiation Protection, Division of Nuclear Safety
02/11/93	10:05 a.m.	Senior Resident Inspector at TMI, NRC
02/11/93	1:04 p.m.	Security Shift Supervisor, GPUN
02/11/93	2:11 p.m.	Director, Operations and Maintenance, TMI-1, GPUN
02/11/93	2:40 p.m.	Commanding Officer, 56th Ordnance Detachment, Explosive Ordnance Disposal, Forces Command, Field Operating Activity, United States Army
02/11/93	3:30 p.m.	Chemistry Technician, Metropolitan Edison

Table B.2 Interviews and Meetings the Incident Investigation Team Conducted

Date	Time	Meeting/Interview
02/11/93	3:35 p.m.	I&C Technician, Metropolitan Edison
02/11/93	3:35 p.m.	56th Ordnance Detachment (EOD) at Fort Indiantown Gap, Pennsylvania, U.S. Army
02/12/93	8:00 a.m.	Senior Site Protection Supervisor, GPUN
02/12/93	8:08 a.m.	Operations Shift Foreman, TMI-1, GPUN
02/12/93	10:05 a.m.	Director, TMI-1, GPUN
02/12/93	10:14 a.m.	Site Protection Officer, GPUN
02/12/93	1:03 p.m.	Operations Shift Supervisor, TMI-1, GPUN
02/12/93	1:10 p.m.	Site Protection Officer, GPUN
02/12/93	3:05 p.m.	Operations Shift Foreman, TMI-1, GPUN
02/12/93	3:06 p.m.	Senior One, Plant Process Control, TMI, GPUN
02/16/93	8:18 a.m.	Security Manager, TMI, GPUN
02/16/93	10:12 a.m.	Site Protection Officer, GPUN
02/16/93	10:15 a.m.	TMI Emergency Preparedness Manager, GPUN
02/16/93	1:05 p.m.	Corporate Manager of Emergency Preparedness for GPUN
02/16/93	1:10 p.m.	I&C Technician, Metropolitan Edison
02/16/93	2:05 p.m.	Senior Site Protection Officer, GPUN
02/16/93	2:16 p.m.	Site Protection Officer, GPUN
02/17/93	8:02 a.m.	I&C Technician, Senior, Metropolitan Edison, GPUN
02/17/93	8:05 a.m.	Senior Site Protection Officer, GPUN
02/17/93	9:05 a.m.	Shift Technical Advisor, GPUN
02/17/93	10:10 a.m.	Mechanical Maintenance, Metropolitan Edison

Table B.2 Interviews and Meetings the Incident Investigation Team Conducted

Date	Time	Meeting/Interview
02/17/93	10:12 a.m.	Plant Engineering Director, TMI-1, GPUN
02/17/93	10:27 a.m.	Radiology Control Supervisor, TMI-1, GPUN
02/17/93	11:15 a.m.	Safety Protection Training Coordinator, TMI-1, GPUN
02/17/93	12:07 p.m.	Senior Site Protection Officer, GPUN
02/17/93	1:00 p.m.	Operations Shift Supervisor, TMI-1, GPUN
02/17/93	1:10 p.m.	Metropolitan Edison
02/17/93	1:45 p.m.	Machinist, First Class, Metropolitan Edison
02/17/93	2:15 p.m.	Senior Site Protection Officer, GPUN
02/17/93	2:25 p.m.	Plant Engineering, GPUN
02/17/93	3:00 p.m.	Security Manager, TMI, GPUN
02/17/93	3:05 p.m.	Senior Site Protection Officer, GPUN
02/17/93	4:17 p.m.	Telecom Coordinator, GPUN
02/17/93	5:00 p.m.	Telecom Staff, GPUN
02/18/93	8:00 a.m.	Radiological Controls Technician, TMI-1, Metropolitan Edison
02/18/93	8:25 a.m.	Operations Training Manager, GPUN
02/18/93	8:25 a.m.	Lead Operations Engineer, GPUN
02/18/93	9:06 a.m.	Director, TMI-1, GPUN
02/18/93	9:08 a.m.	Operations Director, TMI-1, GPUN
02/18/93	9:32 a.m.	Site Protection Officer, GPUN
02/18/93	9:55 a.m.	Senior Site Protection Officer, GPUN
02/18/93	10:00 a.m.	QA Lead Auditor TMI, GPUN

Table B.2 Interviews and Meetings the Incident Investigation Team Conducted

Date	Time	Meeting/Interview
02/18/93	10:37 a.m.	Operations Quality Assurance Acting Manager, GPUN
02/18/93	2:12 p.m.	Quality Control Manager, TMI, GPUN
02/18/93	3:10 p.m.	TMI Site Emergency Review Group Briefing IIT
02/19/93	8:06 a.m.	Onsite Close-out Meeting
02/19/93	12:00 p.m.	Media Briefing
02/19/93	2:45 p.m.	Meeting with Commonwealth of Pennsylvania
02/25/93	10:08 a.m.	Chief of Safeguards, Division of Radiological Safety and Safeguards, Region I, NRC
02/25/93	11:16 a.m.	Chief of Projects, Branch No. 4, Division of Reactor Projects, Region I, NRC
02/25/93	1:05 p.m.	Chief Division of Environmental Radiation Bureau of Radiation Protection, Pennsylvania Department of Environmental Resources
02/25/93	1:12 p.m.	Senior Security Specialist, Region I, NRC
02/25/93	2:20 p.m.	Emergency Preparedness Section Chief for Region I, NRC
02/25/93	2:32 p.m.	Chief Of Safeguards, Division of Radiological Safety and Safeguards, Region I, NRC
02/25/93	3:07 p.m.	Deputy Regional Administrator, Region I, NRC
02/25/93	4:11 p.m.	Regional Administrator, Region I, NRC
02/25/93	4:15 p.m.	Director, Pennsylvania Emergency Management Agency
02/25/93	5:12 p.m.	Director, Office for Analysis and Evaluation of Operational Data, NRC
02/26/93	9:12 a.m.	Special Counsel for Fuel Cycle and Safeguards Regulation, OGC, NRC
02/26/93	9:32 a.m.	Senior Intelligence Analyst, Division of Fuel Cycle Safety and Safeguards, NMSS, NRC

Table B.2 Interviews and Meetings the Incident Investigation Team Conducted

Date	Time	Meeting/Interview
02/26/93	10:29 a.m.	Emergency Response Data System Project Officer AEOD, NRC
02/26/93	11:00 a.m.	Chief of the Safeguards Branch, Division of Radiation Safety and Safeguards, NRR, NRC
02/26/93	11:08 a.m.	Incident Response Coordinator, AEOD, NRC
02/26/93	11:25 a.m.	NRR Project Manager for Three Mile Island Unit 1, NRC
02/26/93	12:57 p.m.	Chief of the Performance Assessment Section Safeguards Branch, NRR, NRC
02/26/93	1:07 p.m.	Chief of the Incident Response Branch, AEOD, NRC
02/26/93	3:17 p.m.	Security Specialist Reactor, NRR, NRC
03/02/93	9:10 a.m.	Senior Reactor Engineer, Safeguards Section Region I, NRC
03/02/93	10:06 a.m.	State Liaison for Incident Response, AEOD, NRC
03/02/93	11:09 a.m.	Chief of the Emergency Preparedness Branch, NRR, NRC
03/02/93	3:15 p.m.	Director of Fuel Cycle Safety and Safeguards, NMSS, NRC
03/03/93	3:10 p.m.	Director, Pennsylvania Emergency Management Agency
03/11/93	10:00 a.m.	TMI Site Emergency Review Group Meeting with IIT