U. S. NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IE INVESTIGATION REPORT NO. 50-289/75-20 Docket No: 50-289

Licensee: Metropolitan Edison Company License No: DPR-50

Three Mile Island Unit 1 Priority: N/A

Category: C

Location: Middletown, Pennsylvania

Type of Licensee: PWR, 871 MWe (B&W)

Type of Investigation: Allegations, Unannounced

Dates of Investigation: August 5 and 6, 1975

Reporting Investigator: Raymond H. Smith Sept. 3, 1975
Raymond H. Smith, Investigation Specialist DATE

Accompanying Investigators: Raymond Shepherd Sept. 3 1975
Raymond Shepherd, Physical Security Inspector DATE

for Raymond H. Smith Sept. 3 1975
Nicholas Panzarino, Radiation Specialist DATE

Other Accompanying Personnel: None
DATE

Reviewed By: Paul R. Nelson Sept 9, 1975
Paul R. Nelson, Chief, Radiological and Environmental Protection Branch DATE

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TABLE OF CONTENTS

I. BACKGROUND

A. Reason for Investigation

On August 4, 1975, at approximately 4:00 PM, R. O. McClintock, Senior Radiation Specialist, Region I received a telephone inquiry from an individual regarding information contained in NRC Regulations relating to radiological protection. The individual stated that he would visit Region I on August 5, 1975, to obtain more detailed information.

On August 5, 1975, at about 9:00 AM, the individual visited the Region I office. During a brief discussion, it was determined that the individual was concerned about radiological working conditions at the Three Mile Island Nuclear Station, Unit I. A meeting was subsequently conducted with appropriate Region I personnel and the individual provided information in the form of generalized allegations regarding the radiological working conditions and one allegation regarding the physical security programs.

Following a review of the information provided by the individual, the NRC, Region I, initiated an immediate investigation.

B. Identification of Concerned Organizations

1. General Public Utilities Service Corp. (GPUC)
   Box 1018
   Reading, Pennsylvania 19603

   A Utility Company with interest in three Nuclear Power plants in the Pennsylvania, New Jersey area. It is the parent company of Metropolitan Edison Company.

2. Metropolitan Edison Company (Met-Ed)
   Box 542
   Reading, Pennsylvania 19603

   Met-Ed is a subsidiary of GPUC. Met-Ed is licensed by NRC to operate TMI Nuclear Power Station, Unit 1.

3. Crouse Company, Incorporated
Upper Lewis Road
Linfield, Pennsylvania 19468

This firm, under contract to Met-Ed, provides maintenance service.

4. Attorneys Investigation Services (AIS)
Suite 4
513 West Chocolate Avenue
Hershey, Pennsylvania 17033

This security agency, under contract to Met-Ed, provides the guard force for the protection of TMI, Unit I.

II. SUMMARY OF FINDINGS

A. Allegations Made During a Meeting at NRC, Region I

On August 5, 1975, the complainant met with Region I representatives and provided information regarding the radiological working conditions existing at the Three Mile Island Nuclear Station, Unit I. According to the complainant, the work involved grinding and buffing on the spent fuel racks located in the Fuel Handling Building. The complainant also stated that the work was being performed by the Crouse Company, Incorporated. The complainant also discussed what he felt was laxity of the plant security program.

The complainant requested not to be identified by the NRC and refused to provide a residential address or telephone number. The complainant did agree to contact the Region I office by telephone on August 7, 1975.

Based on a review of the complainant's allegations described during the meeting an unannounced investigation was initiated immediately.

B. Allegations and Investigation Findings

The NRC, Region I representatives interpreted a total of nine allegations from the complainant's discussion. The nine allegations and NRC findings on each are as follows:

1. Allegation No. 1

It was alleged that the hand and foot counters at the work location and at the exit to the control area were not always working.

The NRC investigation finds that during the period from July 14 to August 6, 1975, the hand and foot monitor located at the exit to the controlled area was out of service on August 2, 3 and the morning of August 4, 1975. In addition to the portal monitor an operable portable survey instrument with pancake probe and alarm was placed at the counter that was out of service.

2. Allegation No. 2

It was alleged that there is inadequate control of personal monitoring devices in that the complainant's film badge and pocket dosimeter had been moved from the rack location where they were placed and that any individual could also use another's personal monitoring device.

The NRC investigation finds that the control of personal monitoring devices is commensurate with the radiological health protection problems of the work in progress.

3. Allegation No. 3

It was alleged that during one shift, from 7 to 8 individuals entered the work location without personal monitoring devices.

The NRC investigation finds no information or documentation to substantiate the allegation that individuals entered the controlled area without personal monitoring devices.

4. Allegation No. 4

It was alleged that the complainant was instructed, for radiation control purposes, to avoid some 55 gallon drums that were not identified, posted or barricaded.

The NRC investigation finds that the 55 gallon drums were barricaded with rope and the area posted as a high radiation area on August 5, 1975. Individuals were instructed not to stand at the rope where a radiation exposure level of 15 milliroentgens per hour was measured on August 5, 1975. The investigation also finds that there may be periods of time when drums are present in the area and posting is not required.

Failure to post the radiation area in accordance with 10 CFR 20.203(b) was noted as a deficiency and corrected prior to conclusion of the investigation.

5. Allegation No. 5

It was alleged that there were several doors to various rooms in the vicinity of the work location that were not identified, posted or locked to provide radiation control.

The NRC investigation finds that the doors and areas containing radioactive material in the work location vicinity and from the controlled area entrance at the 305 foot level to the 348 foot level were either posted as radiation areas and/or locked.

6. Allegation No. 6

It was alleged that candy and coffee vending machines were located in an area where they should not be, due to the work in progress.

The NRC investigation finds that all coffee and vending machines were located in areas free of radiation and radioactive contamination. There were vending machines located in the turbine building where a work location was established for non-radiation work.

7. Allegation No. 7

It was alleged that tools could be taken from the work area without being surveyed for contamination and the complainant did remove a grinder from the work location without it being surveyed for contamination.

The NRC investigation finds no indication that tools were removed from the controlled area without a release survey. A release survey is not required for tools removed from the work location established in the turbine building which is outside of the controlled area.

8. Allegation No. 8

It was alleged that the complainant's request regarding exposure information was denied.

The NRC investigation finds that each individual reads and records pocket dosimeter results at the beginning and end of each shift and is aware of his accumulated exposure. These pocket dosimeters and film badges are worn although the radiation levels at the work site are less than one milliroentgen per hour and individuals appeared to be aware of the radiation level.

9. Allegation No. 9

It was alleged that the security program was lax in regard to access control of terminated employees to the site.

The NRC investigation finds that the physical protection program is adequate for controlling access of terminated individuals to the nuclear plant site.

C. Conclusions

1. There was no information or evidence obtained during the investigation to substantiate any of the eight allegations alluding to the described deficiencies of the radiological protection program nor the one allegation regarding the security program being lax.

2. Within the scope of the investigation, there was one item of noncompliance observed that was corrected prior to conclusion of the investigation.

III. DETAILS

A. Introduction

This investigation was initiated as a result of information provided by an individual during a visit to the Nuclear Regulatory Commission, Office of Inspection and Enforcement, Region I, on August 5, 1975.

The individual stated that his concerns related to work being performed at the Three Mile Island Nuclear Power Reactor Site by the Crouse Company. According to the individual, the work involved grinding and buffing for modification of the spent fuel racks. The individual provided information regarding the work being performed and this information contained the eight allegations related to radiological working conditions and one allegation related to the security program.

The individual requested that he not be identified and refused to provide a residential address or telephone number. He did state that he would contact the Region I office by telephone on August 7, 1975.

B. Scope of Investigation

The investigators met with the Met-Ed Manager of Nuclear Operations and his staff for a discussion of the work being performed in the fuel building by the Crouse Company. During this discussion it was determined that the work being performed by Crouse Company craftsmen began on July 21, 1975.

Following this discussion the investigators examined security records, logs and reports; radiological survey reports; exposure records; procedures; training records; and sample analysis. During an examination of the work area on both the day and evening shifts, individuals involved with the work were contacted. Individuals having significant information were interviewed.

C. Persons Directly Interviewed and/or Contacted During the NRC Investigation

1. Complainant

(Name withheld by NRC pursuant to 10 CFR Part 9.6)

2. General Public Utilities Service Corporation

R. Rice, Security Coordinator

3. Metropolitan Edison Company

J. Herbein, Manager, Generation Operations-Nuclear
G. Miller, Superintendent - Unit 2
W. Poyck, Coordinator of Services
J. Stacey, Security Specialist
K. Beale, Radiation Protection Supervisor
J. O'Hanlon, PORC Chairman
G. Wallace, Shift Supervisor
R. Zechman, Administrator Nuclear and Technical Training
J. Floyd, Operating Supervisor
R. McCann, Health Physics Foreman
D. Trout, Assistant Engineer, Health Physics
J. Thompson, Radiochemistry Technician
T. Mulleavy, Radiation Protection Foreman

4. Crouse Company, Incorporated

H. Bailey, Project Superintendent
L. Carter, Timekeeper
K. Frederick, General Foreman
J. Borowick, General Foreman
J. Murphy, Foreman
R. Fuhrmann, Foreman
S. Schickley, Foreman
Individual craftsmen (Names not obtained)

5. Attorneys Investigation Services

T. Williams, Guard Supervisor
W. Brown, Security Guard

D. Interpretation of Allegations From Complainants Information

1. Allegation No. 1

a. Allegation

It was alleged that the hand and foot counters at the work location and at the exit to the control area were not always working.

b. NRC Comments

A hand and foot monitor was observed at the exit from the fuel handling building. A test of the instrument showed it to be functioning in accordance with TMI Unit 1 procedure HP1757. Because of the higher background in the area the alarm points were set higher than the hand and foot monitor located at the control point exit. According to Met-Ed representatives this instrument was not required to be used by construction personnel but that most individuals used it on the way out of the area.

A hand and foot monitor was also located at the exit from the control point and all personnel are required to use it. A test of the instrument showed it to be functioning properly. According to Met-Ed representative's the instrument was identified as being out of service on August 2, 3 and the morning of August 4. This was the only period the instrument was out of service from July 14 to August 6, 1975. According to the Met-Ed representatives, a portable survey instrument with alarm device was provided to replace the hand and foot monitor until it was placed in service on the afternoon of August 4, 1975. These representatives also stated that as individuals left the controlled area on both shifts they were instructed in the use of the portable survey instrument.

Contacts with Crouse Company employees confirmed the routine use of the hand and foot monitors and also the instrument being out of service with a portable instrument provided. The investigators observed several individuals using both hand and foot monitors when leaving the work area. In addition each individual also passed through a portal monitor following use of the hand and foot monitor.

c. NRC Investigation Findings

The NRC investigation finds that during the period from July 14 to August 6, 1975, the hand and foot monitor located at the exit to the controlled area was out of service on August 2, 3 and the morning of August 4, 1975. In addition to the portal monitor, an operable portable survey instrument with pancake probe and alarm was placed at the counter that was out of service.

2. Allegation No. 2

a. Allegation

It was alleged that there is inadequate control of personal monitoring devices in that the complainants' film badge and pocket dosimeter had been moved from the rack location where they were placed and that any individual could also use another's personal monitoring device.

b. NRC Comments

The investigator determined that film badges and TLD's are used to monitor personnel exposure. Pocket dosimeters are used to provide an estimate of an individual's current exposure. A badge rack is located at the entrance and exit to the control area in which personal dosimetry devices are stored. Film badges and TLD holders are labelled with the name of the person to whom they are issued. Each individual having dosimeters issued is

assigned a permanent location for storing them in the rack. In the case of new hires there may be a period of two to three days before a rack location number is assigned. During this period, the individual places the dosimeters in an unnumbered section of the storage rack.

During the training instruction provided each employee, the individuals' responsibilitity for picking up, wearing properly, signing in and out of the controlled area and storing personal dosimeters in the rack is emphasized. This was confirmed by contacts with individuals working inside the controlled area and the investigators observations of individuals entering and leaving the controlled area.

c. NRC Investigation Findings

The NRC investigation finds that the control of personal monitoring devices is commensurate with the radiological health protection problems of the work in progress.

3. Allegation No. 3

a. Allegation

It was alleged that during one shift, from 7 to 8 individuals entered the work location without personal monitoring devices.

b. NRC Comments

The cognizant licensee representatives stated that no cases of individuals not wearing personnel monitoring devices had been reported nor were they aware of such an occurrence.

The investigators observed the records for recording pocket dosimeter results and noted that only one individual had failed to record a result when leaving the

controlled area. The investigators also noted that one of the questions appearing on the training examination test referred to the proper location on the body for wearing the personal monitoring devices.

The investigators observed individuals working on both shifts during the investigation and each was noted to be wearing the required monitoring devices. Contacts with individuals confirmed that instructions regarding proper wearing of monitoring devices were included in training instructions and in no case did the individuals know of any other individuals not wearing their assigned monitoring devices.

c. NRC Investigation Findings

The NRC investigation finds no information or documentation to substantiate the allegation that individuals entered the controlled area without personal monitoring devices.

4. Allegation No. 4

a. Allegation

It was alleged that the complainant was instructed for radiation control purposes, to avoid some 55 gallon drums that were not identified, posted or barricaded.

b. NRC Comments

The investigators observed eight 55 gallon drums being stored in an area adjacent to the work location in the new fuel receiving area. The storage area was barricaded by a rope with a sign attached designating the storage area as a high radiation area. On August 5, 1975, the investigator measured the radiation level at the rope and found about one fourth of the barricade to be in excess of 5 milliroentgens per hour with a maximum of 15 milliroentgens per hour. The occupied work location also in

the area had a radiation level of 0.1 milliroentgens per hour. (mR/hr)

The investigators determined that of the eight drums only three contained radioactive waste and each had radiation levels of 25 mR/hr. On August 6, 1975, the investigator observed that five drums remained stored in the area and that it was not designated as a radiation area. The investigator confirmed that the three waste drums had been removed from the area during the first shift on August 6, 1975 and that the radiation levels in the area were less than 2 mR/hr.

Contacts with craftsmen working in the area confirmed that each was aware of the meaning of the posted area and had been instructed not to stand next to the rope barricade or adjacent to any other radiation areas that they might encounter. None of the craftsmen or foremen had observed the drums not being barricaded or posted prior to August 6, 1975.

Licensee representatives stated that approximately once each week the accumulated radioactive waste drums were removed from the area and that the area was posted continuously as a high radiation area since a waste drum would intermittently be stored inside the area requiring this posting. They also stated that it was necessary to enlarge the work area for the spent fuel racks beginning August 6, 1975 and that use of the area for storing radioactive waste drums would be discontinued until the work was completed.

c. NRC Investigation Findings

The NRC investigation finds that the 55 gallon drums were barricaded with rope and the area posted as a high radiation area on August 5, 1975. Individuals were instructed not to stand at the rope where a radiation exposure level of 15 milliroentgens per hour was measured on August 5, 1975. The investigation also finds that there may be periods of time when drums are present in the area and posting is not required.

Failure to post the radiation area in accordance with 10 CFR 20.203(b) was noted as a deficiency and corrected prior to conclusion of the investigation.

5. Allegation No. 5

a. Allegation

It was alleged that there were several doors to various rooms in the vicinity of the work location that were not identified, posted or locked to provide radiation control.

b. NRC Comments

The investigators observed that the radiochemistry laboratory, the decontamination room, the machine shop, and the health physics office were the only rooms that an individual working on the 348' or 305' elevation in the fuel handling building would have to pass to go to and from his work on the spent fuel racks. The radiochemistry laboratory and the health physics office were posted as "Caution - Radioactive Material" and "Radiation Areas" respectively. The health physics office is usually staffed with technicians. On August 5, 1975, the door to the radiochemistry laboratory was open. There is no requirement that the door be locked. The entrance to the decontamination room was locked on August 5, 1975. According to the cognizant licensee representatives the key is maintained by Health Physics and the door is continously locked. The machine shop door was open on August 5 and 6, 1975, and two clearly designated contaminated areas (step off pads, signs, ropes) were noted in this room.

The investigators also observed areas within walking distances of the job on the 305' elevation of the fuel handling building. These areas included the precoat filter room, the cation demineralizer room (both posted

as high radiation areas and locked), the spent fuel pool cooling room, the contaminated tool storage room on the 281' elevation of the auxiliary building, make up filters 2A and 2B, the drum storage area, the decay heat valve area and the make up valve alley and others. Doors to areas posted as high radiation areas were locked. Other areas such as radiation or contamination areas were appropriately posted and controlled (e.g., step off pads, signs on doors). To observe the areas and rooms described above would require the individual to leave the fuel storage rack job-site and walk through the other areas of the auxiliary building.

According to the cognizant licensee and Crouse Company representatives each foreman is responsible for the areas occupied by his crew members. The investigators contacted individual craftsmen and each appeared knowledgeable that they were to remain in the work locations of the spent fuel racks and to pass by certain doors to and from the work location.

c. NRC Investigation Findings

The NRC investigation finds that the doors and areas containing radioactive material in the work location vicinity and from the controlled area entrance at the 305 foot level to the 348 foot level were either posted as radiation areas and/or locked.

6. Allegation No. 6

a. Allegation

It was alleged that candy and coffee vending machines were located in an area where they should not be, due to the work in progress.

b. NRC Comments

The investigators noted that there were several vending machines located on the site. The machines are located in clean areas (i.e., the hallway from the administration building to the turbine building and in the turbine building itself). This facility is a pressurized water reactor and the turbine building was not a controlled area. According to the cognizant licensee representatives the turbine building has remained a clean area.

The investigators observed a work location established in the turbine building for grinding and buffing portions of the spent fuel racks being modified. The work involved is free from radiation and radioactive contamination.

c. NRC Investigation Findings

The NRC investigation finds that all coffee and vending machines were located in areas free of radiation and radioactive contamination. There were vending machines located in the turbine building where a work location was established for non-radiation work.

7. Allegation No. 7

a. Allegation

It was alleged that tools could be taken from the work area without being surveyed for contamination and the complainant did remove a grinder from the work location without it being surveyed for contamination.

b. NRC Comments

The investigator examined procedures for controlling the removal of tools from the controlled area. According to the cognizant licensee representatives tools used on the racks and in the pools of the spent fuel building are free from contamination because the work area is clean.

According to the licensee representatives work in a contaminated area would require that the contractor employees work under a Radiation Work Permit and that a health physics (HP) qualified individual would be assigned to observe the work. It is the responsibility of the HP qualified individual to make sure tools are bagged and stored in the proper location for a HP technician to check and tag the tools after the job. The licensee representative also stated and the investigator confirmed that surveys taken on the job in the fuel handling building showed no contamination above background and contractor employees were instructed to have all tools checked for contamination prior to removal from the controlled area.

A smear and fixed contamination survey was made of various tools in the contractor tool shed located outside of the controlled area. Tools such as grinders and drills which were in use on the job in the spent fuel handling building were examined and all were found to be free of radioactive material.

The investigator contacted Crouse Company employees and each individual confirmed that the requirement for having all tools or other items taken into a controlled area surveyed prior to removal was included in the training instruction when hired. They also stated that the foreman routinely emphasized the requirement during work. None of the individuals had seen tools being removed without a survey or knew of it being done. Each of the individuals performing work at the turbine building location were aware that tools used at the location did not require a release survey since it was outside the controlled area.

c. NRC Investigation Findings

The NRC investigation finds no indication that tools were removed from the controlled area without a release survey. A release survey is not required for tools removed from the work location established in the turbine building which is outside of the controlled area.

8. Allegation No. 8

a. Allegation

It was alleged that the complainant's request regarding exposure information was denied.

b. NRC Comments

The investigator determined through contacts with individuals and survey records that the Crouse Company employees were not working under the authority of a Radiation Work Permit. The work location occupied showed exposure levels of 0.1 mR/hr and there was no radioactive contamination present. Individuals performed work in their personal clothing.

The use of personal monitoring devices and a discussion of exposure rates and exposure are included in the training instructions. Prior to being authorized for entry to a controlled area each employee is required to pass a test which includes questions regarding these matters.

According to licensee and Crouse Company cognizant representatives the employees were informed that no exposure rates or radioactive contamination were present in the work locations associated with the spent fuel racks. Personal monitoring devices were to be worn, however, for all work inside of the controlled area. The understanding of this information and these instructions was confirmed by contacting craftsmen performing the work.

The investigator observed that data sheets used to record pocket dosimeter results upon entry and exit, were available at the entrance to the controlled area. These sheets are also used each week to update a computerized summary of accumulated exposure for each individual. An examination of the computer summaries and the log sheets showed no exposure received for the period from July 14

through August 5, 1975. One entry of a pocket dosimeter reading was noted as missing for one individual who left the area to terminate.

The investigator observed Crouse Company employees using the pocket dosimeter log sheets when entering and leaving the area. Further questioning of the employees by the investigator showed that they were aware of the system for knowing accumulated exposure through pocket dosimeter reading and that the film badge dosimeters would be processed at a later date for the official exposure record.

According to licensee and Crouse Company representatives they were not aware of anyone requesting information about their exposure or the exposure rate at the work location and not receiving an answer to the request.

c. NRC Findings

The NRC investigation finds that each individual reads and records pocket dosimeter results at the beginning and end of each shift and is aware of his accumulated exposure. These pocket dosimeters and film badges are worn although the radiation levels at the work site are less than one milliroentgen per hour and individuals appear to be aware of the radiation level.

9. Allegation No. 9

a. Allegation

It was alleged that the security program was lax in regard to access control of terminated employees to the site.

b. NRC Comments

The investigators examined records and documentation of the physical protection program related to the nuclear plant site access controls for terminated employees.

The investigators also contacted cognizant representatives of the licensee, the AIS guard force, and the Crouse Company relative to the procedures and actions which are implemented at the time an individual terminates his employment.

c. NRC Investigation Findings

The NRC investigation finds that the physical protection program is adequate for controlling access of terminated individuals to the nuclear plant site.

E. Management Meeting

At the conclusion of the investigation, the investigator held a meeting at the site with the following personnel:

General Public Utilities Service Corporation

R. Rice, Security Coordinator

Metropolitan Edison Company

J. Herbein, Manager, Generation Operations-Nuclear
G. Miller, Superintendent, Unit 2
W. Poyck, Coordinator of Services
J. Stacey, Security Specialist
K. Beale, Radiation Protection Supervisor
J. O'Hanlon, PORC Chairman

1. The investigator reviewed the reason and scope of the investigation.

2. The investigator informed the licensee that within the scope of the investigation, one item of noncompliance had been observed regarding the failure to post a radiation area. The investigator also noted that this item was corrected prior to the conclusion of the investigation.