U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-295/82-09(DETP)

Docket No. 50-295 License No. DPR-39

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: Zion Nuclear Power Station, Unit 1

Inspection Conducted: March 30-31, April 7-8, and 29, 1982

Inspectors: Donald E. Miller D. E. Miller 6/10/82

L. R. Greger 6/11/82

Approved By: L. R. Greger, Chief 6/11/82
Facilities Radiation
Protection Section

Inspection Summary:

Inspection on March 30-31, April 7-8, and 29, 1982 (Report No. 50-295/82-09 (DETP))
Areas Inspected: Special inspection to review the circumstances surrounding an overexposure received by a licensee employee on March 25, 1982. The inspection involved 48 inspector-hours onsite by two NRC inspectors.
Results: Two apparent items of noncompliance were identified: (1) 10 CFR 20.101 - an individual received a whole body radiation dose in excess of three rem (Paragraph 5.2); (2) 10 CFR 20.201(b) - failure to make an adequate survey and evaluation of radiation levels beneath Unit 1 reactor vessel (Paragraph 7.3)

DETAILS

1. Persons Contacted

K. Graesser, Superintendent
E. Fuerst, Assistant Superintendent, Operations
G. Pliml, Assistant Superintendent, Administrative and Support Services
R. Budowle, Unit 1 Operating Engineer
J. Gilmore, Unit 2 Operating Engineer
D. Howard, Rad/Chem Supervisor
F. Ost, Lead Health Physicist
R. Aker, Health Physicist
F. Rescek, Health Physicist, CECo

The inspectors also contacted several other licensee employees including Rad/Chem Foremen, Rad/Chem Engineering Assistants, Rad/Chem Technicians, and members of the technical and engineering staffs.

2. General

This special inspection, which began at 1:30 p.m. on March 30, 1982, was conducted to review the circumstances surrounding an overexposure received by a licensee employee when he entered the Unit 1 reactor cavity (area beneath reactor vessel) on March 25, 1982. The reactor was shut down and the incore thimbles were withdrawn. The dose to the film badge, worn between the waist and chest, was about 3550 mrem. Because of the location of the radiation source, it is likely that a higher dose was received by the individual's lower body. The individual's film badge readings for the first calendar quarter of 1982 totaled 3880 mrem. Evaluation by the licensee determined an estimated maximum whole body dose of 4.9 rem for the quarter. Region III (NRC) estimated the whole body dose for the quarter to be between 4 and 6 rem.

Several problems which contributed to the resulting overexposure were identified, including: inadequate preplanning, inadequate surveys, inadequate training, and shortage of calibrated high range portable survey instruments.

Two items of noncompliance were identified concerning overexposure of one licensee employee and failure to make adequate evaluations of radiation hazards on two occasions.

3. General Plant Conditions and Sequence of Events

Unit 1 was in cold shutdown for refueling and maintenance. Incore instrumentation thimble retraction started during the evening shift on March 23, 1982, and was completed about six hours later at approximately 0400 hours on March 24. Maintenance Procedure RC001-12, "Retracting and Inserting Incore Instrumentation Thimbles," requires that all access doors to the reactor cavity be locked with "R" locks,

and all incore detectors be in the storage position before the thimbles are retracted. Control of keys to the "R" locks is administratively assigned to the shift engineer on duty. These precautions were in effect.

Shortly after thimble retraction was completed, the licensee began to flood the refueling cavity in preparation for refueling. At about 1030 hours, it was determined that the water level in the refueling cavity was decreasing. At about noon, a shift foreman briefly entered the reactor cavity in an effort to locate the leakage source. The shift foreman saw that the leakage was voluminous. The licensee decided to lower the water in the refueling cavity, reinstall the reactor vessel head, and investigate the leakage source. At about 2300 hours, the licensee found an excore nuclear instrumentation cover gasket had slipped and was apparently the cause of the leak.

After the gasket was replaced, the licensee flooded the refueling cavity to about 130 inches and raised the vessel head. At about 1800 hours on March 25, a shift engineer entered the reactor cavity to determine if there was further leakage. During this entry, the shift engineer received a radiation dose in excess of regulatory limits. The leakage continued.

The licensee raised the water level to see if increased static water head would seat the gasket and stop the leak. At about 2130 hours, a shift foreman briefly entered the reactor cavity and found there was still leakage. The licensee again lowered the refueling cavity water level.

After further gasket replacement on March 26, the refueling cavity water level was again raised. At about 0600 hours on March 27, it was determined that there was still leakage. There is no record of personnel entry to the reactor cavity at this time. The licensee again lowered the refueling cavity water level. After installing redesigned gaskets on the nozzle flanges, the licensee inserted the incore instrumentation thimbles during the day shift on March 28, and again raised the water level in the refueling cavity. With the thimbles inserted and radiation levels in the reactor cavity greatly reduced, entry under the reactor vessel was made to look for leaks. No significant leakage was identified. The licensee retracted the incore instrumentation thimbles and proceeded with the refueling.

4. Reactor Cavity Entry on March 24, 1982

While flooding the refueling cavity in preparation for refueling, the licensee determined, at about 10:30 a.m. on March 24, that the water level in the refueling cavity was decreasing. The licensee decided that an entry into the reactor cavity was needed to locate the source of leakage from the refueling cavity to the reactor cavity.

A shift foreman obtained an administrative dose extension (to 500 mrem for the day) from a plant health physicist, and a digital dosimeter

from a rad/chem foreman. He then proceeded to the reactor cavity access area where a rad/chem technician (RCT) trainee was already monitoring the installation of a temporary pump in the cavity. According to the licensee, entry into the cavity was not made while installing the pump; the pump was lowered by rope. The RCT trainee stated that he had been informed by the rad/chem foreman that a cavity entry would be made and that the rad/chem foreman cautioned him to be careful because high radiation levels may be encountered in the reactor cavity. The trainee did not make a radiological survey in the reactor cavity before the shift foreman arrived. Also, there was no discussion between the RCT trainee and the shift foreman concerning radiological conditions in the reactor cavity before the foreman made the reactor cavity entry.

The shift foreman borrowed the RCT trainee's RO-2 portable survey instrument and made an entry into the cavity down to the bottom of the ladder. The shift foreman had the RO-2 on its lowest scale (0-500 mR/hr) during the descent. The shift foreman said that he did not look at the RO-2 meter on the way down. As he neared the bottom of the ladder, he was alerted to increasing radiation levels by the audible indication of the digital dosimeter, and he checked the survey meter as he reached the bottom of the ladder. Upon seeing that the meter was off scale, he immediately climbed out of the cavity. At the reactor cavity access area, the shift foreman checked his digital dosimeter, which read 61 mrem, and his self-reading pocket dosimeter, which read 250 mrem. The shift foreman said that the self-reading pocket dosimeter read about 100 mrem before the entry. During the entry, the shift foreman saw that a large leak existed somewhere around the reactor vessel.

After the shift foreman made the entry, the RCT trainee went down the ladder to about Point B (Figure) where his RO-2 meter pegged full scale on the 0-5 R/hr scale. The RCT trainee made another entry with a teletector. He went down the ladder to about Point A (Figure), extended the teletector probe, and read exposure rates of 35 R/hr at Point B and 85 R/hr at Point D. No further reactor cavity entries were made on March 24. The shift foreman's film badge for the period March 15-28 read 250 mrem, which agrees with dose estimates for the period as indicated by self-reading dosimeter.

5. Reactor Cavity Entries on March 25, 1982

5.1 Description of Events

On March 25, a cover gasket was replaced and plans made to again increase refueling cavity water level. An operating engineer wrote a night order which stated: "With water above the flange, make an entry to the cavity area with RP (radiation protection) and check for leaks as best as possible minimizing exposure."

The rad/chem foreman learned at a shift meeting that a planned entry into the reactor cavity would be made. At about 1800 hours

the shift engineer went to the rad/chem office and told the rad/chem foreman that he was preparing to make the entry. The shift engineer then went to a plant health physicist to request an administrative approval for dose extension to 500 mrem for the day. The shift engineer was wearing a 0-200 mR self-reading dosimeter and a film badge. There was no discussion concerning the need for additional dosimetry.

The rad/chem foreman assigned an RCT to cover the job. The foreman and the RCT recalled discussions about an exposure rate of 85 R/hr from the previous day's entry, conducted on another shift, but they were unable to find the survey record to verify this information. The foreman later assigned an RCT trainee to assist the RCT. When the shift engineer went past the rad/chem foreman while leaving the office, the foreman asked if the incore detectors were "parked." The shift engineer responded "yes." There was no discussion of thimble position.

During discussions with the involved health physicist and rad/chem foreman, the inspectors learned each had assumed that the other had discussed radiological planning for the entry with the shift engineer. They both stated that the shift engineer was more familiar with the area than they were.

In preparation for entry, the RCT attempted to locate a teletector that was calibrated on its top scale. The RCT was not successful in locating a teletector which was calibrated on the highest scale and went to the reactor cavity access area with a teletector and an RO-2A survey meter which were calibrated to 50 R/hr. The RCT and shift engineer were wearing full protective outer clothing with plastic rain suits and full face respirators. The shift engineer was also wearing rubber boots because he expected there would be water above the cavity platform.

The RCT took the teletector and a flashlight (the cavity was dark) and proceeded down the cavity ladder to make a survey. When he reached Point A (Figure), he read an exposure rate of about 200 mR/hr. He said that this surprised him because he was expecting 85 R/hr. The RCT then extended the teletector probe down and in front of the ladder and read an exposure rate of about 35 R/hr at Point B and about 50 R/hr at Point C (Figure). The RCT then handed the teletector up to the RCT trainee, who was above at the top of the ladder, got the RO-2A from the trainee, went down the ladder to the bottom step, extended his arm to about Point C (3 feet above the platform), and verified the 50 R/hr reading. There were no further surveys taken.

The RCT stated that he then went up the ladder to about Point A, yelled to the RCT trainee to inform him of the exposure rate at Point C, and told the shift engineer he could now go down. When the shift engineer arrived at about Point C, the RCT yelled to the trainee to start keeping time. The shift engineer was

told the dose rate at Point C (50 R/hr) but was not told his allowed stay time, nor was there any discussion of his intended actions in the reactor cavity.

The RCT trainee calculated the permitted stay time to be 30 seconds (about 400 mrem) to keep the shift engineer within his dose extension of 500 mrem.

The shift engineer descended the ladder to the platform, which was covered with about six inches of water. The shift engineer then waded in toward the bottom of the reactor vessel. The shift engineer estimates he went at most eight feet along the platform.

When the trainee yelled that 30 seconds was up, the RCT yelled to the shift engineer to come out. When the shift engineer failed to show up in a few seconds, the RCT yelled again and went further down the ladder. The RCT saw the shift engineer wading back toward the ladder. The RCT and shift engineer then climbed out of the cavity. The trainee stopped the stopwatch at 67 seconds when he could see the shift engineer on the ladder.

The RCT returned to the rad/chem office and told the lead health physicist and the rad/chem foreman that the shift engineer received an estimated dose of 900 mrem. The RCT based the estimated dose on 67 seconds in a 50 R/hr field. The lead health physicist took the shift engineer's film badge and told him not to enter the controlled area until the dose had been evaluated. The film was sent to the vendor on March 26. The results of film badge processing are reported below in Section 5.2.

When interviewed by the inspectors, the RCT said that he did not expect the exposure rate to increase as the shift engineer approached the reactor vessel. The RCT significantly was not knowledgeable about the source of radiation in the reactor cavity or the anticipated radiation levels.

When interviewed by the inspectors, the shift engineer said that he was aware that the exposure rate would increase as he approached the bottom of the reactor vessel. He also said that when he decided to leave the ladder and walk toward the bottom of the reactor vessel to look for the source of leakage, he tried to hurry. He said it was difficult to hurry because the water was about six inches above the platform and his rubber shoe covers were only about eight inches high.

After the shift engineer's entry into the reactor cavity, the licensee raised the water level in the refueling cavity to see if increased static head would seat the gaskets. At about 2130 hours, the same RCT and RCT trainee monitored for a cavity entry made by the shift foreman. The shift foreman made a brief entry to about Point B and saw that there was still significant leakage. This entry appears uneventful.

According to the licensee, no further entries into the reactor cavity were made with the incore instrumentation thimbles withdrawn.

5.2 Personal Overexposure

On March 26, the film badges of those participating in the March 25 reactor cavity entries were sent to the vendor for processing. The following day the vendor phoned the licensee and reported that the shift engineer's film badge reading was 3700 mrem. At the request of the licensee, the vendor read the film two more times. The reading was verified.

During the film badge period March 15-26, the shift engineer had a self-reading dosimeter dose indication of about 150 mrem before the cavity entry. Subtracting this previous dose, the dose to the film badge during the entry was about 3550 mrem. The shift engineer had previous film badge readings totaling 180 mrem for the calendar quarter. Adding the 3700 mrem gives a total personal dose of 3880 mrem for the first calendar quarter of 1982 as recorded by the film badge.

During the reactor cavity entry, the shift engineer was wearing his film badge in the breast pocket of a one piece pull-on protective clothing overall. The shift engineer said that he wears oversized coveralls because they are easier to put on and take off. He said that the film badge was located about midway between his chest and waist when the entry was made. Because of the configuration of the reactor cavity and the location of the active portion of the withdrawn thimbles, it is probable that the dose received by the individual's lower trunk was greater than to the film badge. The licensee evaluated the possible dose for the entry and estimates a dose of 4.721 rem. Added to previous doses for the quarter, the individual's total dose is 4.901 rem. The licensee made a timely report, dated April 23, 1982, in accordance with 10 CFR 20.405.

The licensee's evaluation was based on the calculated direct radiation contribution of the exposed portion of the individual incore instrumentation thimbles to the exposure rate at various locations within the reactor cavity. This method of calculation is conservative in this application since it maximizes the variance between exposure rates at the film badge and the lower portion of the whole body. (i.e., The contribution to exposure rates from scattered radiation would have less vertical variability than the direct radiation component.) However, the calculated dose to the shift engineer is also dependent on his assumed movements within the reactor cavity. Minor, and reasonable, variations in the licensee's assumptions can introduce a 10 to 15 percent variation in the licensee's calculated whole body dose.

An independent evaluation by the inspectors, based on the three exposure rate measurements made by the licensee near Point B, resulted in a calculated maximum quarterly whole body dose of about five rems. Although rigorous calculation of the maximum whole body dose is not possible without determination of the actual vertical dose profile within the reactor cavity with the incore thimbles withdrawn, it appears reasonable from the film badge results, and the calculations performed by the inspectors and the licensee, that the quarterly whole body dose to the shift engineer was between four and six rems.

The dose received by the licensee employee is contrary to 10 CFR 20.101(b) which permits a dose of three rems per calendar quarter provided certain specified conditions are met. This is an apparent item of noncompliance.

6. Training and Qualifications

6.1 Rad/Chem Technicians (RCT)

The RCT trainee who was assigned to the reactor cavity access area when the shift foreman made his entry on March 24 joined the Rad/Chem Department in December 1981. He had been receiving formal and on-the-job training for about four months. According to the trainee, he had limited experience in monitoring high radiation fields or performing timekeeping for persons entering high radiation areas. The trainee stated that the rad/chem foreman told him that the radiation levels in the reactor cavity would probably be low but cautioned that the reactor cavity could be a high radiation area and gave him instructions to enter the area cautiously with his survey instrument in front.

The RCT who monitored the shift engineer's entry on March 25 has been at the station since 1974. He worked as a "B" operator from January 1974 to November 1980. In December 1980, he transferred to the Rad/Chem Department and began training. Since that time, about six months were spent in classroom and on-the-job training. The remainder of the time was spent working as an RCT in various jobs. He also appears to have had limited experience in monitoring relatively high exposure rate tasks. He had monitored some filter/demineralizer changeouts. The RCT said that he had been in the reactor cavity once about eight years ago when he was a "B" operator.

The RCT trainee who timekept the shift engineer's entry on March 25 was employed at the Station for about 16 months before transferring to the Rad/Chem Department in November 1981. He attended classroom training for about four months and had been in on-the-job training for about one month.

The RCT and both RCT trainees said that they were not familiar with the specific radiological hazards (radiation source and

exposure rate) in the reactor cavity with the instrumentation thimbles withdrawn. They could not recall receiving training, other than general precautions, concerning the area. They stated they were not given specific instructions concerning the shift engineer's or shift foreman's intended actions in the reactor cavity other than to look for leaks.

During the shifts when the reactor cavity entries were made, there were RCTs on duty who had significantly more experience than those assigned to the cavity entries.

6.2 Health Physicists and Rad/Chem Foremen

The plant health physicists appeared generally knowledgeable concerning the source of radiation in the reactor cavity and the magnitude of expected radiation levels when the instrumentation thimbles are withdrawn. The rad/chem foremen involved in the entries made on March 24 and 25 were not knowledgeable of the specific radiation source and exposure rates in the reactor cavity. They did know that the reactor cavity can be a high radiation area during refueling outages.

6.3 Shift Foreman and Shift Engineer

The shift foreman and shift engineer who made entries into the reactor cavity on March 24 and 25 have had extensive training in radiation protection during reactor operator and senior reactor operator instruction. These individuals also knew the physical layout of the reactor cavity and source of radiation in the cavity when the instrumentation thimbles are withdrawn. These management individuals were the most knowledgeable about the radiological hazards in the reactor cavity of all the people involved in the entries made on March 24 and 25.

6.4 Reactor Cavity Radiation Hazard Training

On March 17, 1976, during preparation for the first refueling, a licensee management individual received an overexposure in the Unit 1 reactor cavity while looking for leaks. The exposure rates were significantly less in the reactor cavity at that time because the withdrawn instrumentation thimbles had less activation time.

After the overexposure, the licensee instructed station personnel about the incident, the cause, and the radiological hazards. This specific instruction, however, was not included in the on-going training for operations and rad/chem personnel. During recent RCT training, the reactor cavity radiological hazard was described only in general terms, with no specific description of the radiation sources or the expected rapid exposure rate increase as the reactor vessel is approached when the instrumentation thimbles are withdrawn. Of the individuals directly

involved in the March 24 and 25 entries to the reactor cavity, the shift engineer, the shift foreman, and the RCT foremen were onsite in 1976.

7. Radiological Evaluations, Preplanning and Surveys

7.1 Preplanning

Although the shift foreman who made the March 24 reactor cavity entry obtained an administrative dose extension from a health physicist and a digital dosimeter from the rad/chem foreman, there were no detailed discussions between these individuals concerning the planned entry or the radiological conditions in the reactor cavity. Direct health physics coverage of the entry was used in lieu of a radiation work permit as allowed by the licensee's procedurs. The RCT trainee assigned to the entry was informed by the rad/chem foreman that there was a possibility of high radiation levels within the reactor cavity and to use caution upon entry, but no detailed discussion of radiological conditions or the shift foreman's plans took place. The RCT trainee was unaware of the radiological conditions within the reactor cavity and did not discuss these conditions with the shift foreman before the shift foreman entered the reactor cavity alone, with the RCT's RO-7 survey meter. No reason was given for the assignment of an RCT trainee to the entry other than that he was already in the general area covering another job.

On March 25 the rad/chem foreman was told at a shift meeting that an entry into the reactor cavity would be made. The foreman assigned an RCT to cover the job in lieu of issuing a radiation work permit, and the shift engineer obtained an administrative dose extension from a health physicist. There were no detailed discussions between these individuals concerning the planned entry or the radiological conditions in the reactor cavity. The health physicist stated he assumed the rad/chem foreman would handle the details of the entry with the shift engineer. The rad/chem foreman stated he assumed the health physicist would do so.

The only dosimetry worn by the shift engineer was his normal film badge and 0-200 mR self-reading dosimeter. There were no discussions concerning what the shift engineer planned to do other than look for leaks. The RCTs who were in attendance when the entry was made did not know that the shift engineer would leave the ladder and approach the reactor vessel. Nor were the RCTs cognizant of the specific radiological conditions in the reactor cavity other than an undocumented report of radiation levels of 85 R/hr from the previous day. The location of this exposure rate was not known; the RCT who entered the reactor cavity on March 25 stated that he thought the 85 R/hr measurement had been made at the midpoint of the ladder

into the reactor cavity (above Point A) and when be measured 200 mR/hr at this point he assumed that the incore instrumentation had been returned to a shielded position.

The RCTs assigned to the reactor cavity entries on both March 24 and March 25 did not have survey instruments which were calibrated for the exposure rates which existed in the reactor cavity. On March 25 the RCT attempted to locate a survey instrument calibrated to greater than 50 R/hr but was unsuccessful. According to licensee personnel, three such instruments were onsite, however, only one could be located in a search conducted the following day.

7.2 Surveys

There were no surveys performed in the reactor cavity between the time the instrumentation thimbles were withdrawn early on March 24 and the shift foreman entered at about noon on March 24. The shift foreman entered the cavity with an RO-2 survey instrument set on its lower scale (0-500 mR/hr). Hearing the audible indication on his digital dosimeter increase as he descended the ladder, when he got to the platform he looked at the survey meter and saw it off scale. The shift foreman was in an approximate 50 R/hr field at the time. He immediately climbed out of the reactor cavity without determining the actual dose rate. The RO-2 used by the shift foreman during the entry had an upper range of 5 R/hr and therefore was not adequate to measure exposure rates below Point A. The shift foreman did not monitor the exposure rates during his ladder descent, thereby entering an unsurveyed area. The inspectors were not able to determine what actions the shift foreman would have taken had he not been wearing an audible dosimeter. The subsequent surveys made by the RCT trainee on March 24 were acceptable except for the use of an uncalibrated survey instrument for the final survey. However, the results of this final survey were not used to control entry as the decision was made not to enter the reactor cavity again on March 24 since the exposure rates were considered too high. The March 24 survey results were not documented for future use, thereby contributing to the lack of planning the next day.

On March 25, an exposure rate of slightly under 50 R/hr was measured near the base of the ladder to the reactor cavity by the RCT using an RO-2A survey instrument with an upper range of 50 R/hr. The shift engineer was informed of this exposure rate, which was used to determine his stay time, before he descended past Point A. No further surveys were made. The RCT stated that he felt the exposure rates would be relatively constant (50 R/hr) in the reactor cavity because he thought the radiation source was fairly uniformly distributed along the length of the incore tubes, which ran along the entire length of the reactor cavity. He also stated that although he had not discussed the shift engineer's planned actions, he assumed the shift engineer was going to stay close to the base of the ladder where the survey was made. The shift engineer stated

that he was aware the exposure rates would increase significantly as he approached the reactor vessel and the withdrawn incore thimbles, but did not think about the exposure rates when he left the base of the ladder and walked six to eight feet towards the reactor vessel. The RCT observed the shift engineer walk towards the reactor vessel into an unsurveyed area but did not attempt to stop him.

7.3 Noncompliance

The entries made by the shift foreman and shift engineer were contrary to 10 CFR 20.201(b) which requires that each licensee make or cause to be made such evaluations of radiation hazards as (1) may be necessary for the licensee to comply with 10 CFR 20 regulations, and (2) are reasonable under the circumstances to evaluate the extent of radiation hazards that may be present. This is an apparent item of noncompliance.

8. Enforcement Conference

An enforcement conference was held on April 27, 1982, to discuss the overexposure, Region III's concerns about problems contributing to the overexposure, and the items of noncompliance. The meeting, held at the Region III Office, was attended by Mr. J. G. Keppler, Regional Administrator, NRC, Region III and Mr. C. Reed, Vice President, Nuclear Operations, Commonwealth Edison Company, and members of their staffs.

Region III representatives began the meeting by describing the NRC findings regarding the overexposure including; a summary of events, specific problems identified, and potential noncompliances. There was no significant disagreement concerning the summary of events.

The specific problems discussed included (1) lack of adequate planning and preparations for the March 24 and 25 reactor cavity entries, (2) inadequate radiation surveys associated with the entries, (3) use of inexperienced RCTs to monitor the entries, (4) lack of understanding by radiation protection personnel of the reactor cavity radiological hazards including the radiation sources, (5) inadequate training in reactor cavity radiological hazards even though a similar overexposure had occurred in 1976, (6) failure of shift operations personnel in leadership positions to exhibit good radiation protection practices, and (7) unavailability of survey instruments calibrated to greater than 50 R/hr.

The licensee representatives acknowledged that they were also concerned with the events leading to the overexposure, especially the lack of judgement exhibited by the shift engineer when he left the base of the ladder and proceeded into an unsurveyed area. Specific corrective actions were discussed by licensee representatives. These corrective actions are described in Reportable Occurrence Report No. 50-295/82-14. Also discussed were improvements made in the li-

censee's radiation protection program since the Health Physics Appraisal in early 1980. Licensee representatives stated that efforts are continuing at the plant and corporate level to improve the performance of the CECo radiation protection programs.

Region III representatives acknowledged that improvements had been made in the licensee's radiation protection program in the last two years, but that it was apparent from the March 24 and 25 reactor cavity entries that additional improvements are needed. Region III observations concerning methods for improving the performance of radiation protection personnel were discussed, including a graded RCT qualification program, technician specialization, professional health physicist involvement, and management support. The licensee representatives were asked to consider the Region's observations and to meet with regional representatives again in the near future to explore possible solutions to those problems.

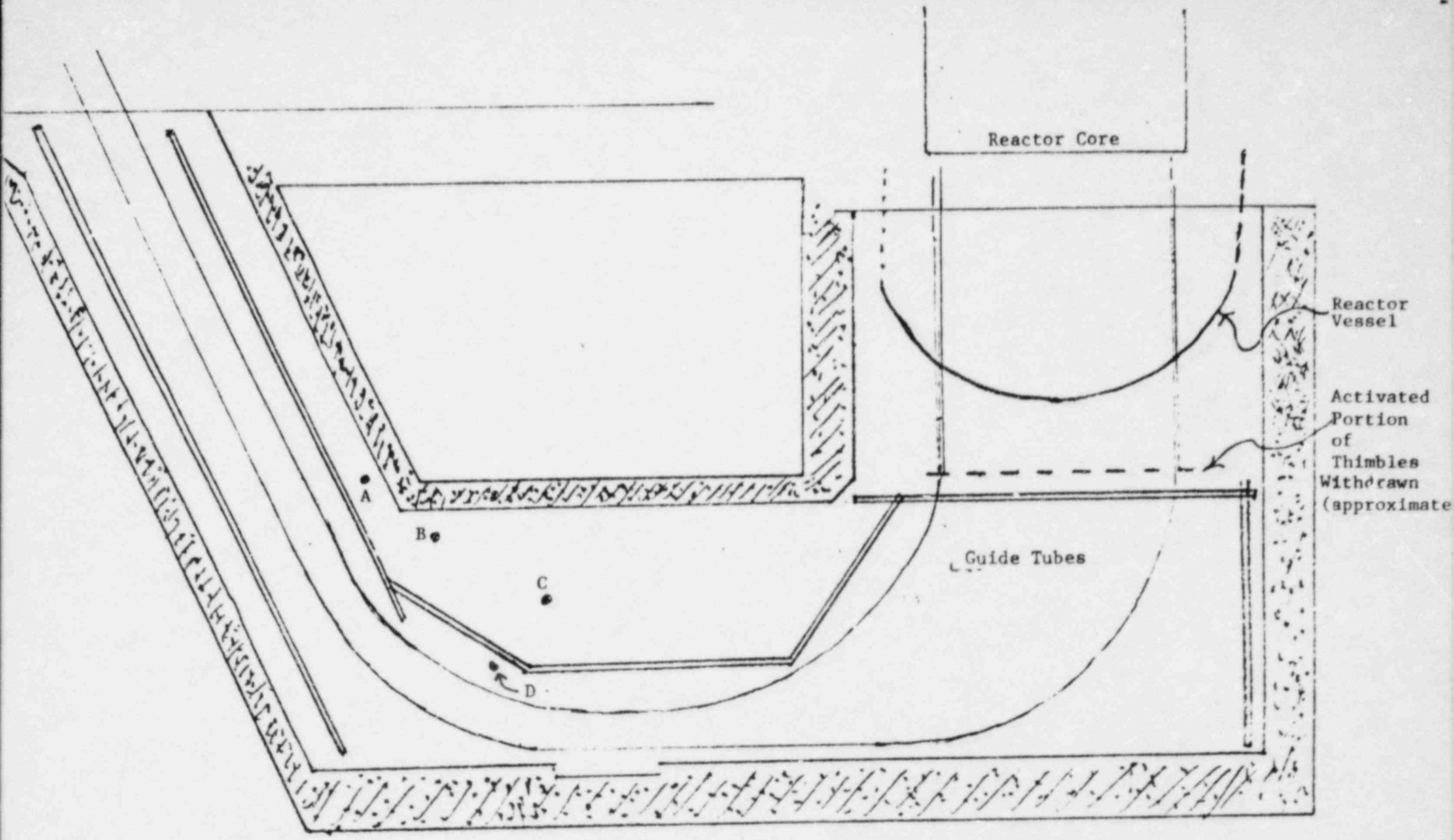
In Attendance at the Enforcement Meeting were:

U.S. Nuclear Regulatory Commission

J. Keppler, Regional Administrator
L. Greger, Chief, Facilities Radiation Protection Section
D. Hayes, Chief, Reactor Projects Section 1B
R. Knop, Chief, Projects Branch 1
D. Miller, Radiation Specialist
C. Norelius, Director, Division of Engineering and Technical Programs
G. Roy, Acting Chief, Technical Inspection Branch
W. Schultz, Enforcement Coordinator
R. Warnick, Director, Enforcement and Investigation Staff

Commonwealth Edison Company

C. Reed, Vice President, Nuclear Operations
L. DelGeorge, Director of Nuclear Licensing
J. Golden, Supervisor, Technical Services, Health Physics and Emergency Planning
K. Graesser, Superintendent, Zion Station
D. Howard, Rad/Chem Supervisor, Zion Station
F. Palmer, Division Vice President, Nuclear Stations
R. Pavlick, Health Physics Supervisor, Technical Services Nuclear
G. Pliml, Assistant Superintendent, Administrative and Support Services, Zion Station
F. Rescek, Health Physicist, Technical Services Nuclear
G. Wagner, Manager, Technical Services, Nuclear Stations



Measured Exposure Rates

A = 200 mrem
B = 35000 mrem
C = 50000 mrem
D = 85000 mrem

Reactor Cavity
Figure