

# DUKE POWER COMPANY

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April 20, 1977

B. B. PARKER  
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(704) 373-4889

Mr. Ernst Volgenau, Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Re: Oconee Nuclear Station  
License Numbers DPR-38, DPR-47 and DPR-55  
Docket Numbers 50-269, 50-270 and 50-287

Dear Mr. Volgenau:

This letter and its attachments constitute Duke Power Company's reply to your transmittal of March 29, 1977. Your letter stated that based on the results of an inspection conducted on December 20-23, 1976, January 18-21, 1977 and January 25-28, 1977, that it appears that certain activities were not conducted in full compliance with NRC regulations and license conditions. The inspection concentrated on events beginning January 17, 1977 associated with the inadvertent release of radioactivity to the Keowee River due to leakage of contaminated secondary system water into the Turbine Building sump. A Notice of Violation pursuant to 10CFR2, Section 2.201, and a Notice of Proposed Imposition of Civil Penalties pursuant to Section 234 of the Atomic Energy Act of 1954, as amended and to 10CFR2, Section 2.205 were enclosed with your transmittal.

Your letter stated, in part:

"Based on our review of the enforcement history related to the Oconee Nuclear Station, it appears that the history of repetitive and chronic noncompliance, when considered in conjunction with failure to institute effective corrective action and management controls, demonstrates that management is apparently not conducting licensed activities with adequate concern for the health, safety or interest of its employees or the public."

Duke Power Company considers that this statement is totally at variance with the facts. The total record clearly reflects positive management control and concern for the health and safety of both the public and employees. During the period of operation of the Oconee Nuclear Station, Duke has been cited for only one incident which was categorized as a violation according to current regulatory practice. Also, even though the number of manhours spent by inspectors on site at Oconee has increased, the total number of deficiencies and infractions reported each year has declined since 1974. The record further indicates a decline in the number of reportable events since 1974.

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Since the initial operation of Oconee Nuclear Station, Duke Power Company has continually maintained an objective approach to management of the station. In 1974, the Emerson Consultants were retained to conduct an in-depth study of the Steam Production Department and the Oconee Nuclear Station organization relative to effective management. Based on the results of that study, the station organization was changed to its present concept in August, 1974. The Steam Production Department organization was changed in October, 1974 to include a Nuclear Production Division with line management responsibility assigned to the Manager of that Division. These changes provided a more clearly defined responsibility of each area of management and better control of each phase of station operation. While primary management for Oconee is at the station level, the Manager, Nuclear Production Division, has averaged a station visit once per week to assure a close relationship between station and upper management, with direct assistance being provided in effective management where necessary. Further, the Executive Committee of the Board of Directors is kept advised on an ongoing basis on the status of Oconee Nuclear Station operation and pertinent regulatory matters.

In April, 1976, the North Carolina Utilities Commission retained Booze, Allen & Hamilton, Inc. to conduct a management audit of Duke Power Company. The resulting report stated:

"Duke Power Company is an efficiently managed utility overall. Duke has developed a strong, experienced management team. Managers at all levels are both technically competent and cost conscious. Management exhibits pride in past accomplishments, but also a positive attitude toward constructive change."

Relative to the Steam Production Department, the report stated:

"Overall, the Steam Production Department appears to be effectively managed and efficiently operated."

An example of management attention to the status of activities at Oconee is the daily briefing of the Vice President, Steam Production and the Senior Vice President, Production and Transmission. This includes unusual events and particularly personnel errors that may indicate the potential for improved managerial control. A recent series of discussions on Oconee organizational effectiveness were conducted on December 14 and December 22, 1976 with the Senior Vice President, Production and Transmission, Vice President, Steam Production and Manager, Nuclear Production Division. These discussions concluded with plans for an in-depth review at Oconee scheduled for March 23, 1977. At the March 23 meeting, the Oconee Station Manager, Superintendent of Operations, Superintendent of Technical Services, Superintendent of Maintenance, and Director of Administrative Services, each presented detailed review and analysis of requirements for effective managerial control of Oconee Nuclear Station, the results of organizational and administrative changes to improve functional efficiency, and status of further improvements. The presentation and discussions were with the Senior Vice President, Production and Transmission, Vice President, Steam Production, Assistant Vice President, Production and Transmission, Manager, Nuclear Production Division, and a Management Consultant.

Radiological safety and environmental control were an important part of these discussions. The information prepared for these discussions consisted of 78 pages of material, and was subsequently presented for information and review to the President and Chief Operating Officer and the Chairman of the Board and Chief Executive Officer of Duke Power Company.

Duke Power Company management has an established record of sincere interest in the safety of its employees. Mr. B. B. Parker, President and Chief Operating Officer, has issued a statement to all employees which read: "Your work is never so urgent nor our service so important that time cannot be taken to perform the job safely". In addition, Oconee Nuclear Station was recently awarded the coveted Edison Electric Institute Safety Award for having worked one million manhours without a lost time accident. In the area of radiological safety, Duke has an effective health physics program oriented toward maintaining occupational exposure as low as practical, which was instituted considerably before NRC Regulatory Guide 8.8 was issued. In particular, the per unit exposure of personnel has been less than one-half the national average for operating nuclear stations. Annual effluent release data indicate activity and exposure to potential offsite individuals are well within technical specification limits (See Attachment F). These records have been achieved with concerned, effective management.

Subsequent to the inadvertent release of January 18, 1977 both the NRC and Duke Power Company agreed that there was no affect on the health and safety of the public, and therefore Duke decided a public announcement was not required. Later the NRC decided that a public release was necessary to provide information on certain procedure changes instigated to prevent this type occurrence. At this point, Duke made public the procedure changes as well as reports of the release of radioactive liquid to the Keowee River from Oconee Nuclear Station. These reports created concern on the part of the residents of Clemson, S. C. that the incident had not been reported earlier and the river had possibly been contaminated to a level of activity that could be considered unsafe for the health and safety of the public. Action was taken on the part of some citizens of Clemson, S. C. to hold an open forum to determine to their satisfaction the impact of the release on their health and safety. Representatives of NRC, Region II, Environmental Protection Agency, South Carolina Department of Environmental and Health Control, and Duke Power Company were invited to attend and respond to questions relative to the release. The spokesman for each party stated emphatically in their opening remarks that surveys had been made of Lake Hartwell (Keowee River) and the results indicated clearly that the level of activity in the water did not constitute a threat to the health and safety of the public. Participation in this forum by Duke Power Company, and responding openly and honestly to questions raised by the residents of the area is a direct indication of the management's concern for public understanding of nuclear operation and its interest in the health and safety of the public.

With regard to Duke's contact with NRC Region II personnel referred to in your letter, the meetings have been preceeded and/or followed by specific management action directed toward correction of any deficiencies noted and prevention of recurrence. At the meeting held in Charlotte, North Carolina on April 16, 1974, to discuss the station health physics program,

Duke representatives described a reorganization of the management of the health physics program which included assignment of specific responsibilities, increased number of personnel, and additional training and upgrading of personnel.

In the meeting held in Atlanta, Georgia on August 29, 1974 to discuss reportable incidents, Mr. N. C. Moseley, Regional Director, closed the meeting with an expression of intent to conduct in-depth management systems inspection in the near future. Duke management personnel that participated in the meeting identified specific action items with individuals and assigned responsibility to follow to completion. As a consequence of this action, additional inspections by Region II personnel resulted in no further enforcement action or meetings being deemed necessary relative to these matters.

The meeting held at Region II headquarters in Atlanta on June 9, 1976 concerned primarily monitoring of radiological releases from the station under the waste management program. Prior to this meeting, Duke management had recognized the need for revision to the program, and had already initiated corrective action. This was addressed by Mr. W. O. Parker, Jr., Vice President, Steam Production, during the meeting. Since the meeting, an additional effort has been made to correct problems associated with instrument response and procedures. An application was also made to NRC on November 10, 1976 for a change in Technical Specifications concerning the control of liquid effluents, has since been supplemented on April 12, 1977, and is still pending.

The above information, management audits, and management's expressed policy of complying with regulations, as well as other information which is a matter of record, indicate prompt action by management to thoroughly investigate any deficiency, and take subsequent appropriate corrective measures. This position is also validated by information of public record generated during other proceedings.

Further, specific information in response to your letter of March 29, 1977 is provided in attachments hereto, as follows:

Attachment A - Corrective Actions Taken or Planned

Attachment B - Response to Notice of Violation

Attachment C - Response to Enforcement History Related to Radiation Safety

Attachment D is an assessment of the health affects due to the releases of radioactivity resulting from the January 17-20, 1977 incident. This information clearly demonstrates that public health and safety were not adversely affected or realistically threatened by the subject incident.

Attachment E - Discussion of Duke Power Company's History of Effective Management

Attachment F - Summary of Radioactive Waste Releases and In-Plant Personnel Exposure

Duke Power Company acknowledges that, based upon the events related to the inadvertent radioactive effluent release, compliance with Technical Specifications was not achieved and the need for corrective action arose. Duke does not agree, however, that its attention to the matters involved in the occurrence before, during, and after the events warrants the imposition of civil penalties. Duke did indeed, on its own initiative, take corrective action. (See Attachments A and B hereto). A review of the record reflects that Duke's actions were clearly reasonable, though perhaps in retrospect, not optimal. (See Attachment B).

Additionally, Duke does not agree that the past matters of noncompliance set forth in Appendix C of your letter support the imposition of civil penalties for, as shown in this response, such matters were corrected in an expeditious and appropriate manner. (See Attachment C). Further, the facts regarding these matters do not support a pattern of repeated Duke inattention or unconcern. (See Attachment C).

An examination of the Statement of Considerations relating to civil penalties (36 Reg. 16894, August 26, 1971), the "Criteria for Imposing Civil Penalties" set forth in the NRC's Inspection and Enforcement Manual (pp. 0800-14, 15) and past AEC/NRC enforcement action resulting in the imposition of civil penalties, reflect that civil penalties may be imposed in those instances wherein suspension or revocation would be otherwise appropriate, i.e., where gross disregard, recalcitrance or irresponsibility has been exhibited. Duke submits that the facts here and the pattern of Duke's activities under its licenses simply do not fall within the ambit of the above standards and thus do not warrant the imposition of civil penalties. (See Attachments A through F).

In conclusion, we repeat our position that the allegations contained in your letter of March 29, 1977 are unwarranted and inappropriate. Accordingly, we hereby request, pursuant to 10CFR, Section 2.205:

- 1) Based on the information provided herewith, that the proposed civil penalties be withdrawn;
- 2) Unless the civil penalties are rescinded, a meeting be held between Duke and NRC management to discuss this matter further; and
- 3) That our right to request a public hearing on this matter be reserved in the event satisfactory resolution of this matter is not achieved as a result of this response and our above requested meeting.

Very truly yours,

s/Carl Horn, Jr.

Carl Horn, Jr.

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ATTACHMENT A

CORRECTIVE ACTION TAKEN OR PLANNED

The purpose of this attachment is to be the response to the following items in the NRC March 29, 1977 letter:

- (1) "Section 2.201 requires you to submit .... a written statement or explanation in reply ...."
- (2) "Describe those actions taken or planned to improve the effectiveness of your management systems to control plant effluents, effluent monitoring, radiation safety and to improve communications and performance among operating, health physics, chemistry and maintenance organizations involved with such activities."

## ATTACHMENT A

### CORRECTIVE ACTIONS TAKEN OR PLANNED

There are four major groups within the Oconee Nuclear Station organization. These are:

1. Administrative Services
2. Technical Services
3. Maintenance
4. Operations

The Operations Group is considered the "line" organization. The other groups perform in a "staff" function to support the Operations Group. The Operations Group is assigned the responsibility for coordinating all activities associated with actual operation and outage activities of all Oconee units. As such, the Operations Group is assigned responsibility for controlling the activities associated with the operation of all equipment. The Technical Services Group performs functions related to radiation monitoring; sampling and analysis; and assessment of equipment performance. The Health Physics and Chemistry Sections are a part of the Technical Services Group. The Maintenance Group provides services in the form of preventative and corrective maintenance relating to mechanical, electrical and instrument equipment. While the Operating Group monitors the operating equipment and requests assistance of the other groups, the other groups performing their routine surveillance functions notify the Operations Group and station management of any appropriate abnormalities noted. This management system has worked well and is considered to be effective. This has been demonstrated in all of Duke's facilities.

Company and station management have established other programs or requirements to implement control over effluent releases, effluent monitoring and radiation safety. Many of these were implemented years ago independent of regulatory requirements. Several were implemented in 1976 and a few in 1977. These are:

1. Terminated use of the low activity waste tank as a source of effluent release. Initially, the normal effluent release was from the low activity waste tank, however, since this tank was not isolatable during the release, its use was terminated approximately 2 years ago, and

- releases from isolatable tanks are now used (not required by regulations).
2. In connection with the above, procedures relating to effluent releases have required, since May 24, 1976, redundant sampling and analysis of liquids in these isolatable tanks prior to release (not required by regulations).
  3. Isolated laundry and hot shower drains were instituted on February 23, 1976 for separate handling and treatment to improve radioactive waste evaporator performance and distillate quality affecting reduction in activity releases and reuse of distillate (not required by regulations).
  4. On October 4, 1976, computer programs were provided to calculate radioactive liquid and gaseous waste releases to assure accuracy in determining release rates (not required by regulations).
  5. Provided on October 4, 1976 computer program to accumulate quantities of radioactive liquid and gaseous waste releases for better management control (not required by regulations).
  6. Installed on October 7, 1975, additional radioactive liquid and gaseous waste processing equipment to reduce quantities released (not required by regulations).
  7. Established Station Waste Task Force on February 23, 1977 with representatives from the Operations, Technical Services, and Maintenance Groups. Operations representative is Chairman. Chairman and one member have participated in waste management seminars to be current with the latest technical developments (not required by regulation).
  8. Company management established on March 4, 1976, a Radiation Monitoring Task Force to review the existing radiation monitoring equipment and establish appropriate corrective action. As a result of extensive research and development by Duke Power Company, an improved liquid effluent monitor is being installed to back up liquid sampling and analysis. The task force developed a Station Directive identifying responsibilities for establishing setpoints and providing preventative

maintenance for the monitors (not required by regulations).

9. A Radiation Exposure Control Program was implemented on November 1, 1975 to provide management with the means to control personnel exposures through daily printout of personnel exposures. The program has the capabilities of identifying the radiation exposure associated with specific work activity, measuring exposure by distinct groups, and provides the employee with his current status of exposure and permitted level. Supervisors use this as a means of scheduling personnel to equalize and minimize exposures among crew members. The status is available as employees report to work each morning (not required by regulations).
10. A station committee has been established to assist in the implementation of the as low as reasonably achievable (ALARA) objective. Members are from the Operations, Technical Services, and Maintenance Groups.
11. A station directive to implement a formal Health Physics Problem Report has been written. Identified problems in implementation of the radiation protection program are documented with requirements to provide proper resolution and followup (not required by regulations).
12. A station modification was implemented on December 10, 1976 that resulted in sizable reduction in exposures due to changeout of reactor coolant filters (not required by regulations).
13. A station modification has been initiated on February 24, 1977 to provide a more substantial door with positive isolation of High Radiation Areas.
14. Additional personnel for the Health Physics Section were authorized by company management in 1976 to facilitate a better radiation protection program for the station. These 10 additionally authorized personnel are presently enrolled in the Health Physics Training Program bringing the total Health Physics staff to 49.

The Superintendent of Operations, as a result of this incident, took immediate action for establishing positively that in any future primary

to secondary leak that the contaminated liquid in the secondary side of the steam generator would be drained to tanks provided for radioactive liquids and would not be used for performance of any leak location testing. He also established the requirement that the Operations Group obtain the concurrence of the Technical Services Group on an acceptable level of activity in the secondary side of the steam generator prior to performance of leak test. This will prevent an inadvertent release of activity should a leak develop during test.

In order to assure adequate communication in the future and to positively establish responsibility for coordinating all station efforts, the Station Manager met with the heads of each group and reviewed the existing management system and initiated the following actions:

- A. The Operating Group is to act as the focal point in gaining and maintaining control of any off-normal situations to include:
  - 1. Take those immediate steps necessary to stabilize the situation.
  - 2. Secure whatever help and assistance is needed to properly assess and evaluate the situation.
  - 3. Jointly, with those in 2 above, review the situation and determine a recommended course of action.
  - 4. Review the recommended course of action with the Superintendent of Operations, the Station Manager, and General Office personnel, as appropriate.
  - 5. Put the program into action maintaining the proper control and surveillance.
  - 6. Report periodically to the Superintendent of Operations, the Station Manager, and General Office personnel as appropriate.
  - 7. Prepare appropriate reports.

3. Recommend corrective action to prevent future recurrence.

The Operating Engineer or Assistant Operating Engineer assigned to the affected unit is the responsible individual if the occurrence is during normal working hours. The Operating Engineer serving in the "on call" capacity is to be the responsible individual in other than normal working hours.

Each Group Head concurred in this system and indicated full support. This meeting was held on January 26, 1977. Following this meeting, a meeting was held with the Operating Engineers, the Assistant Operating Engineers, the Superintendent of Operations, and the Station Manager, and this system of management was reviewed. All present agreed and assured their support. Other Group Heads held similar meeting with their staff and supervisory personnel.

B. Actions which have been taken to preclude either the introduction of radioactivity to the turbine building sumps or inadvertent discharge thereof, of radioactivity to the environment are:

1. Written, approved procedures have been provided to:

- (a) Preclude inadvertent introduction of significant radioactivity into the secondary system during steam generator leak testing.
- (b) Provide adequate and appropriate sampling for radioactivity.
- (c) Isolate any secondary system radioactive leakage and collect it separately from the turbine building sump water.
- (d) Route any collected radioactive leakage from (c) above either to the liquid radioactive waste system or to the condensate system for cleanup.
- (e) Minimize normal inputs to the turbine building sumps.

- (f) Route turbine building sump liquid to the liquid radioactive waste system as appropriate.
  - (g) Coordinate Keowee Hydro Station operation with established limits of activity released from the oil settling basin.
  - (h) Provide maximum use of the powdex demineralizers when appropriate to remove secondary system activity.
2. Company management was in the process of establishing a Waste Management Task Group prior to the January 17 incident to reevaluate the adequacy of systems and equipment at Oconee and McGuire Nuclear Stations to cope with existing or potential radiological requirements. Representatives are from the stations, Steam Production General Office, and Design Engineering. A part of their function will be to review the corrective action of this incident.
3. Equipment is being purchased for providing more rapid analysis of samples.
- C. In the areas of communications and proper utilization of procedures, the following actions have been reiterated since the incident:
- 1. The Station Manager and the Group Heads have reviewed intergroup communications and initiated action to assure that overall station communications are adequate.
  - 2. The requirements of Technical Specifications, Station Directives, and the Administrative Policy Manual relating to procedures have been reviewed with station personnel to include:
    - (a) Requirements for a procedure.
    - (b) Requirements to use procedures.
    - (c) Requirement to check Control Copy
    - (d) Methods and requirements for making a procedure change
    - (e) Qualification of personnel in use of procedures

- (f) Requirement to follow procedures as written
- (g) Proper use of procedures.

D. To assure that further failures to verbally report within the prescribed time limits do not occur, the Technical Services Engineer or his designated substitute contacts the station every day to determine if any reportable occurrences should be identified to the NRC.

Station and company management agree that improvements can be made in the system used to control the proper functioning of the nuclear program. Management has, is, and will continue to take the initiative in improving the program. When considering the program as a whole, the record proves that management controls have been effective in protecting and displaying interest in the health, safety, and well being of its employees and the general public.

ATTACHMENT B

RESPONSE TO NOTICE OF VIOLATION

The purpose of this attachment is to protest the imposition of the civil penalties as provided for in 10 CFR 2.205.

ATTACHMENT B

RESPONSE TO NOTICE OF VIOLATION

The following discussion provides information in regard to the NRC March 29, 1977 letter, Appendix A. Each of the items are numbered to correspond to NRC Appendix A and refute or mitigate the argument for specific civil penalties.

Item 1

10CFR20.201, "Surveys", requires that each licensee make or cause to be made such surveys as may be necessary to comply with the regulatory requirements specified in 10CFR Part 20.

Contrary to the above, on January 17, 1977, no adequate measurement or other evaluation was made to account for radioactive effluent released from the Oconee oil collection basin to the Keowee River until about 8:50 a.m. on January 18.

Civil Penalty - \$4,000

RESPONSE

The Notice of Violation alleges that surveys as required by 10CFR20.201 were not made from the time the spill occurred at 2300 on January 17, 1977 until 0850 on January 18, 1977. As defined by 10CFR20.201, a survey includes an evaluation of the radiation hazards incident to the ...use, release, disposal or presence of radioactive materials or other sources of radiation under a specific set of conditions.

When the spill occurred, swipe surveys were made on the turbine floor, the mezzanine and in the turbine basement. Two hundred and forty-four (244) swipes were made from 2330 on January 17, 1977 to 0200 on January 18, 1977. Results of these surveys showed low level contamination present at an average of 1000-2000 dpm/100 cm<sup>2</sup>. A turbine building air sample was taken at 2340 on January 17. It showed no detectable activity.

Low level contamination was found present on the floors, and it was considered by station personnel that little activity was involved in the spill. However, as a precautionary measure, the turbine building sump discharges were routed to the lower waste water collection basin.

Swipe samples were taken along the periphery of the water present on the floor; however, water on the periphery was apparently only slightly

contaminated water which sprayed forth when the initial rupture of the gasket took place. The water which followed apparently became more contaminated by steam generator water but it did not spray as far from the break. Consequently, the results of the surveys which were made, were not, as then believed, representative. The turbine building surveys did not indicate the need for additional samples to be taken. Low level contamination barriers were quickly erected around all areas where contamination was found present in the turbine building to prohibit the spread of contamination.

It is significant to note that this steam generator leak was the fifth such leak which had been identified on the Oconee units. In each previous steam generator leak, radiation surveys were conducted to detect, and in fact demonstrate the absence of radiation hazards. In each case, the polishing demineralizers had cleaned up the significant portion of activity present which had leaked from the primary system into the condensate and feedwater system. The small amount of activity remaining in the condensate and feedwater system was well distributed in the large quantity of water. Consequently, when this leak occurred, precedent existed for concluding that although the quantity of water escaping from the system was greater, the activity was not significant.

The next day (January 18), a sample of yard drain water was taken to survey activity present. The analysis showed a measurable iodine concentration. When this activity was multiplied by flow from the basin and diluted in the tailrace, it became evident that the activity being released was in excess of that allowed by the instantaneous values imposed by the Technical Specification. The Technical Specifications were exceeded beginning approximately 0850 and continuing during the day until the Keowee hydro units were placed in operation beginning at 1245. It was decided that the operation of the Keowee hydro unit would be prudent until sufficient water had flowed to assure that, averaged over the day, the maximum permissible concentration of 10CFR20 would not be exceeded. It was confirmed that the Keowee Hydro would be operated from 1245 to 2230 on January 18, 1977.

Swipe surveys were made just after the leak occurred. Based on previous experience of steam generator leaks and the results of the surveys made,

no further surveys were considered necessary at that time. It is considered that survey requirements include a consideration of the reasonable need for such surveys. Therefore, it is concluded that the surveys made were appropriate under the circumstances. It may be noted that action taken by station employees served to contain approximately 95 percent of the activity released from the steam generator within the station area.

Consequently, based on the above, the proposed \$4,000 civil penalty should be rescinded.

Item 2a

Technical Specification 3.9.3 requires that the rate of release of radioactive materials in liquid from the station shall be controlled such that the instantaneous concentration of radioactivity in liquid waste upon release from the Restricted Area, does not exceed the values listed in 10CFR20, Appendix B, Table II, Column 2.

Contrary to the above:

- a. Radioactivity released in oil collection basin effluents on January 18-20, 1977 caused the instantaneous concentration of radioactivity released from the Restricted Area via the Keowee River to exceed the values of 10CFR20, Appendix B, Table II, Column 2 by up to a factor of nineteen.

Civil Penalty - \$1,500

RESPONSE

The intent of 10CFR20, Appendix B, Table II, Column 2 per 10CFR20.106 paragraph is to limit concentrations averaged over a period not greater than one year. If yearly averages are made, concentrations of radioactive materials released from Oconee Nuclear Station are a small fraction of that intended limit. Even when averaged over a period of one day, Oconee has never exceeded the limiting concentrations of 10CFR20. When the Oconee Technical Specifications were approved, Oconee was committed to meeting the limits of 10CFR20 on an instantaneous basis.

On January 18, 1977, it became evident, when data was received on oil collection basin flow rate and activity, that the instantaneous limit of Technical Specification 3.9.3 had been exceeded. The spill had occurred late the night before and contaminated water was discharged to the oil collection basin.

When the spill from the gasket failure was terminated, the waste water collection basin water was being retained, and it was assumed the activity in the oil collection basin would likely decrease soon. The immediate problem appeared to be to dilute the activity previously released. Keowee was operating and it was confirmed that it would remain in operation until approximately midnight. Calculation of the flow through Keowee and the activity being released showed that there would be no problem meeting the 10CFR20 limits when averaged over the day. The station personnel felt

secure with the premise that the spill was terminated and reasonable efforts to mitigate the effects to the public had been accomplished, and that the problem was essentially over.

The next day, activity in the sump and the oil collection basin was unexpectedly high. Another radiation survey of the powdex cells showed they had increased in radiation level significantly--meaning that a significant amount of activity had been transferred to the condensate system. Samples of the condensate system showed that the activity there was in the  $10^{-5}$   $\mu\text{Ci/ml}$  range indicating that the powdex cells had removed most of the activity. While the recovery and preparation of these resins for shipment were to be a problem, for the present they were contained and controlled. The small amount of activity present in the condensate system should not provide a leakage problem and the sump activity and oil collection basin activity would soon be reduced to the point where they were no longer a problem. Consequently, it was considered that again the incident was finally over. It was assured that Keowee was operated so that, averaged over the day, the maximum permissible concentration of 10CFR20 would not be exceeded.

Late that day, January 19, 1977 when water from an isolated section (this section had not been previously cleaned up with the remainder of the coolant system) of the condensate system was drained to the turbine room sump to repair the gasket leak, the activity in the sump and the oil collection basin increased causing a third period where the limits of 10CFR20 were exceeded on an instantaneous basis. This occurred from 2145 on January 19 to 0800 on January 20 when Keowee hydro was not operating.

When this third situation occurred, station personnel realized that the problem was more complex than previously considered. Keowee was then operated continuously, the oil collection basin was diluted, and its level was varied to get the activity under full control. The Keowee flood gates were opened as necessary when full hydro flow was no longer required to provide dilution flow.

Approximately one week after the initial spill, the complex series of events causing the initial spill and the activities which took place over the next two days were understood. Although the action taken appeared

reasonable at the time, the action taken for any future similar event would be different and more responsive than the action taken in this instance.

Based on the above discussion, it is concluded that at the time of the incident reasonable corrective measures were initiated by the station staff. Consequently, although infractions of technical specification occurred, a civil penalty is unwarranted.

Item 2b.

Technical Specification 3.9.3 requires that the rate of release of radioactive materials in liquid from the station shall be controlled such that the instantaneous concentration of radioactivity in liquid waste upon release from the Restricted Area, does not exceed the values listed in 10CFR20, Appendix B, Table II, Column 2.

Contrary to the above:

- a. Calculation errors associated with routine liquid waste releases resulted in these instantaneous limits being exceeded by up to a factor of two during January through March, 1976.

Civil Penalty - \$1,500

RESPONSE

This item refers to events transpiring from January through March, 1976. These matters were discovered by the Oconee staff and in a Reportable Occurrence RO-269/76-4 dated April 21, 1976. They were not discussed by the NRC in any of the inspections of December 20-23, 1976 and January 18-21, 25-28, 1977. Since the Notice of Violation is based upon infractions resulting from the December, 1976 and January, 1977 inspections, there is no basis for the proposed civil penalty and the amount of \$1,500 should be stricken.

Item 3

Technical Specification 3.9.5 requires that as far as practicable, the releases of liquid waste shall be coordinated with the operation of the Keowee hydro unit.

Contrary to the above, although the Keowee hydro plant was available for use, it was not operated in coordination with liquid waste releases on January 18, 19 and 20, 1977.

Civil Penalty - \$3,000

RESPONSE

It is the interpretation of this specification that whenever practical, releases should be made when the Keowee units are operated. It has not been the interpretation to operate the Keowee units whenever liquid effluents must be released within requirements of technical specifications.

All releases of liquid waste that were controllable were coordinated with Keowee operation. The drawdown of the oil storage basin was coordinated with Keowee operation to provide capacity for retaining activity within the basin. In addition, the operation of Keowee was extended to permit releases within Technical Specification 3.9.3. Consequently, no civil penalty should be imposed.

Also, both Item 2a and Item 3 refer to the interaction of radioactive releases in and nonoperation of hydro units on the Keowee River. As explained in the response to Item 2a, such radioactivity which exceeded the instantaneous values of 10CFR Part 20, Appendix B, Table II, Column 2, arose as a result of this nonoperation. It is submitted that since the basis and cause for Items 2a and 3 are identical, this is not a separate issue from that identified in 2a and does not warrant a penalty.

Item 4

Technical Specification 3.9.4 requires that the equipment installed in the liquid radioactive waste system shall be maintained and operated for the purpose of keeping released quantities within the objectives of these specifications and shall process all liquids prior to their discharge in order to limit the activity, excluding tritium and dissolved noble gases, released during any calendar quarter to 1.25 curies or less per unit.

Contrary to the above, more than three curies of radioactivity, predominantly Iodine-131, was released from the plant in liquid effluents during the period of January 17 through 28, 1977, without processing by the liquid radioactive waste system.

Civil Penalty - \$3,000

RESPONSE

The interim waste evaporator provided for treatment of liquid radioactive waste was in operation and at full capacity throughout this entire period. The reactor coolant bleed evaporator and the miscellaneous waste evaporator were inoperable during this period due to a modification in progress to meet South Carolina requirements for solidification of evaporator bottoms prior to shipment to the waste burial facility. Therefore, all waste processing equipment available was fully utilized during this period.

Subsequent calculations of the volumes involved from the turbine building sump affected, show that no more than 5 percent of the total volume of water which contained approximately 2% of the activity, could have been routed to the waste storage tanks and processed by evaporation without flooding the turbine building basement.

Station personnel recognizing from surveys performed that some level of activity was present in the sump due to the gasket failure took positive action to minimize release of this to the unrestricted area in diverting the turbine building sump discharge from the oil settling basin to the lower and upper settling basins. This water has been held up for decay and is being processed by demineralization.

While in excess of three curies of activity excluding tritium and dissolved noble gases were released during this period, the station objective of 3.75 curies for a calendar quarter has not been exceeded.

Due to the fact that liquid waste disposal system was at full capacity and given the large volume of water in the turbine building sump, it was not considered practical to process. Consequently, the civil penalty of \$3,000 should be rescinded.

Item 5

Technical Specification 6.4.1 requires that detail written emergency procedures involving potential or actual release of radioactivity with appropriate checkoff lists and instructions shall be provided.

Contrary to the above, emergency procedures for controlling radioactivity released to the Turbine Building sump had not been provided.

Civil Penalty - \$3,500

RESPONSE

Oconee Nuclear Station, in the course of complying with NRC criteria and guidelines, has developed 27 emergency procedures for the station. These emergency procedures have been reviewed by the Nuclear Regulatory Commission on several occasions, particularly at the time of the Unit 3 licensing as a part of the QA audit (see Inspection Report 50-287/74-5). Emergency procedures cover a wide range of subjects such as reactor trip, loss of reactor coolant flow, spent fuel damage, steam generator tube failure, etc. On each of the four previous steam generator tube failure incidents, a reportable occurrence was generated and filed with the Nuclear Regulatory Commission. The dates of these reports are: August 5, 1976, November 15, 1976, December 20, 1976, and December 22, 1976. NRC Inspection and Enforcement personnel have reviewed the circumstances of each of the steam generator tube leaks and did not identify any deficiencies in regard to emergency procedures concerning potential radioactivity releases from the Turbine Buildings.

NRC IE Inspection Reports 50-269/76-10, 50-270/76-10, and 50-287/76-10 identify that Reportable Occurrence 50-287/76-10 had been reviewed by the inspector (Page I-4) with no further questions. The same inspection report on Page IV-3, Item 4, "Means for Determining the Magnitude of a Release of Radioactive Materials," states as follows:

Section 6.4.1(d) of the Oconee Nuclear Station Technical Specifications requires that emergency procedures involving a potential actual release of radioactivity be established ....

To verify these procedures were available, the inspector discussed the requirements with the Superintendent of Operations and the Health Physics Supervisor.

The inspector also reviewed the procedures included as Appendix A to the Oconee Emergency Plan. The inspector verified by direct observation that the procedures were maintained in the control room and the meteorological information necessary for the procedures was available.

The requirements for procedures to determine the magnitude of radioactive release appeared to be adequately satisfied.

NRC Regulatory Guide 1.33, Quality Assurance Program Requirements (Operations), was revised in January, 1977 to provide direction in regard to "typical procedures for Pressurized Water Reactors and Boiling Water Reactors" and to be used as guidance to insure minimum procedure recovery for plant operating activities." Item 6 of Appendix A identifies "Procedures for Combating Emergencies and Other Significant Events." Although Item a, Loss of Coolant (including significant PWR steam generator leaks), and Item y, Abnormal Release of Radioactivity, are enumerated, the list does not contain information pertinent to the potential releases of radioactivity from turbine buildings.

In a December 31, 1974 letter to all licensees, Donald F. Knuth Director of Regulatory Operations, identified the criteria for determining enforcement action in categories of non-compliance for the AEC regulatory requirements. Attachment A to that letter on Pages 3 and 4 identified "Civil Monetary Penalties-Criteria." These criteria identify the conditions under which the Commission may levy civil penalties; Items a-k of the criteria do not describe a situation whereby failure to establish a written procedure, in itself, is a condition that meets the civil penalty criteria.

Although a procedure has now been developed to provide methods for handling radioactive releases in the turbine building, for the reasons outlined above, the civil penalty of \$3,500 should be rescinded.

Item 6

Technical Specification 6.4.1 requires that the station shall be operated and maintained in accordance with approved procedures.

Contrary to the above, (a) the procedures for identifying steam generator tube leaks were not adhered to in that the Unit 1 steam generator "B" was leak tested on January 17, 1977 using radioactively contaminated water, whereas the procedure requires that such water be drained and the steam generator refilled from the hotwell, (b) operational steps within OP/3/A/1102/2, used for trip recovery of Unit 3 on November 14, 1976, had not been initialed to confirm that the unit had been raised to full power in the manner specified by the procedure.

Civil Penalty - \$4,000

RESPONSE

Revising the approved procedures to permit using contaminated water to leak test the "1B" steam generator was properly reviewed at the 1230 operations meeting on January 17. The Superintendent of Operations, Operating Engineers and Assistant Operating Engineers were in the meeting and all concurred in the change. Factors leading to the decision were:

1. The generator was very near full and would take minimum additional water for the test.
2. This was the fifth tube leak that had been experienced and the test used in previous cases to identify the leak and to verify the integrity and repair had not resulted in leakage.
3. Since flushing the steam generator and refilling with clean water would increase the burden on the liquid waste system, use of existing water would minimize the overall amount of waste generated.

The approval of the change by the Superintendent and other Senior Reactor Operators was verbally passed to the shift personnel. Although the decision was appropriately reviewed, the change was not properly documented.

The use of the Trip Recovery Procedure, OP/3/A/1102/2, in this instance occurred during the Power Escalation Sequence following the refueling of the unit. The power level was at the 40 percent plateau. When the trip occurred, the trip recovery procedure was used to return the unit to the

40 percent power level plateau. At this point, normal operating procedures were reverted to in increasing the power to the 100 percent power level. Therefore, in this instance, use of the trip recovery procedure was not applicable above the 40 percent power level and sign off of steps beyond those documented were not required.

Although an infraction of the technical specification occurred in regard to 6(a), based on the above discussion the civil penalty is unwarranted for Item 6.

Item 7

Technical Specification 6.6.2.1 requires that abnormal degradation discovered in the reactor coolant pressure boundary shall be reported within 24 hours of discovery to the Director, Office of Inspection and Enforcement, Region II or his designate.

Contrary to the above, the primary-to-secondary system leak discovered in the Unit 1, "B" steam generator on January 15, 1977, was not reported to the NRC until the morning of January 17, 1977.

Civil Penalty - \$1,000

RESPONSE

It is correct that Oconee Nuclear Station did not notify NRC, Inspection and Enforcement, Region II, within a 24 hour period, however, it is noted that the NRC has characterized this matter as a "deficiency" as opposed to an infraction. Duke submits that none of the criteria (a through k) in the NRC "Criteria for Determining Enforcement Action and Categories of Noncompliance with AEC Regulatory Requirements - Modifications", December 31, 1974, Attachment A, pages 3 and 4, serve as a basis for this item, and that the proposed penalty should be stricken. Additionally, when one examines the totality of inspection reports with the recognition that this is the first time that Oconee Nuclear Station has been cited for being tardy in notification, such a penalty is unnecessarily harsh. This is particularly so when it is recognized that the reporting is totally unrelated to the inadvertent release. Therefore, the \$1,000 penalty should be rescinded.

ATTACHMENT C

ENFORCEMENT HISTORY RELATED

TO

RADIATION SAFETY

The purpose of this attachment is to place the enforcement history related to radiation safety into proper perspective.

## ATTACHMENT C

### RESPONSE TO ENFORCEMENT HISTORY RELATED TO RADIATION SAFETY

The Oconee Nuclear Station has been in operation for over four years. As documented in the NRC letter of March 29, 1977, some 41 alleged items of noncompliance involving 30 basic requirements have been identified. As documented in the following pages, several of these items are considered not to be valid and this position was so established in Duke Power Company responses. The vast majority of these alleged items were minor administrative or procedural matters and did not affect the health and safety of our employees or the public. Additionally, items alleged by the NRC to be of a repetitive or similar nature are generally not considered to be so due to the differing natures of the items and the lack of relationship among them. It is demonstrated by the attached response that Duke management was responsive to the resolution of items raised during inspections and in the majority of instances the corrective action was initiated or completed before the NRC inspector departed the site. It is our position that this history of enforcement does not support the conclusions of your letter.

## REQUIREMENTS

### 1. 10 CFR 20.201 "SURVEYS"

#### (a) NRC Enforcement Item - January 22, 1974

10 CFR 20.201 requires, in part, that an evaluation be made of radiation hazards to assure compliance with the regulations.

Contrary to the above, an evaluation or survey for airborne tritium was not made to determine that the requirement of 10 CFR 20.103(a) was not exceeded following the leak of reactor coolant to the Reactor Building on January 22, 1974.

#### DUKE RESPONSE - March 21, 1974

Following the leakage of reactor coolant to the Reactor Building on January 22, 1974, an evaluation was made by the Health Physics Supervisor that airborne tritium from the atmosphere of the Reactor Building would not result in a radiation hazard to personnel entering that building. The Health Physics Supervisor knew at the time of the incident that the reactor coolant system activity was approximately  $2 \times 10^{-2}$   $\mu\text{Ci/cc}$  and that airborne tritium concentration at this level of reactor coolant activity would not be a problem.

Paragraph 20.201 of 10CFR requires that surveys be made as necessary to comply with the regulations contained in Part 20. Based on his knowledge of the existing reactor coolant system activity and many years of experience in the field of health physics, the Health Physics Supervisor felt that it was unnecessary to perform an airborne tritium survey.

As noted in the inspection report, sampling on January 26, 1974 showed a tritium concentration below the level of minimum detectable ( $5 \times 10^{-8}$   $\mu\text{Ci/ml}$ ). Furthermore, calculations have been performed assuming 100 percent relative humidity, 100°F Reactor Building air temperature, and that the reactor coolant system activity at the time of the incident ( $2 \times 10^{-2}$   $\mu\text{Ci/cc}$ ) was attributable only to tritium. The maximum possible tritium concentration based on these assumptions would be approximately  $1 \times 10^{-6}$   $\mu\text{Ci/cc}$  or about 20 percent of the maximum permissible concentration (MPC).

Position

As described in the above response, an evaluation of the airborne tritium concentration was made by the Health Physics Supervisor and in his assessment tritium concentrations would not present a hazard to personnel. It was not considered that a survey for tritium was necessary. This item was closed by NRC/OIE in Report 287/74-13 on December 11, 1974. It was our position that no violation of the regulations existed.

(b) NRC Enforcement Item - February 23, 1976

Contrary to the survey requirements of 10 CFR 20.201(h), surveys, the inspectors found on February 23, 1976, that the interim waste building vent gas monitor, RIA-52, was not operating.

DUKE RESPONSE - April 8, 1976, May, 14, 1976, June 11, 1976

To assure continued operation of the interim waste building vent gas monitor pump, a sign has been prominently displayed requiring that the pump be periodically checked and kept in operation. In addition, a station modification which will cause an alarm to be sounded if the pump fails to operate is being implemented. A daily check of operation will be conducted to assure operability until this modification is completed. Additionally, weekly iodine and particulate samples of the ventilation exhaust from the permanent waste management facility will be taken.

Position

The referenced paragraph for enforcement action does not exist.

Duke was responsive to this item by performing daily checks of monitor operability and initiating a station modification to provide status of monitor operability in the control room. Additionally, commitments have been made to NRC/ONRR for the installation of particulate and iodine monitors. This item was closed by NRC/OIE on October 26, 1976 in Report 269/76-10.

(c) NRC Enforcement Item - January 18, 1977

10 CFR 20.201, "Surveys", requires that each licensee make or cause to be made such surveys as may be necessary to comply with the regulatory requirements specified in 10 CFR Part 20.

Contrary to the above, on January 17, 1977, no adequate measurement or other evaluation was made to account for radioactive effluent released from the Oconee oil collection basin to the Keowee River until about 8:50 a.m. on January 18.

DUKE RESPONSE

See Attachment B.

Position

The three items are not considered to be repetitive items of non-compliance. In (a) and (b) above, one is associated with a specific event and another with a process monitor. It was not considered that either item was valid. The third item, (c), was related to environmental sampling. This item was not considered valid since samples had been taken in the Turbine Building which did not indicate the need for samples of the environment.

2. TECHNICAL SPECIFICATION 3.9.3, INSTANTANEOUS LIQUID WASTE DISCHARGE CONCENTRATION

(a) NRC Enforcement Item - January 18, 1977

Technical Specification 3.9.3 requires that the rate of release of radioactive materials in liquid from the station shall be controlled such that the instantaneous concentration of radioactivity in liquid waste upon release from the Restricted Area, does not exceed the values listed in 10 CFR, Appendix B, Table II, Column 2.

Contrary to the above:

- a. Radioactivity released in oil collection basin effluents on January 18-20, 1977, caused the instantaneous concentration of radioactivity released from the Restricted Area via the Keowee River to exceed the values of 10 CFR 20, Appendix B, Table II, Column 2 by up to a factor of nineteen.
- b. Calculation errors associated with routine liquid waste releases resulted in these instantaneous limits being exceeded by up to a factor of two during January through March, 1976.

DUKE RESPONSE & POSITION

See Attachment B.

Additionally, letters to NRC/ONRR dated November 18, 1975 and April 12, 1977 expressed views of the overly restrictive limits on the rate of discharge of radioactive materials in liquids. In no event have the regulations as stated in 10 CFR 20 been exceeded.

3. TECHNICAL SPECIFICATION 3.9.5, COORDINATE LIQUID WASTE DISCHARGES WITH KEOWEE HYDRO PLANT

(a) NRC Enforcement Item - January 18, 1977

Technical Specification 3.9.3 requires that as far as practicable, the releases of liquid waste shall be coordinated with the operation of the Keowee hydro unit.

Contrary to the above, although the Keowee hydro plant was available for use, it was not operated in coordination with liquid waste releases on January 18, 19 and 20, 1977.

DUKE RESPONSE & POSITION

See Attachment B.

4. TECHNICAL SPECIFICATION 3.9.4, PROCESS LIQUIDS WHEN 1.25 CURIES PER QUARTER IS EXCEEDED

(a) NRC Enforcement Item - January 18, 1977

Technical Specification 3.9.4 requires that the equipment installed in the liquid radioactive waste system shall be maintained and operated for the purpose of keeping released quantities within the objectives of these specifications and shall process all liquids prior to their discharge in order to limit the activity, excluding tritium and dissolved noble gases, released during any calendar quarter to 1.25 curies or less per unit.

Contrary to the above, more than three curies of radioactivity, predominantly Iodine-131, was released from the plant in liquid effluents during the period of January 17 through January 28, 1977, without processing by the liquid radioactive waste system.

DUKE RESPONSE & POSITION

See Attachment B.

5. TECHNICAL SPECIFICATION 6.4.1, PROVIDE DETAILED PROCEDURES

(a) NRC Enforcement Item - February 25, 1974

Contrary to the requirements of Section 6.4.1(h) of the Oconee Technical Specifications, the radioactive waste drumming station was operated without a procedure.

DUKE RESPONSE - April 10, 1974

Since the AEC/RO audit ending on March 1, 1974, a procedure, OP/1&2/A/1104/28, has been written and approved for operation of the radioactive waste drumming facility. This procedure includes health and safety aspects of operation of this facility. The limits and precautions section provides that all work in the drumming area shall be done under an approved radiation work permit, which specifies the health physics precautions which must be taken in the drumming operation, including requirements for contamination protective equipment, personnel dosimetry, respiratory equipment, and allowable stay times.

Position

This item occurred over three years ago, very early in the life of Oconee Nuclear Station. Numerous procedures covering every significant facet of operation of the station had been prepared. Adequate and timely corrective action was taken by writing and approving the waste drumming procedure. NRC/OIE closed this item on August 14, 1974 in Report 269/74-5. It is felt that this item is of minor significance.

(b) NRC Enforcement Item - January 18, 1977

Technical Specification 6.4.1 requires that detailed written emergency procedures involving potential or actual release of radioactivity, with appropriate check-off lists and instructions, shall be provided.

Contrary to the above, emergency procedures for controlling radioactivity released to the turbine building sump had not been provided.

DUKE RESPONSE

See Attachment B.

Position

It is considered that these two items are not repetitive in nature. One involved a procedure to operate a specific system over three years ago. The latter concerns the need for a specific emergency procedure.

6. TECHNICAL SPECIFICATION 6.4.1, FOLLOW PROCEDURES

(a) NRC Enforcement Item - January 22, 1974

The Operating Procedure, Reactor Building Purge System (OP/2/A/1102/14), specifies an alarm setting of 25 counts per minute (cpm) on the 2RIA-46 gaseous monitor. During this inspection, the alarm was observed to be set at 50 cpm. During the management interview, an inspector pointed out that this was a violation of Technical Specifications, Specification 6.4.1.

DUKE RESPONSE - March 21, 1974

Gaseous monitor 2RIA-46 is one of two instruments which monitor gaseous activity during releases through the unit vent. RIA-45 employs a plastic beta scintillator to detect gaseous activity in the normal range of operating conditions. Associated with RIA-45 are interlocks which automatically terminate a Reactor Building purge and close the purge isolation valves on high radiation level. Monitor RIA-46 uses a small volume G-M tube to provide overlap and extend the sensitivity of a gaseous monitoring ranges. RIA-46 provides indication and alarm function and only for the high end of the operating range. Although the overlap between the two monitoring ranges was diminished when the setpoint of RIA-46 was changed from 25 cpm to 50 cpm, continuous indication of the full operating range was provided. To prevent recurrence of this incident, the setpoints on radiation monitors will be checked weekly.

Position

It is agreed that the alarm setpoint on RIA-46, gaseous monitor, was not set as specified in procedures. However, as described above, all automatic functions are performed by RIA-45 which was set properly and would have functioned properly if needed. Continuous indication was provided over the entire range of both instruments. Timely and adequate corrective action was taken. This item was closed by NRC/OIE on December 11, 1974 in OIE Report 287/74-13.

(b) Enforcement Item - May 27, 1975

Contrary to Technical Specification 6.4.1, the licensee was not operating and maintaining the station in full accordance with the DPC System Health Physics Manual.

This infraction had the potential for causing or contributing to an occurrence related to health and safety.

The Manual (Section J.3 and Section L.1.b) states that respiratory protective equipment can be obtained in the personnel change rooms. Contrary to this, no respirators were available in either of the two main personnel change rooms. Licensee representatives stated that the respirators were stored in the clean area of the decontamination room, in order for health physics to have full control of the respirators.

The Manual (Section L.1.c) states that all tools and equipment being transferred from the Reactor Building or radiation control zones to the contaminated tool crib must be properly wrapped and tagged. Contrary to this, a licensee representative stated that tools and equipment were not routinely wrapped and tagged for transfer to the contaminated tool crib.

The Manual (Section G.3) states that the portal monitor at the entrance to the Restricted Area will serve as the final check of persons leaving the Restricted Area, to ensure that they are free of radioactive contamination. Instructions posted at the monitor specify that persons will stop or pass slowly through the monitor. Contrary to this, the inspector observed approximately fifteen persons exit the Restricted Area, and none stopped or slowed in passing through the monitor.

DUKE RESPONSE - July 21, 1975

Respirators are stored in the clean area of the decontamination room in order for Health Physics to have full control of the respirators. The Health Physics Manual has been revised to permit storage of respiratory protective equipment in any appropriate location rather than specifically in the personnel change room.

The Health Physics Manual has been revised to state that all tools and equipment being transferred from the Reactor Building or radioactive control zones within the radiation control area to the contaminated tool crib must be properly monitored, and wrapped and tagged as required by contamination levels.

Prior to leaving any radiation control area, personnel are required to utilize monitoring equipment to ensure they are free of contamination. Since the majority of personnel passing through the portal monitor have not been in a radiation control area, it is not considered necessary that they use the portal monitor. Consequently the Health Physics Manual has been revised to indicate that the portal monitor is available for an optional check for contamination on leaving the restricted area.

Position

These items of non-compliance are the result of several minor errors existing in the System Health Physics Manual upon publication. Adequate and timely corrective action was taken to revise the System Health Physics Manual. It is not considered that these items had the potential for causing or contributing to an occurrence related to health and safety as alleged in the enforcement item.

(c) Enforcement Item - October 4, 1976

Contrary to Technical Specification 6.4.1.g on October 13, 1976, Oconee Nuclear Station Directive 3.8.2 was not adhered to in that three persons entered radiation control zones without completing the daily exposure time card as required.

DUKE RESPONSE - December 21, 1976

Counseling sessions have been held with the specific individuals involved in this incident, all Maintenance Supervisors, Shift Supervisor, and the Construction Supervisor. The necessity for accurately accounting for radiation exposure via the Daily Radiation Exposure Cards was emphasized. This information has been promulgated to personnel reporting to the above listed supervisors. It is felt that this action will be effective to prevent recurrence of this item.

Position

Increased management attention has emphasized the necessity for proper completion of radiation exposure records. Prompt action was taken in this regard.

(d) NRC Enforcement Item - January 18, 1977

Technical Specification 6.4.1 requires that the station shall be operated and maintained in accordance with approved procedures.

Contrary to the above, (a) the procedures for identifying steam generator tube leaks were not adhered to in that Unit 1 steam generator "B" was leak tested on January 17, 1977, using radioactively contaminated water, whereas the procedure requires that such water be drained and the steam generator refilled from the hotwell, (b) operational steps within OP/3A/1101/2, used for trip recovery of Unit 2 on November 14, 1976, had not been initialed to confirm that the unit had been raised to full power in the manner specified by the procedure.

DUKE RESPONSE

See Attachment B

Position

The four items listed above are related to setpoints of radiation monitors, storage of health physics respiratory equipment as stated in the System Health Physics Manual, radiation exposure records, and performance of leak testing of a steam generator. These four items are separated over a span of three years and are not related whatsoever. No recurrence has been observed.

8. TECHNICAL SPECIFICATION 6.5.2, RECORD PREPARED AND MAINTAINED FOR SIX YEARS

(a) NRC Enforcement Item - January 22, 1974

Technical Specification 6.5.2 and Oconee Standing Order No. 9 requires that a Reactor Operations Logbook be maintained of events affecting reactor operation.

Contrary to the above, during the period of January 22-25, 1974, the logbook did not contain entries concerning a weld failure of a RCP seal water supply pipe and leakage of radioactive water in the auxiliary building, actuation of the QT rupture disc and resultant damage to other components, receipt and investigation of a reactor building fire alarm and the leakage of 65,000 gallons of radioactive water in the containment.

DUKE RESPONSE - March 21, 1974

The proper maintenance of logs in accordance with Standing Order 9 and other administrative procedures has been emphasized to all shift supervisors. On January 29, 1974, the Operating Engineer issued a letter to all Operations Supervisors instructing them that the Reactor Operation Logbook and other required logs must be maintained in accordance with Standing Order 9 and other applicable administrative procedures.

Additional clarification will be given to the operators as to the types of information which should be included in the logs. A review is being made of the information found on computer logs and recorders so that unnecessary redundant information will not be included in the Shift Supervisor's Log and the Reactor Operations Log.

Position

Although this is a violation of the Oconee Technical Specifications, it is considered to be a minor record keeping detail and not indicative of management performance. Adequate and timely corrective action was taken as evidenced by no recurrent violations in over three years. This item was closed by NRC/OIE in Report 287/74-13 on December 11, 1974.

9. 10 CFR 20.203, "CAUTION SIGNS, LABELS, SIGNALS AND CONTROLS"

(a) NRC Enforcement Item - March 18, 1974

Contrary to 10 CFR 20.203, "Caution signs, labels, signals, and controls," a high radiation area in Room No. 104 of the Auxiliary Building was not posted with the prescribed high radiation area sign as required by (c)(1) of this section. Further, entrances to Room 104 and to high radiation areas in Rooms 112 and 122, which were posted as high radiation areas, were not controlled as required by (c)(2) of this section.

DUKE RESPONSE

See Item 10.

Position

Corrective action to post appropriate signs was taken prior to the inspector departing the site. Further, the required doors were installed in an expeditious manner. It is considered that management acted in a timely and concerned manner to correct these deficiencies.

(b) NRC Enforcement Item - May 27, 1976

Contrary to 10 CFR 20.203, a radiation area was not conspicuously posted per 20.203(b), two high radiation areas were not posted per 20.203(c)(1), a high radiation area was not fully controlled per 20.203(c)(2), and two high radiation areas were secured with padlock and chain such that an individual could be prevented from leaving the area, contrary to 20.203(c)(3).

This infraction had the potential for causing or contributing to an occurrence related to health and safety.

DUKE RESPONSE - July 21, 1975

All discrepancies noted in this item have been corrected. In order to prevent recurrence, this item has been reviewed with the appropriate health physics and chemistry supervisors and their personnel.

Position

Duke management reacted to swiftly correct discrepancies, even before the NRC inspector departed the site.

(c) NRC Enforcement Item - October 13, 1976

Contrary to 10 CFR 20.203(c) access to five high radiation areas in the auxiliary building was not controlled as required, on October 13, 1976.

DUKE RESPONSE - December 1, 1976

In order to prevent recurrence of access doors to high radiation areas being inadvertently left open, the health physics section routinely checks the radiation control area to verify that high radiation access doors are closed and locked. Reports will be submitted to the Health Physics Supervisor if conditions contrary to 10 CFR 20.203(c) are encountered. Reports of these conditions are brought to the attention of the station Superintendents and they are requested to inform their personnel of these conditions and aid in the prevention of recurrence. By maintaining routine surveillance of the radiation control area, and identifying problem areas to the responsible management personnel, it is felt that positive control of entrances to high radiation areas will be maintained.

Specific items identified in the report have been corrected as follows:

The hole in the entrance door to RM 160, Unit 3 Low Pressure Injection Cooler was repaired on October 15, 1976. With this repair to the door, positive control of entry to this room will be maintained and thus in compliance with 10 CFR 20.203(c)(2)(iii).

The padlock on the entrance to the Janitor Storage Room was replaced on October 15, 1976 with a key in, free egress type lock. This change will bring this area into compliance with 10 CFR 20.203(c)(3).

A physical barricade with a locked door has been erected around the High Radiation Area created by Valve 2HP-181. The barricade was installed on October 18, 1976. With the erection of the barricade and door, this area should not (sic) be in compliance with 10CFR 20.203(c). In addition, an evaluation of the use of spring closures for certain high radiation areas is also being conducted.

Position

Duke Management is actively engaged in resolution of this problem as evidenced by the above response. Additionally, modifications were proposed and implemented to prevent recurrence of these items. Routine surveillance is being performed to assure that positive control of entrances to high radiation areas is being maintained.

10. 10 CFR 50, APPENDIX B. CRITERION XVI, "CORRECTIVE ACTION"

(a) Enforcement Item - March 18, 1974

Contrary to 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action", measures had not been established to assure that the causes of significant radiological problems, such as spills of radioactive materials, contamination of personnel and inadequate control of access to high radiation areas, were determined and corrective action taken to preclude repetition. Further, the identification of such problems, the cause of the problems and corrective action taken had not been documented and reported to appropriate levels of management.

DUKE RESPONSE - May 24, 1974

The following actions are being taken:

1. Closer coordination and cooperation of general office and Oconee health physics personnel is being developed. Also, more attention is being paid to properly informing Duke personnel that support for a vigorous health physics program exists in Duke management.
2. Duties and responsibilities of health physics personnel, both in the general office and at Oconee, have been more clearly defined.
3. The Health Physics Section at Oconee has been reorganized into three sub-groups each headed by an Assistant Health Physics Supervisor reporting to the Health Physics Supervisor. The basic responsibilities of the three sub-groups are:
  - a. Counting Room and Environmental Radioactivity Monitoring
  - b. Radiation Surveillance and Personnel Exposure Control
  - c. Support Functions

Detailed job descriptions have been written for all supervisors in the Oconee health physics section and for the health physics general office staff, which shows their technical direction, support and audit relationship to the Oconee health physics section.

Position

The NRC inspector verified that the appropriate corrective action was taken in Report 50-269/74-5 and that this action would prevent recurrence. This action consisted of a program for evaluating correctly and reporting radiological problems. No similar enforcement items have occurred in over three years.

11. 10 CFR 50, APPENDIX B, CRITERION XII, "CONTROL OF MEASURING AND TEST EQUIPMENT"

(a) NRC Enforcement Item - March 18, 1974

Contrary to 10 CFR 50, Appendix B, Criterion XII, "Control of Measuring and Test Equipment", measures had not been established to check the performance of RM-14 personnel survey instruments at sufficient frequency to maintain accuracy within necessary limits.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

Quarterly calibration checks and weekly source checks of these instruments were being conducted at the time of this inspection. No requirements specify the frequency at which these instrument checks are necessary. Additionally, the combined meter and audible response provide indication of the proper functioning of the device. Daily checks of these instruments were started and are continuing.

12. 10 CFR 50, APPENDIX B, CRITERION VI, "DOCUMENT CONTROL"

(a) NRC Enforcement Item - March 18, 1974

Contrary to 10 CFR 50, Appendix B, Criterion VI, "Document Control", measures had not been established to control issuance of health physics procedures to assure that these procedures, including changes,

were reviewed for adequacy and approved for release by authorized personnel and were distributed to personnel performing the prescribed activity.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

Duke management was responsive to the correction of this item by issuing Administrative Procedures for the control of health physics procedures. These actions have been successful in accomplishing their intended function. It is considered that this item, which occurred three years ago, has been corrected.

13. TECHNICAL SPECIFICATION 3.10.7, CONTINUOUSLY MONITOR UNIT VENT DISCHARGES

(a) NRC Enforcement Item - March 18, 1974

Technical Specification 3.10.7 requires grab samples of particulate activity discharged through the unit vent to be taken and analyzed daily when the continuous particulate vent monitor is inoperable. Contrary to the above, daily grab samples had not been taken or analyzed although the licensee acknowledged that performance of the continuous particulate vent monitors was unreliable.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

Management was responsive and ensured that grab samples were taken during the period that the particulate vent monitor was inoperable. It should be noted that the monitor was functioning and provided a response to varying activity; however, it was not correlatable to laboratory analyses.

14. 10 CFR 50, APPENDIX B, CRITERION V, "INSTRUCTIONS, PROCEDURES AND DRAWINGS"

(a) NRC Enforcement Item - March 18, 1974

Contrary to 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", the licensee did not have adequate procedures for establishing and maintaining proper alarm setpoints for the process radiation monitors.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

A Procedures was written which specified procedures for establishing and maintaining proper alarm setpoints. This procedure was reviewed and determined to be adequate by the NRC inspector in Report 50-269/75-1.

15. TECHNICAL SPECIFICATION 3.10.5.e, "COORDINATE GAS RELEASES WITH METEOROLOGICAL CONDITIONS"

(a) NRC Enforcement Item - March 18, 1974

Technical Specification 3.10.5.e, requires that, as far as practicable, release of radioactive gas be coordinated with favorable meteorological conditions.

Contrary to the above, the licensee has released radioactive gas from the Waste Gas Tanks to the atmosphere without regard to the presence or absence of inversion conditions.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

Immediate management attention was focused upon this item and appropriate procedures were revised to require that releases are coordinated with favorable meteorological conditions. This action was completed during the inspection and has not recurred in over three years.

16. TECHNICAL SPECIFICATION 6.1.2.2.h., CONTENT OF NUCLEAR SAFETY REVIEW COMMITTEE MINUTES

(a) NRC Enforcement Item - March 18, 1974

Technical Specification 6.1.2.2.h. requires that minutes of all scheduled meetings of the Nuclear Safety Review Committee identify all documentary materials reviewed.

Contrary to the above, the minutes of the March 1, 1974 meeting do not indicate that the Committee reviewed the radioactive gas release incident of February 8, 1974. The Chairman stated that the Committee did review that incident, including drawings and other documentary materials, at the March 1 meeting.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

This is considered to be an administrative error which could not possibly have affected the health and safety of the public. The NSRC did review the information associated with the incident but did not document this review.

17. 10 CFR 19, "POSTING OF NOTICE TO WORKERS"

(a) NRC Enforcement Item - March 18, 1974

Contrary to 10 CFR 19, "Posting of Notices to Workers," the licensee did not post, within two working days after receipt, the notice of violations involving radiological working conditions contained in RO Inspection Report No. 50-270/74-1.

DUKE RESPONSE - May 24, 1974

See Item 10.

Position

A mechanism was promptly established to provide for the posting of notices required by 10 CFR 19. It had previously been considered that posting of a notice of availability of an inspection report satisfied this requirement. The latest applicable inspection report is now posted.

(b) Enforcement Item - April 1, 1975

Contrary to 10 CFR 19.11, neither all the documents required by 19.11 (a), nor a notice per 19.11(b), was posted.

DUKE RESPONSE

None Required.

Position

This item related to the requirement for posting of 10 CFR 20, the license, license conditions, documents incorporated into the license by reference, amendments thereto and operating procedures applicable to licensed activities. A notice of the availability of these documents had inadvertently been removed from the bulletin board. This was corrected prior to departure of the NRC inspector. This item could not have affected the health and safety of employees or the public.

Additionally, these two items related to posting are not considered to be recurrent items since one was a requirement to post due to a situation (notice of proposed violation) and the other concerns a notice which should be constantly displayed.

18. 30.41 "TRANSFER OF BYPRODUCT MATERIAL"

(a) NRC Enforcement Item - May 16, 1974

Contrary to 10 CFR 30.41, a metal seal ring containing byproduct material was transferred to a company in the State of Oregon on February 21, 1974, who was not authorized to receive the material.

DUKE RESPONSE

To assure full compliance with 10 CFR 30.41(c), prior to any shipment of non-exempt quantities of radioactive material, station personnel will verify that the type, form, and quantity of material can be received by the transferee, using the verification methods listed in Paragraph (d) of 10 CFR 30.41.

Position

This item resulted from the transfer of a metal "O" ring to a subcontractor of the NSSS vendor. Duke had received a letter from the NSSS vendor stating that the subcontractor was licensed to handle the radioactive material. It was later determined that the subcontractor's license did not permit receipt of this piece. It is considered that adequate and timely actions were taken and there have been no further occurrences in over three years. It is also considered that good faith had been utilized by Duke in this transfer.

19. TECHNICAL SPECIFICATION 6.6.2.1.a, REPORT ABNORMAL OCCURRENCES

(a) NRC Enforcement Item - May 16, 1974

Contrary to Technical Specification 6.6.2.1.a., and abnormal occurrence report concerning radioactivity in the component cooling system was not submitted, as required.

DUKE RESPONSE - August 8, 1974

Technical Specification 6.2.1 requires, in part, that abnormal occurrences, as defined in Section 10. of the technical specifications, be reported to the AEC. Paragraph f. of Section 1.8 of the technical specifications defines abnormal occurrence as the occurrence of any plant condition that results in abnormal degradation of one of the several boundaries designed to contain radioactive materials resulting from the fission process. In this instance, abnormal degradation would involve a boundary between the Reactor Coolant System and the Component Cooling System. Thus far, there is no evidence that this is the case. No correlation can be made between the activity in the Component Cooling System and reactor power or Reactor Coolant System activity. Nor can any correlation be made between the operation of a particular cooler which interfaces the Component Cooling System and the Reactor Coolant System.

It appears that the source of this activity is the liquid waste disposal header, which has a piping tie to the Component Cooling System drain tank. Valve leakage would allow waterborne activity from the waste disposal header to enter the Component Cooling System. Preparations are being made to isolate this piping tie between the tank and header to determine if this is the source of activity in the Component Cooling System.

Position

As stated in the response, it was our position that radioactivity in the component cooling system did not create a condition in which abnormal degradation of the reactor coolant system boundary existed. Ultimately, the source of activity was determined to be in a cross-connect to the low activity waste system. Therefore, this enforcement item is not considered valid.

It should be mentioned that the reporting definitions for non-routine reports, by necessity, are somewhat ambiguous and require interpretation as far as deciding if an event is to be considered reportable. A review of the Oconee Nuclear Station position will reveal a management position that questionable events are always reported to the NRC and brought to the attention of the NRC inspector.

20. TECHNICAL SPECIFICATION 3.9.8, SAMPLE AND ANALYZE LIQUID WASTE

(a) Enforcement Item - July 10, 1974

Oconee Technical Specification 3.9.8 requires liquid radioactive waste sampling and activity analysis of the condensate test tank contents prior to release.

Contrary to the above on April 24, 1974, a release was made from the B condensate test tank without prior sampling.

Corrective actions described in DPC's abnormal occurrence report dated May 6, 1974, were reviewed and the inspector had no further questions.

DUKE RESPONSE

Abnormal Occurrence Report 50-269/74-7 dated May 6, 1974.

Position

This item was identified by Duke and adequate and timely corrective action was taken as indicated by this inspection report. An abnormal occurrence report was also submitted to the NRC before the NRC

inspection occurred and three months before the NRC inspection report was received. Samples of the released tank indicated that no release limits were exceeded. Monitoring of the effluent line was in operation.

21. TECHNICAL SPECIFICATION 6.6.1.3.e(6)(a)4, REPORT ENVIRONMENTAL DATA IN SEMIANNUAL REPORT

(a) NRC Enforcement Item - October 9, 1974

Ocone Technical Specification 6.6.1.3.e.(6)(a)4. requires that the Semiannual Report include, for each environmental medium sampled, the highest, lowest, and average concentration (or level of radiation) for the sampling point with the highest average, and a description of the location of that point with respect to the site.

Contrary to the above, the January-June, 1974 Semiannual Report did not include the required information.

DUKE RESPONSE - November 27, 1974

As reported in the January-June, 1974 Semiannual Report, there were no sample locations at which levels were found to be above background. Therefore, it would not have been meaningful nor consistent with the intent of Specification 6.6.1.3.e.(6)(a) to report highest, lowest, and average levels.

Position

In this item, Table 2.8-1 of the Semiannual Report for January 1 - June 30, 1974 did not include, for each medium sample, the highest, lowest and average concentration for the sampling point with the highest average. It was our interpretation that this data would only be useful if the concentration were above background. Since no results met that criteria, none of the highest, lowest and average values were given since they would be meaningless. This item of non-compliance is not considered valid. It is considered that the quality and quantity of environmental data supplied to the NRC is far greater than required.

22. TECHNICAL SPECIFICATION 4.11.1, COLLECT AND PROCESS ENVIRONMENTAL SAMPLES

(a) NRC Enforcement Item - October 9, 1974

Oconee Technical Specification 4.11.1 (in effect prior to July 19, 1974) required, in part, that environmental samples taken in accordance with Table 2-1a of the FSAR be collected and processed in accordance with Table 4.11-1 of the Technical Specifications.

Contrary to the above, the following omissions were noted:

- (a) Terrestrial vegetation samples, required from Keowee High School (Location 003), had not been collected;
- (b)  $^{89}\text{Sr}$  analyses, required for both animal and fish samples, had not been performed for either.

DUKE RESPONSE - November 27, 1974

The  $\text{Sr}^{89}$  analyses were inadvertently overlooked when they were added to the Technical Specifications. The requirement for  $\text{Sr}^{89}$  analyses of animals has since been deleted.

Detailed procedures have been written covering the requirements of Technical Specification 4.11 and should prevent any recurrence.

Position

The identified items had not been performed as required by the Oconee Technical Specifications. The primary cause appears to be the interpretation of the July 19, 1974 Technical Specification revision which altered the sampling program. It should be pointed out that the revision deleted terrestrial vegetation samples from Keowee High School and  $^{89}\text{Sr}$  analyses of animals. Corrective measures were taken to assure analyses for  $^{89}\text{Sr}$  in fish. Although this was an enforcement item, it is considered to have had an exceedingly minor impact upon the environmental monitoring program.

(b) NRC Enforcement Item - February 23, 1976

Contrary to Technical Specification 4.11.1, analysis of environmental samples has not been performed to the sensitivities listed in Table 4.11-3 for all water and milk samples as evidence (sic) by analysis results in the licensee's semi-annual report of January to June, 1975 and verified by the inspectors with licensee personnel during the inspection.

DUKE RESPONSE - April 8, 1976

The details of this infraction specifically refers to the measurement of gross beta and Iodine-131 in water samples and of Iodine-131 in milk samples, stating that in a number of instances analyses of results did not meet applicable sensitivities.

With regard to milk samples, it has been identified to the analytical laboratory that analyzes milk samples that the I-131 analyses must be performed to a minimum sensitivity of 0.5 picocuries per liter. It is expected that this action will assure that future milk samples are analyzed within prescribed sensitivities.

Concerning the analysis of water samples, there are no requirements in Table 4.11-2 of the Technical Specifications to analyze water samples for I-131. This nuclide is listed with other gamma emitters which were evaluated to fulfill the requirement in Table 4.11-2 for a "gamma analysis." It is considered that analysis of I-131 to a sensitivity of 0.5 picocuries per liter is only required when I-131 is called for as a specific nuclide in the right hand column of Table 4.11-2.

The minimum sensitivities for gross beta have not been met. In consultation with a vendor who can analyze to lower sensitivities than the Duke environmental laboratories, the vendor has indicated that an analysis of 0.03 picocuries per liter would require an unreasonably large volume of water. Consequently, Duke intends to request a Technical Specification change to provide for a minimum sensitivity for gross beta of 1.0 picocuries per liter. This sensitivity is considered the lowest practicable value. Similarly, a change in the gross alpha sensitivity to 0.5 picocuries per liter will be requested. Additionally, a review is being made of other sensitivities in Table 4.11-3 to determine that all other analyses meet the minimum sensitivities given.

Position

With regard to this item, the I-131 analyses in milk samples were expeditiously specified to meet the sensitivities listed in Technical Specifications. With regard to the I-131 analyses of water, the enforcement item was incorrect as these samples were not required.

With respect to the minimum sensitivities for gross beta, a Technical Specification amendment was requested and was approved on January 27, 1977. It is considered that management representatives were responsive

in resolving this matter. This item was closed by NRC/OIE on October 26, 1976 in Report 50-269/76-10.

23. TECHNICAL SPECIFICATION 4.11.1, MEASURE ENVIRONMENTAL RADIATION WITH TLD'S

(a) Enforcement Item - October 9, 1974

Oconee Technical Specification 4.11.1 (effective July 19, 1974) requires, in part, that an environmental radiological monitoring program be conducted in accordance with Tables 4.11-1 and 4.11-2.

Contrary to the above, a TLD had not been posted 5 miles west of site on Highway 183 (Location 002.1) as specified in Table 4.11-1 of the Technical Specifications.

DUKE RESPONSE - November 27, 1974

The specified Location 002.1 was a typographical error and should have been Location 002. A change to this Technical Specification has been requested and is currently under review by AEC/DOL.

Position

As noted above, this item resulted from a typographical error in specifying the location for a TLD. The TLD was installed at the intended location. NCR licensing had not been notified expeditiously of the needed technical specification change. However, a TLD was installed at the location identified by the typographical error prior to the NCR inspector's leaving the site, and the error was subsequently corrected.

24. 20.103, "EXPOSURE OF INDIVIDUALS TO CONCENTRATIONS OF RADIOACTIVE MATERIALS IN RESTRICTED AREAS"

(a) NRC Enforcement Item - January 27, 1975

Contrary to 10 CFR 20.103, two individuals, on separate occasions, were exposed to airborne radioactive material in excess of the limits specified in 10 CFR 20, Appendix B, Table I.

This infraction was identified by the licensee and caused or constituted an occurrence with safety significance. Each exposure was reported to the Commission by the licensee pursuant to 10 CFR 20.405.

DUKE RESPONSE - April 11, 1975

None Required

Position

This item was identified by Duke and adequate corrective action had been taken before the NRC inspection. This was verified in the NRC inspection. There has been no recurrence in over two years.

25. 19.13, "NOTIFICATIONS AND REPORTS TO INDIVIDUALS"

(a) Enforcement Item - January 27, 1975

Contrary to 10 CFR 19.13, the licensee had not provided a written report to the two individuals exposed to airborne radioactive material in excess of 10 CFR 20 limits. This deficiency was identified by the inspector.

DUKE RESPONSE - March 26, 1975

None Required

Position

A report had been submitted to the NRC on December 4 and December 9, 1974 respectively; however, these reports had not been transmitted to the individuals. The reports were sent to the individuals while the inspector was on site. Personnel had been informed of their exposure verbally. Written exposure records would have been provided and were provided at the end of the quarter.

26. 20.401, "RECORDS OF SURVEYS, RADIATION MONITORING AND DISPOSAL"

(a) Enforcement Item - January 27, 1975

Contrary to 10 CFR 20.401, the licensee's fourth quarter, 1974, personnel exposure records were not accurate, in that a determined correction factor was not uniformly applied. This deficiency was identified by the inspector.

DUKE RESPONSE - March 26, 1975

The doses to the two individuals of concern were reduced after proof of lower exposure was provided by the TLD contractor. These individuals were the only ones that previously had appeared to have exceeded the 10 CFR 20 quarterly limits. The previously recorded exposure data for other personnel was not similarly lowered as this was the most accurate, conservative data available. This practice of correcting the exposure records for two out of a large group of records does not appear to be inconsistent with the requirements of 10 CFR 401.

See also letter dated April 11, 1975.

Position

It was not considered that this enforcement item was valid since justification existed to lower the two exposure records in order to document that these two individuals did not exceed regulatory exposure requirements. The records of all other station employees were not similarly reduced because no method accurately existed for determining their specific error. All records were conservative in that the recorded exposure exceeded the actual exposure.

27. TECHNICAL SPECIFICATION 3.9.7, "LIQUID EFFLUENT MONITOR ISOLATION FUNCTION"

(a) NRC Enforcement Item - February 19, 1975

Contrary to Technical Specification 3.9.7, the effluent control monitor was not set to alarm and automatically close the waste discharge valve so that the appropriate requirements of the specification are met.

This infraction was identified by the inspector and had the potential for causing or contributing to an occurrence with safety significance.

DUKE RESPONSE - April 11, 1975

The procedure used at the time of the inspection required setting the effluent monitor at one-half decade above detector background activity or tank activity (whichever is higher). Due to the high background during this period, the former setting was utilized. This would have prevented the release of liquid effluents which had a substantially higher activity than anticipated.

The liquid waste process monitors have been moved to an area of lower background on the turbine floor. New dual monitors have been installed which will permit decontamination of one while the other is in service. On March 20, 1975, a procedure change was made which provides specific setpoints (numerical values) for each combination of discharge conditions (example: 50 gpm, 40 cfs dilution). The setpoints are such that an alarm would be sounded and the release terminated preventing any possibility of exceeding values listed in 10CFR20, Appendix B, Table II, Column 2.

The initial readings of the effluent monitor are well within expected values. However, after a few discharges through the new monitor chamber, the background level has increased. Periodic decontamination of the chamber internal surfaces has been necessary to reduce this background. Although efforts are being made to determine the best method of operation of the effluent monitors, periodic decontamination assures that the intent of Technical Specification 3.9.7 is met.

Position

Numerous corrective actions have been taken to reduce monitor background readings as described in letters dated July 30, 1976, November 18, 1976 and April 12, 1977 to NRC/ONRR. The monitor has been relocated, parallel monitors were installed, and experimentation has been conducted with coatings, surface finishes and materials to reduce radioactivity buildup. An off-line monitor

which has a removable chamber has finally resolved the monitor background problem. As pointed out in our April 12, 1977 letter; however, it is not considered possible for a single monitor to measure all isotopes present and perform the arithmetical functions as described in Note 1 of 10 CFR 20, Appendix B, Table II to alarm and automatically terminate the liquid release if it exceeds 10CFR20, Appendix B, Table II, Column 2 limits on an instantaneous basis.

(b) Enforcement Item - February 23, 1976

Contrary to Technical Specification 3.9.7, the effluent control monitor was not set to alarm or automatically close the waste discharge valve to assure that appropriate requirements were met for liquid waste releases made during February, 1976.

DUKE RESPONSE - April 8, 1976

As noted in the above response to Item I.A.1, the background problem prevents a setpoint from being determined which will assure that the release limits of Specification 3.9.3 are not exceeded. Resolution of the background problem should allow a setpoint to be assigned as required by Technical Specification 3.9.7.

Position

See Item 27(a).

28. 10 CFR 50, APPENDIX B, CRITERION II, "QUALITY ASSURANCE PROGRAM"

(a) NRC Enforcement Item - April 1, 1975

Contrary to Criterion II of 10 CFR 50, Appendix B, as implemented by Section 2.5.4.7 of Duke's Administrative Policy Manual for Nuclear Stations, the licensee has not conducted periodic training on a regular basis to provide instruction in radiation protection.

This infraction had the potential for causing or contributing to an occurrence related to health and safety.

DUKE RESPONSE - May 21, 1975

A comprehensive radiation-protection training program has been provided for all new employees. In addition, special training has been provided in preparation for specific tasks such as refueling and maintenance activities. In order to provide for periodic health physics training, a course has been prepared to be administered on an annual basis. The first session was held

on April 23, 1975, and future sessions will be held once a month until all employees have attended.

Position

Although specialized training was being given on specific maintenance activities prior to refueling outages, no generalized training was given periodically. A course was prepared and administration began on April 23, 1975. This is an example of the responsiveness of Duke management.

29. TECHNICAL SPECIFICATION 3.9.6, "COMPARE MONITOR READINGS TO LABORATORY ANALYSES

(a) Enforcement Item - February 23, 1976

Contrary to Technical Specification 3.9.6 liquid waste effluent monitor readings were not compared with expected readings for liquid waste releases 76-111 and three batches released in February, 1976.

DUKE RESPONSE - April 8, 1976

Presently, because of the high background readings seen on RIA-33 and RIA-34, correlation of lab analysis results and expected monitor readings is difficult. A task force, consisting of representatives from Oconee Nuclear Station and the Steam Production Department General Office staff, has been organized to review this situation and make recommendations for its resolution. This task force has met and is actively pursuing measures to correct the background problem. A supplemental report will be submitted by August 1, 1976 to further describe the status of this matter.

Position

See Item 27(a).

30. TECHNICAL SPECIFICATION 4.16, LEAK TEST SEALED SOURCES

(a) NRC Enforcement Item - August 30, 1976

Contrary to Technical Specification 4.16 a 0.97 millicurie radiation source designated ONS #60 was not leak tested prior to use when identified as being larger than 100 microcuries of beta activity during 1976.

DUKE RESPONSE - November 16, 1976

The identified source was leak checked on September 8, 1976, and the results were acceptable with less than .005 Ci leakage as required by Oconee Technical Specification 4.1.6.2. A complete

check of the source inventory system was performed to determine if any other discrepancies similar to the one identified in this inspection existed. None were found.

Personnel that perform the source inventory and leak checks have been cautioned to double check themselves when transferring source information and to verify that they have leak checked all required sources.

Position

This item resulted from a record error on the size of the source.

Corrective action beyond the specific source was initiated to recheck the source inventory system to assure no other discrepancies existed.

ATTACHMENT D

ASSESSMENT OF HEALTH EFFECTS  
DUE TO  
RELEASE OF RADIOACTIVITY RESULTING FROM  
JANUARY 17 THROUGH 20, 1977  
INCIDENT

The purpose of this attachment is to summarize the results of a special environmental sampling program conducted to determine the effects of the inadvertent release.

## ATTACHMENT D

### Assessment of Health Effects Due to Release of Radioactivity Resulting from January 17 Through 20, 1977 Incident

On January 20, 1977, a special radiological environmental sampling program was established to analyze the release of radioactivity from the Turbine Building sumps through the oil collection basin to the Keowee River (Hartwell Reservoir). Surface water and water supply samples were collected daily for the first week followed by weekly sampling for several weeks. Surface water samples and water supply samples, both raw and finished water, were collected (except as noted due to severe weather conditions) during this period from sampling locations routinely sampled as part of the radiological environmental surveillance program conducted pursuant to Technical Specification 4.11. Samples were analyzed for gamma emitters using gamma spectrometry (GeLi) and for iodine-131 using a radiochemical analytical method.

Approximately 3.2 curies of activity were released from the oil collection basin to the Keowee River (Hartwell Reservoir) during this time period. Of the total activity released, 83% of the release was iodine-131; 10% of the release was cesium-137; 6% of the release was cesium-134; and 1% of the release was other radionuclides. Accountability of the activity was based on collection and analysis of 246 samples from either the yard drains or turbine building sump. Yard drain samples were used for activity accountability until the concentrations were below minimum detectable concentration at which time Turbine Building sump samples were used for activity accountability. Samples were analyzed for gamma emitters and tritium to the sensitivities required for routine effluent samples. From January 17 to January 30 samples were collected and analyzed every two hours, from January 31 to February 16 samples were collected and analyzed every four hours and from February 17 until the end of February samples were collected and analyzed every eight hours, and from the end of February until mid-March samples were collected and analyzed once a day to account for the activity released from the oil collection basin.

Attachment 1 contains a summary of the radioanalytical results for iodine-131, cesium-137, cesium-134, and cobalt-60 in surface water and water supply samples collected downstream of the Keowee Dam. Cobalt-60 was not detected

in samples taken from the oil collection basin but was detected in some of the surface water and water supply samples collected downstream.

Attachment 2 contains a summary of calculated dose commitments for the above listed radionuclides based on the calculational methods of Regulatory Guide 1.109 (March 1976). Projected dose commitments are based on an intake for one week (one liter per day) at the concentrations measured in finished water from sample location 006.1. Attachment 2 also contains the dose commitments which would result if the concentrations measured in finished water were averaged for the two week period during which finished water concentrations were above minimum detectable concentrations. Attachment 3 compares these dose commitments to regulatory limits. Dose commitments for sample location 012 were not calculated since only one sample indicated activity above the minimum detectable activity.

To reduce the environmental impact of the activity, dilution flow from the operation of Keowee Hydro was provided at times during the release. The Hydro was operated at a minimum of 6600 cfs from January 18 at 1245 until 2230, from January 19 at 0700 until 2145, from January 20 at 1050 until January 21 at 0100, and from January 21 at 0700 until 1700. The Keowee flood gates were then used to provide dilution flow. Attachment 4 relates the period of radioactive release to the use of dilution flow sources.

From this information, it is concluded that the measured concentrations of radioactivity in water leaving the oil collection basin did not adversely affect the public health and safety.

## ATTACHMENT 1

I-131 ACTIVITY IN OCONEE SPECIAL SAMPLES  
COLLECTED JANUARY 20-26, 1977 (UNITS OF  $10^{-9}$   $\mu\text{Ci/ml}$ )

LOCATION AND SAMPLE TYPE	MILES TO KEOWEE DAM	1/20/77	1/21/77	1/22/77	1/23/77	1/24/77	1/25/77	1/26/77
Hwy. 183 Bridge 000.7 Surface Water	0.6	50.9 $\pm 10$	ND	17.5 $\pm 1$	81.7 $\pm 12$	52.8 $\pm 12$	60.5 $\pm 13$	33.0 $\pm 12$
Hwy. 27 Newry 005.2 Surface Water	7.2	ND	43.5 $\pm 9$	48.9 $\pm 14$	36.8 $\pm 11$	No Sample	No Sample	70.7 $\pm 13$
Clemson 006.1 Raw Water Supply	12.4	5.3 $\pm 0.5$	4.2 $\pm 0.5$	8.3 $\pm 0.4$	11.0 $\pm 0.4$	9.4 $\pm 0.6$	No Sample	12.0 $\pm 0.6$
006.1 Finished Water Supply	12.4	ND	4.2 $\pm 0.6$	3.6 $\pm 0.3$	7.2 $\pm 0.4$	6.6 $\pm 0.5$	No Sample	9.0 $\pm 0.6$
Anderson 012 Raw Water Supply	---	7.3 $\pm 0.6$	ND	ND	ND	ND	ND	ND
012 Finished Water Supply	---	5.1 $\pm 0.5$	ND	ND	ND	ND	ND	ND

NOTES (1) "ND" means "Not Detected". The minimum detectable activity for this radionuclide is  $1.0 \times 10^{-9}$   $\mu\text{Ci/ml}$ .

(2) Additional sample of the Clemson finished water supply were collected on 1/18/77 with I-131  $< 0.5$ , on 2/2/77 with I-131  $< 1.0$ , on 2/8/77 with I-131  $< 3$

## ATTACHMENT 1 (Cont'd)

Cs-137 ACTIVITY IN OCONEE SPECIAL SAMPLES  
COLLECTED JANUARY 20-26, 1977 (UNITS OF  $10^{-9}$   $\mu\text{Ci/ml}$ )

LOCATION AND SAMPLE TYPE	MILES TO KEOWEE DAM	1/20/77	1/21/77	1/22/77	1/23/77	1/24/77	1/25/77	1/26/77
Hwy. 183 Bridge 000.7 Surface Water	0.6	ND	ND	ND	ND	ND	20.1 $\pm 8$	ND
Hwy. 27 005.2 Surface Water	7.2	ND	ND	ND	14.2 $\pm 7$	No Sample	No Sample	ND
Clemson 006.1 Raw Water Supply	12.4	ND	ND	ND	ND	ND	No Sample	ND
Clemson 006.1 Finished Water Supply	12.4	ND	61.9 $\pm 10$	ND	ND	ND	No Sample	ND
Anderson 012 Raw Water Supply	---	ND	ND	ND	ND	ND	ND	ND
Anderson 012 Finished Water Supply	---	ND	ND	ND	ND	ND	ND	ND

NOTE: (1) "ND" means "Not Detected". The minimum detectable activity for this radionuclide is  $15 \times 10^{-9}$   $\mu\text{Ci/ml}$ .

## ATTACHMENT 1 (cont'd)

Cs-134 ACTIVITY IN OCONEE SPECIAL SAMPLES  
COLLECTED JANUARY 20-26, 1977 (UNITS OF  $10^{-9}$   $\mu\text{Ci/ml}$ )

LOCATION AND SAMPLE TYPE	MILES TO KEOWEE DAM	1/20/77	1/21/77	1/22/77	1/23/77	1/24/77	1/25/77	1/26/77
Hwy. 183 Bridge 000.7 Surface Water	0.6	ND	ND	ND	ND	ND	ND	ND
Hwy. 27 Newry 005.2 Surface Water	7.2	ND	ND	ND	ND	No Sample	No Sample	ND
Clemson 006.1 Raw Water Supply	12.4	ND	ND	ND	ND	ND	No Sample	ND
006.1 Finished Water Supply	12.4	ND	ND	ND	ND	ND	No Sample	ND
Anderson 012 Raw Water Supply	---	ND	ND	ND	ND	ND	ND	ND
012 Finished Water Supply	---	ND	ND	ND	ND	ND	ND	ND

NOTE: (1) "ND" means "Not Detectable". The minimum detectable activity for this radionuclide is  $15 \times 10^{-9}$   $\mu\text{Ci/ml}$ .

## ATTACHMENT 1 (Cont'd)

Co-60 ACTIVITY IN OCONEE SPECIAL SAMPLES  
 COLLECTED JANUARY 20-26, 1977 (UNITS OF  $10^{-9}$   $\mu\text{Ci/ml}$ )

LOCATION AND SAMPLE TYPE	MILES TO KEOWEE DAM	1/20/77	1/21/77	1/22/77	1/23/77	1/24/77	1/25/77	1/26/77
Hwy. 183 000.7 Surface Water	0.6	ND	ND	ND	14.8 $\pm 8$	ND	ND	ND
Hwy. 27 005.2 Surface Water	7.2	ND	ND	24.2 $\pm 8$	ND	No Sample	No Sample	ND
Clemson 006.1 Raw Water Supply	12.4	ND	ND	ND	ND	ND	No Sample	ND
Clemson 006.1 Finished Water Supply	12.4	20.1 $\pm 8$	14.8 $\pm 8$	ND	ND	ND	No Sample	ND
Anderson 012 Raw Water Supply	---	ND	ND	ND	ND	ND	ND	ND
Anderson 012 Finished Water Supply	---	ND	ND	ND	ND	ND	ND	ND

NOTE: (1) "ND" means "Not Detected". The minimum detectable activity for this radionuclide is  $15 \times 10^{-9}$   $\mu\text{Ci/ml}$ .

ATTACHMENT 2

PROJECTED THYROID DOSE COMMITMENTS BASED ON SPECIAL  
 OCONEE SAMPLES COLLECTED AT SITE 006.1 DURING  
 JANUARY 18 - FEBRUARY 2, 1977

	Dose Commitment For One Week Intake at Measured Average Level of $6.4 \times 10^{-9}$ $\mu\text{Ci/ml}$	Dose Commitment for Release Period <sup>(5)</sup> Intake at Measured Average Level of $4.5 \times 10^{-9}$ $\mu\text{Ci/ml}$
ADULT	0.09 mrem <sup>(3)</sup>	0.13 mrem
CHILD	0.6 mrem <sup>(3)</sup>	0.77 mrem

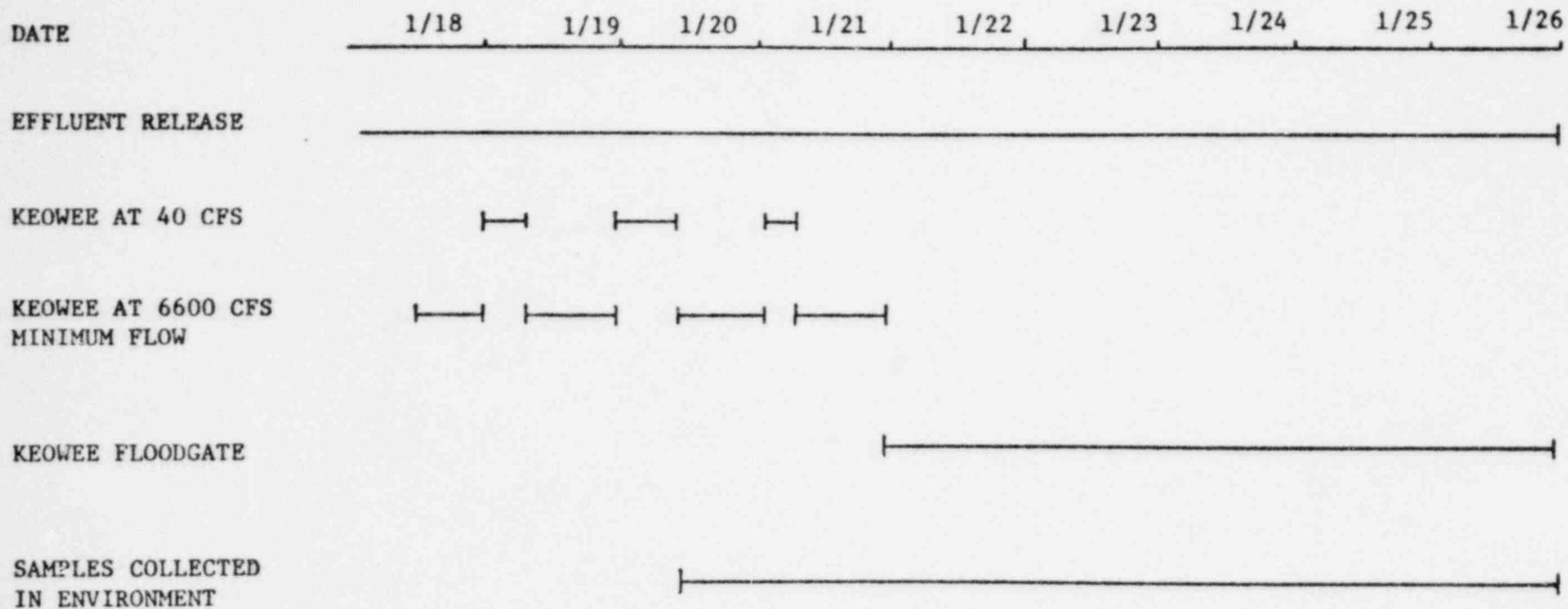
Assumptions:

- 1) Regulatory Guide 1.109 (3/76) Dose Model
- 2) 1.0 Liter of Water consumed per day
- 3) Avg. I-131 activity of  $6.4 \times 10^{-9}$   $\mu\text{Ci/ml}$  based on sample results for 1/20-26/77 at 006.1 finished water site
- 4) Only I-131 considered since other radionuclides made insignificant dose contributions relative to the I-131
- 5) The release period considered is the time period when the activity was traced from an undetectable level (<0.5) through the peak and back to undetectable. On February 8, 1977 activity of 3pCi/l was detected but is not included in this calculation. (If included, the dose could increase 10%).

ATTACHMENT 3

THYROID DOSE COMMITMENTS  
RESULTING FROM RELEASE COMPARED  
TO REGULATORY LIMITS

Doses From Release	Annual Regulatory Limits
Adult 0.13 mrem	
Child 0.77 mrem	
	10 CFR20 - 500 mrem
	10 CFR50 - 30 mrem Appendix I
	EPA Drinking - 4 mrem Water Standards
	Tech Spec - 5 mrem Bases

TIME LINE INDICATING RELEASE PERIOD,  
DILUTION FLOW SOURCES, AND SAMPLING PERIOD  
JANUARY 18-26, 1977

ATTACHMENT E

DISCUSSION OF

DUKE POWER COMPANY'S

HISTORY OF EFFECTIVE MANAGEMENT

The purpose of this attachment is to document those statements, made during public hearings, which attest to the effectiveness of Duke Power Company's Management.

ATTACHMENT E

Discussion of Duke Power Company's  
History of Effective Management

An examination of several of Duke's nuclear plant dockets reflects that Duke has a high caliber of responsible management as recognized by NRC. In Duke's McGuire docket, Staff witness from Inspection and Enforcement testified that Duke had always corrected such items as were identified (Transcript ("Tr.") 1947):

"WITNESS DAVIS: We have been inspecting Duke Power for some length (sic) of time, and it is not unusual to find items of non-compliance on an inspection.

Initially, we dealt with the licensee verbally. Later as we changed our practices, we began to deal with them in writing. The licensee responds, and then at some later time on another inspection, we do determine whether in fact that what he has said in writing has been corrected.

Now some items will be carried as open items for a period of time. To my knowledge, Duke has not in fact not corrected deficiencies when given a sufficient period of time to correct the deficiency, so the deficiency can be identified."

In the Catawba docket, Staff witnesses stated that Duke's responses to its communications had been within normal limits (Tr. 2605):

"(MR. COCHRAN) There has been no known action on Catawba, of course. The enforcement action on McGuire has been adequate and their response to our communications has been within normal limits."

The witnesses went on to state that once a problem was detected Duke's system of operation in contacting upper management immediately and initiating corrective action was good (Tr. 2608):

"(MR. COCHRAN) This was the thing that we noted. And as far as the McGuire inspection effort is concerned, we have not experienced any delays; and in some cases where we would go on a three-day inspection, we would identify a problem the first day; we would see corrective action coming in from the office on Friday before we left."

In the Staff's March 1977 Safety Evaluation Report for Duke's Cherokee station it is stated (p. 13-4):

"The applicant has described his plans for the review and audit of the proposed plant operations. We have reviewed these plans and concluded that they generally meet those provisions described in American National Standards Institute N18.7-1972 "Administrative Controls for Nuclear Power Plants", and are acceptable for the construction permit stage of review.

Based on our review, we conclude that the applicant's proposed program for preparation, review, approval and use of written procedures, and the commitment to document operating and maintenance activities are acceptable at the construction permit stage of review.

The applicant has described his plans for keeping plant records. We have reviewed these plans and conclude that they are generally in accord with those provisions described in American National Standards Institute N18.7-1972, "Administrative Controls for Nuclear Power Plants" and are acceptable at the construction permit stage of review.

Identical language is contained in the Staff's March 1977 Safety Evaluation Report for Duke's Perkins nuclear units (pp. 13-4, 17-4).

In the McGuire docket the Appeal Board (RAI-73-9, ALAB-143, September 6, 1973) stated (at p. 626):

"The Study Group's request for reconsideration thus ignores that we gave a number of reasons in ALAB-128 for denying the exceptions which were based on deficiencies set forth in the Oconee inspection reports. The absence at that time of deficiency notices concerning the implementation of the quality assurance program at McGuire was only one of the factors considered. The subsequent issuance of the deficiency notice does not change the result.

Our examination of the three deficiencies alleged in the staff's June 15 letter to the applicant does not reveal sufficient basis for holding either that the applicant's technical qualifications are lacking or that its commitment to quality assurance is questionable.<sup>19/</sup> The applicant's quality assurance program worked to the extent that it produced the documentation which resulted in the detection of the alleged deficiencies (Tr. 3652).

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<sup>19/</sup> Letter signed by Norman C. Moseley to Duke Power Company, June 15, 1973. The letter is a part of the AEC witness Cochran's testimony at the July 10, 1973, hearing on remand.

It is the inspector's job to detect errors in QA implementation and to determine either that the applicant has taken required corrective action or, if not, to call for such action. And we have no reason to believe that the corrective action has not been taken with regard to the three alleged deficiencies. Nor do we have before us anything which suggests that they fall into a chronic pattern which could call for stronger measures in addition to actions which fully correct the deficiencies and reach their underlying causes."

In its Initial Decision in the Catawba docket (NRCI-75/6, June 30, 1975) the Licensing Board took cognizance of Staff testimony (at p. 647) to the effect that:

"During the period since Appendix B to 10CFR50 has been in effect as an AEC regulation, Duke Power Company has continued to upgrade its Quality Assurance program. From time to time, Regulatory Operations has been critical of the progress of upgrading and the lack of effectiveness in implementing the established program. At no time has Regulatory Operations been completely satisfied with every aspect of DPC's implemented program; however, Regulatory Operations has always concluded that the identified deficiencies did not represent a threat to the health and safety of the public.

The corrective actions, including quality assurance program upgrading, related to deficiencies identified during our inspection have been adequate. Regulatory Operations will continue to critically review DPC's program implementation and take appropriate action whenever deficiencies are identified. As discussed in this testimony, the Staff is satisfied that the Applicant has the requisite qualifications to construct and operate the proposed facilities. (Staff Written Testimony, supra, at pp. 13-14):

The Board went on to state (at p. 648) that it:

"Has carefully reviewed the documents in the record dealing with alleged failures to comply with Commission regulations and standards at Oconee and McGuire. Taken as a whole, they confirm the Staff's evaluation which has been quoted above, i.e., that there were violations and concerns, that Applicant's response was adequate, and that there has been a continuous improvement in Applicant's QA performance."

In light of the above material it is submitted that matters of public record of Inspection and Enforcement personnel, the NRC Staff in general, and the various NRC Boards, have found that Duke's management performs in a satisfactory manner with respect to assuring the public health and safety.

ATTACHMENT F

SUMMARY OF RADIOACTIVE WASTE RELEASES  
AND IN-PLANT PERSONNEL EXPOSURE

The purpose of this section is to compare Oconee Nuclear Station radioactive waste release data with applicable standards and compare in-plant personnel exposures with national data.

Oconee Nuclear Station  
Summary of In-Plant Personnel Exposure

1.	Average Person-Rem Per Megawatt-Year	1969-1975*
	All Nuclear Station - High	21.9
	All Nuclear Station - Low	0.5
	Average of All Nuclear Stations	2.9
	Oconee Nuclear Station	0.5
2.	Average Person-Rem Per Unit	1969-1975*
	All Nuclear Station - High	1167
	All Nuclear Station - Low	147
	Average of All Nuclear Stations	433
	Oconee Nuclear Station	205

\* Data extracted from NUREG-0109, Occupational Radiational Exposure of Light Water Cooled Power Reactors 1969-1975, ONRR, U. S. Nuclear Regulatory Commission.

Oconee Nuclear Station  
Summary of Radioactive Wastes Release Data

1. Radioactive Waste Release as a Percent of Technical Specification Objectives.

	<u>1974</u>	<u>1975</u>	<u>1976</u>
Gaseous Wastes	34.8	29.8	86
Liquid Wastes	11.8	28.7	46

2. Resulting Environmental Doses from 1976 Radioactive Waste Releases Under Present Technical Specifications (MREM)

	<u>Whole Body</u>	<u>Thyroid or Other Organ</u>
Gaseous Waste		
Tech Spec Limit	10.	5.
Calculated Dose	9.5	3.1
Liquid Wastes		
Tech Spec Limit	5.	5.
Calculated Dose	3.4	3.4

3. 1976 Environmental Doses Expressed as a Percent of 10CFR20 Limits.

	<u>Whole Body</u>	<u>Thyroid</u>
Gaseous	1.9	0.6
Liquid	0.7	0.6