

INSTRUCTIONS FOR UPDATING YOUR ER

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## 6.2

APPLICANT'S PROPOSED OPERATIONAL MONITORING PROGRAMS

The objective of the operational monitoring programs is to obtain comprehensive information on environmental conditions near the Wm. H. Zimmer Nuclear Power Station, Unit 1 (ZPS-1) for comparison with data obtained by baseline and preoperational environmental programs. This comparison will document environmental changes that result from plant operation. This section outlines preliminary plans for monitoring radiation, thermal and chemical discharges, meteorological phenomena, and ecological characteristics. The programs will monitor natural phenomena and plant-related changes in the air and surface waters on the plant site and nearby off-site areas.

Commercial operation of ZPS-1 is scheduled for January 1979. Since monitoring systems design and monitoring equipment selection is not final and since final selection of sampling locations depends upon anticipated results from the preoperational monitoring programs, the descriptions provided here shall convey the intent and objectives of the program. Detailed descriptions of the monitoring systems, equipment sensitivity and location, plus sampling methodology and corrective action to be taken if a limiting condition is exceeded appear in this section.

6.2.1 Radiological Monitoring6.2.1.1 Plant Effluent Monitoring System

The Process Radiation Monitoring System in conjunction with the in-plant sampling program is designed to monitor and record radiation levels in all plant effluents and to isolate effluent streams containing radioactivity when activity levels reach a preset limit.

This system consists of numerous channels with detectors and numerous sampling points located throughout the plant to monitor the gaseous and liquid effluent streams. Effluent paths include the service water discharge, the reactor building vent, and the Standby Gas Treatment Discharge Vent.

6.2.1.1.1 Liquid-Discharge Monitors

The service water system discharge will be monitored by detectors in the process liquid radiation monitor system. The processed liquid radwaste will be discharged into the service water system. The monitor channel will consist of a gamma sensitive detector, a main control room mounted monitor/indicator and a main control room high level instrument failure alarm. The instrument measurement range is a function of source geometry, background radiation levels, shielding, energy levels, sampling method, etc. Typical instrument ranges for these monitors will be 10 to  $10^6$  counts per minute. The monitoring channel will be designed to detect anticipated release rates where practical.

#### 6.2.1.1.2.2.4 Portable Air Samplers

Ten high-volume and six low-volume portable air sampling units are provided at the plant for the collection of short-term or long-term grab samples, as required. The units are used to collect particulate and iodine activity on appropriate filter media, which are analyzed for radioactivity in the station laboratory.

#### 6.2.1.2 Environmental Radiological Monitoring

The environmental radiological monitoring program will closely resemble the preoperational program (Sect. 6.1.5) and may be modified as necessary to account for measured station releases and other parameters that might affect normal exposure pathways. The operational program will have these objectives:

- a. to detect sudden changes and evaluate long-term trends in environmental radioactivity levels;
- b. to assess actual or potential exposure of man and other biota to radioactive materials or radiation present in the environment;
- c. to determine the fate of contaminants released by ZPS-1.

The operational monitoring program will take effect at the time of fuel loading. During the initial stage of plant operation, the monitoring program will be as comprehensive and designed to test any projected correlations between radioactive effluents and levels in the environment. Table 6.2-1 shows the proposed changes in the preoperational program for operational monitoring. If radioactivity levels in the environment are sufficiently low and if correlation exists between predicted and actual levels in the environment, the operational monitoring program will be reduced, retaining emphasis on indicator organisms and selected media. Compliance with regulations could then be demonstrated based on plant effluent data, site specific environmental radionuclide transfer models, and dose calculation models. Figures 6.1-6 and 6.1-7 show proposed monitoring/sampling locations for the radiological monitoring program.

#### 6.2.2 Chemical Effluent Monitoring

Samples will be collected and analyzed for parameters as required by the NPDES Permit issued and enforced by the Ohio Environmental Protection Agency.

6.2.3 Thermal Effluent Monitoring

The thermal effluent monitoring program will include instrumentation for continuous monitoring as required by the NPDES Permit.

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6.2.4 Meteorological Monitoring

Meteorological monitoring will continue throughout the life of the plant. The data collection program will be similar to the monitoring program described in Section 6.1.3.1. The rationale for the choice of locations and heights at which meteorological monitoring is conducted is explained in Section 6.1.3.1. The possibility that the cooling tower plume might reach the ground during downwash conditions, and the associated potential for fog or icing occurrence is an area of concern. Three areas where the cooling tower plume might cause problems are the proposed switching yard, about 500 ft east of the cooling tower; Moscow, Ohio, about 1 km (0.62 miles) southeast of the tower; and the Ohio River, about 0.3 km (0.1 miles) west of the cooling tower. Utilizing the results of

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Overcamp and Hoult (Ref. 6.2.1) it was determined that plume downwash would occur when wind speeds exceeded 12 meters per second (27 mph) during neutral stability and 15 mps (34 mph) for stable conditions. For wind speeds greater than 12 mps the plume will be caught in the wake and be brought down to the ground at a distance of two to four tower heights away. For unstable air, the plume will be short enough to cause no concern. Since stable conditions, such as stability category F, do not occur with such high winds, this situation can be safely neglected. In addition, wind speeds of 12 mps will occur less than one percent of the time. Thus, under extreme conditions of neutral stability, moderate wind and high humidity, the fog potential in the vicinity of the plant site may be increased 5 to 10 hours per year. About one or two of these hours might be expected to occur with temperatures low enough to cause light icing. These conditions are likely to be associated with the passage of a storm system however, in which clouds and light fog or rain may already exist. Thus, the moisture from the cooling tower plume would only contribute to moisture already present.

#### 6.2.4.1 Climatology

Climatological data are recorded at several U.S. Weather Bureau Offices near the Zimmer site. The two nearest 1st order National Weather Service stations (from which data are used in this report) are located approximately 25 miles northwest of the site. These are the Greater Cincinnati Airport Weather Bureau Station (Covington, Kentucky), and Abbe Observatory (Cincinnati, Ohio). Climatological records at these stations include temperature, wind cloud cover and fog data, along with other special reports. Limited precipitation and temperature data are also available for various locations, (one being Chilo Dam #34 which is used in this report) within a 100 mile radius of the Zimmer site.

#### 6.2.5 Ecological Monitoring

##### 6.2.5.1 Aquatic Monitoring

The aquatic operational monitoring program will be as required by the NPDES Permit.



#### 6.2.5.2 Terrestrial Monitoring

A monitoring program will be conducted to assess three areas of potential impact: (1) effects of cooling tower drift, (2) baseline and operational sound levels, and (3) construction and maintenance of transmission lines. In addition, any occurrence of an unusual or important event such as excessive collisions of birds with the natural draft cooling tower will be recorded as described in Section 4.1 of the Environmental Protection Plan (Appendix B to this report).

##### 6.2.5.2.1 Cooling Tower Drift

The terrestrial operational monitoring program to assess the impact of cooling tower drift will consist of aerial photographic surveys of vegetation including low altitude color infrared photography.

Detailed descriptions of methods, sampling dates, and reporting requirements appear in Sections 4.2.1 and 5.4 of the Environmental Protection Plan (Appendix B to this report).

In addition, soil samples will be collected in triplicate at the time of the photographic surveys to determine soil conductivities. Conductivity readings ( $\mu\text{mho/cm}$ ) will be expressed as ppm of total soluble salts and will include a mean and standard error for each vegetation type.

##### 6.2.5.2.2 Sound Level Survey

Surveys will be conducted to quantify the background and the operational sound levels that exist at various locations around the site. The selection, calibration, and use of equipment; the conduct of the surveys; and the analysis and reporting of data will conform to the provisions of the applicable American National Standards Institute standards. Detailed descriptions of methods, survey locations, types of measurements, and reporting requirements appear in Sections 4.2.2 and 5.4.1 of the Environmental Protection Plan (Appendix B to this report).

##### 6.2.5.2.3 Construction and Maintenance of Transmission Lines

Details of the transmission corridor inspection program are discussed in Section 4.2.3 of the Environmental Protection Plan (Appendix B to this report).



APPENDIX B

TO FACILITY OPERATING LICENSE NO. DPR-  
WILLIAM H. ZIMMER NUCLEAR POWER STATION

CINCINNATI GAS & ELECTRIC COMPANY

DOCKET NO. 50-358

ENVIRONMENTAL PROTECTION PLAN

(NONRADIOLOGICAL)

WILLIAM H. ZIMMER  
NUCLEAR POWER STATIONENVIRONMENTAL PROTECTION PLAN  
(NONRADIOLOGICAL)

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## 1.0 Objectives of the Environmental Protection Plan

The Environmental Protection Plan (EPP) is to provide for protection of environmental values during construction and operation of the nuclear facility. The principal objectives of the EPP are as follows:

1. Verify that the station is operated in an environmentally acceptable manner, as established by the FES and other NRC environmental impact assessments.
2. Coordinate NRC requirements and maintain consistency with other federal, state, and local requirements for environmental protection.
3. Keep NRC informed of the environmental effects of facility construction and operation and of actions taken to control those effects.

Environmental concerns identified in the FES which relate to water quality matters are regulated by way of the licensee's NPDES permit.

## 2.0 Environmental Protection Issues

In the FES-OL dated June 1977, the staff considered the environmental impacts associated with the operation of the William H. Zimmer Nuclear Power Station. Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

### 2.1 Aquatic Issues

The NRC will rely on the NPDES permit issued and enforced by the Ohio Environmental Protection Agency for regulation of matters involving water quality and aquatic biota.

### 2.2 Terrestrial Issues

Those issues requiring monitoring programs identified previously and not yet completely resolved are listed below.

1. Detection of long-term or sudden changes in vegetation due to operation of the station (FES-OL Sections 6.2.3 and 6.3.3).
2. The applicant will conduct a baseline sound level survey after construction activity has been completed, and a short duration operational sound level survey when the plant reaches its full operational level. Daytime as well as nighttime measurements will be taken to determine ambient day-night equivalent sound levels (Sections 6.2.4 and 6.3.4).
3. Construction and maintenance of transmission lines (Sections 6.2.3 and 6.3.3).

NRC requirements with regard to remaining terrestrial issues are specified in Subsection 4.2 of this EPP.

### 3.0 Consistency Requirements

#### 3.1 Plant Design and Operation

The licensee may make changes in station design or operation or perform tests or experiments affecting the environment provided such changes, tests or experiments do not involve an unreviewed environmental question, and do not involve a change in the Environmental Protection Plan.\* Changes in plant design or operation or performance of tests or experiments which do not affect the environment are not subject to the requirements of this EPP. Activities governed by Section 3.3 are not subject to the requirements of this section.

Before engaging in additional construction or operational activities which may affect the environment, the licensee shall prepare and record an environmental evaluation of such activity. When the evaluation indicates that such activity involves an unreviewed environmental question, the licensee shall provide a written evaluation of such activities and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. When such activity involves a change in the Environmental Protection Plan, such activity and change to the Environmental Protection Plan may be implemented only in accordance with an appropriate license amendment as set forth in Section 5.3.

A proposed change, test or experiment shall be deemed to involve an unreviewed environmental question if it concerns (1) a matter which may result in a significant increase in an adverse environmental impact previously evaluated in the final environmental statement (FES) as modified by staff's testimony to the Atomic Safety and Licensing Board, supplements to the FES, environmental impact appraisals, or in any decisions of the Atomic Safety and Licensing Board; or (2) a significant change in effluents or power level [in accordance with 10 CFR Part 51.5(b)(2)] or (3) a matter not previously reviewed and evaluated in the documents specified in (1) of this Subsection, which may have a significant adverse environmental impact.

The licensee shall maintain records of changes in facility design or operation and of tests and experiments carried out pursuant to this Subsection. These records shall include a written evaluation which provide bases for the determination that the change, test, or experiment does not involve an unreviewed environmental question nor constitute a decrease in the effectiveness of this EPP to meet the objectives specified in Section 1.0. The licensee shall include as part of his Annual Environmental Operating Report (per Subsection 5.4.1) brief descriptions, analyses, interpretations, and evaluations of such changes, tests and experiments.

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\* This provision does not relieve the licensee of the requirements of 10 CFR §50.59.

### 3.2 Reporting Related to the NPDES Permits and State Certifications

Violations of the NPDES Permit or the State certification (pursuant to Section 401 of the Clean Water Act) shall be reported to the NRC by submittal of copies of the reports required by the NPDES Permit or certification. The licensee shall also provide the NRC with copies of the results of special studies (e.g., chlorine minimization, cooling system thermal performance, entrainment/impingement studies pursuant to Section 316(b) of the Clean Water Act) at the same time they are submitted to the permitting agency.

Changes and additions to the NPDES Permit or the State certification shall be reported to the NRC within 30 days following the date the change is approved. If a permit or certification, in part or in its entirety, is appealed and stayed, the NRC shall be notified within 30 days following the date the stay is granted.

The NRC shall be notified of changes to the effective NPDES Permit proposed by the licensee by providing NRC with a copy of the proposed change at the same time it is submitted to the permitting agency. The notification of a licensee-initiated change shall include a copy of the requested revision submitted to the permitting agency. The licensee shall provide the NRC a copy of the application for renewal of the NPDES permit at the same time the application is submitted to the permitting agency.

### 3.3 Changes Required for Compliance with Other Environmental Regulations

Changes in plant design or operation and performance of tests or experiments which are required to achieve compliance with other federal, state, or local environmental regulations are not subject to the requirements of Section 3.1.

#### 4.0 Environmental Conditions

##### 4.1 Unusual or Important Environmental Events

Any occurrence of an unusual or important event that indicates or could result in significant environmental impact causally related to plant operation shall be recorded and promptly reported to the NRC within 24 hours by telephone, telegraph, or facsimile transmissions followed by a written report per Subsection 5.4.2. The following are examples: excessive bird impaction events, onsite plant or animal disease outbreaks, mortality or unusual occurrence of any species protected by the Endangered Species Act of 1973, fish kills, increase in nuisance organisms or conditions and unanticipated or emergency discharge of waste water or chemical substances.

No routine monitoring programs are required to implement this condition.

##### 4.2 Environmental Monitoring

###### 4.2.1 Aerial Remote Sensing

Vegetation communities of the site and vicinity within 1 kilometer of the cooling towers in all directions shall be aerially photographed to detect and assess the significance of damage, or lack thereof, as related to cooling tower drift dispersions. Photography shall be done by aerial overflight during August or September. Monitoring shall include a program of low altitude color infrared photography. The scale for full coverage shall be adequate to enable identification of vegetative damage over relatively small areas of terrain. Some circumstances may warrant inspection of photographs discerning individual trees. Such scale should be adequate to resolve impacted features. Photographs shall be compared with baseline to ascertain changes in vegetation. Photographic interpretations shall be verified by ground inspection surveys to confirm areas of stress and nonstress. This program shall be terminated when data from two growing seasons after commencement of full power operation have been collected, provided that the data support hypotheses of no adverse effects. If adverse effects are detected in the monitoring program, it shall be extended. A report shall be submitted as part of the annual report following each aerial photographic monitoring period. The report shall contain a description of the program, results, and interpretative analyses of environmental impacts. Results reported shall contain information encompassing but not limited to the following: sampling date; time of day; film types; and one (1) set of resultant color transparencies encompassing an area within approximately a one kilometer (1 km) radius of the Unit 1 towers.



#### 4.2.2 Sound Level Survey

Surveys shall be conducted to quantify the ambient (i.e., background) and the operational sound levels that exist at various locations around the site. The ambient sound level survey shall be conducted during the time period when significant outdoor construction activity has ended, but prior to normal operation of the facility (preoperational phase), so that measured sound levels are not significantly affected by onsite activities associated with the power plant. The operational sound level survey shall be conducted as soon as practicable during the operational phase of the facility, when the cooling tower is operating with its design water flow rate.

For each of the surveys, sound level data shall be collected at several sites, the exact number and location to be selected by the licensee after consideration of (1) existing onsite and nearby offsite noise sources and barriers, and (2) noise sensitive land uses in the site vicinity (e.g., residences, schools, churches, cemeteries, hospitals, parks).

Each survey shall include data collected from each sampling site during the time of year when foliage of deciduous trees is present and also from the time of year when such foliage is largely absent. Data collected from each sampling site shall encompass both the daytime and the nighttime periods. Sampling shall include the identification of pure tones, if any, emanating from plant equipment during the operational phase.

The selection, calibration and use of equipment, conduct of the surveys, and the analysis and reporting of data shall conform to the provisions of the applicable American National Standards Institute standards. The conduct of the surveys for both phases shall be similar such that the results are comparable.

The results of the surveys conducted under this program shall be summarized, interpreted and reported in accordance with Section 5.4.1 of this EPP. The results shall include, for each sampling location for each survey, the daytime and nighttime equivalent sound levels, the background and intrusion sound levels (i.e., the  $L_{90}$  and  $L_{10}$ , respectively), and the range of sound levels recorded. A description of the pure tones found, if any, and their sources shall also be included in the results.

The final report of this program shall present a brief assessment by the licensee of the environmental impact of plant operation on the offsite acoustic environment, and shall describe the proposed mitigative measures, if any, to be taken to reduce the impact of plant noise levels on the offsite environment. This report shall also contain a list of all noise-related complaints or inquiries received by CG&E concerning the William H. Zimmer station subsequent to issuance of the operating license along with a description of the action taken by CG&E to resolve these complaints or inquiries.

This program shall terminate upon completion of the collection of the specified sound level data for each phase and submission of an acceptable final report.

#### 4.2.3 Construction and Maintenance of Transmission Lines

The transmission corridor inspection program shall be the same as specified in the preoperational monitoring requirements. Routine annual inspections of corridors may terminate when full redress and recovery from construction impacts have been achieved. Subsequent maintenance activities shall be inspected and compliance with applicable portions of Sections 4 and 5 of the OL-FES statement shall be ensured. Records of clearing, herbicide use and other maintenance actions shall be kept, and brief summary reports of such actions shall be submitted to the staff through regular operating reports during the life of the plant.

## 5.0 Administrative Procedures

### 5.1 Review and Audit

The licensee shall provide for review and audit of compliance with the Environmental Protection Plan. The audits shall be conducted independently of the individual or groups responsible for performing the specific activity. A description of the organization structure utilized to achieve the independent review and audit function and results of the audit activities shall be maintained and made available for inspection.

### 5.2 Records Retention

Records and logs relative to the environmental aspects of plant operation shall be made and retained in a manner convenient for review and inspection. These records and logs shall be made available to NRC on request.

Records of modifications to plant structures, systems and components determined to potentially affect the continued protection of the environment shall be retained for the life of the plant. All other records, data and logs relating to this EPP shall be retained for five years or, where applicable, in accordance with the requirements of other agencies.

### 5.3 Changes in Environmental Protection Plan

Request for change in the Environmental Protection Plan shall include an assessment of the environmental impact of the proposed change and a supporting justification. Implementation of such changes in the EPP shall not commence prior to NRC approval of the proposed changes in the form of a license amendment incorporating the appropriate revision to the Environmental Protection Plan.

### 5.4 Plant Reporting Requirements

#### 5.4.1 Routine Reports

An Annual Environmental Operating Report describing implementation of this EPP for the previous year shall be submitted to the NRC prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following issuance of the operating licenses. The period of the first report shall begin with the date of issuance of the operating license for the first operational unit.

The report shall include summaries and analyses of the results of the environmental protection activities required by Subsection 4.2 of this Environmental Protection Plan for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous nonradiological environmental monitoring reports, and an assessment of the observed impacts of the plant operation on the environment. If harmful effects or evidence of trends towards irreversible damage to the environment are observed, the licensee shall provide a detailed analysis of the data and a proposed course of action to alleviate the problem.

The Annual Environmental Operating Report shall also include:

1. A list of EPP noncompliances and the corrective actions taken to remedy them.
2. A list of all changes in station design or operation, tests, and experiments made in accordance with Subsection 3.1 which involved a potentially significant unreviewed environmental issue.
3. A list of nonroutine reports submitted in accordance with Subsection 5.4.2.

In the event that some results are not available by the report due date, the report shall be submitted noting and explaining the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

#### 5.4.2 Nonroutine Reports

A written report shall be submitted to the NRC within 30 days of occurrence of nonroutine event. The report shall (1) describe, analyze, and evaluate the event, including extent and magnitude of the impact and plant operating characteristics, (2) describe the probable cause of the event, (3) indicate the action taken to correct the reported event, (4) indicate the corrective action taken to preclude repetition of the event and to prevent similar occurrences involving similar components or systems, and (5) indicate the agencies notified and their preliminary responses.

Events reportable under this subsection which also require reports to other federal, state or local agencies shall be reported in accordance with those reporting requirements in lieu of the requirements of this subsection. The NRC shall be provided a copy of such report at the same time it is submitted to the other agency.