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Carolina Power & Light Company

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R. B. RICHEY, Manager
Nuclear Services Department

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
DOCKET NOS. 50-325 & 50-324/LICENSE NOS. DPR-71 & DPR-62

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23
RESPONSE TO NRC INSPECTION REPORT NOS. 50-261/88-26, 50-325/88-33, AND
50-324/88-33

Gentlemen:

Carolina Power & Light Company (CP&L) provides this response for the Brunswick Steam Electric Plant (BSEP) and the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2) to the NRC special, announced assessment in the area of the licensee's program to maintain occupational exposures as low as reasonably achievable (ALARA).

Carolina Power & Light Company appreciates the recognition given to the strengths in the ALARA Program as implemented and maintained by the two plants. NRC support of our continuing efforts to improve program effectiveness in reducing collective doses at our nuclear facilities is encouraging and welcome. We concur that the cumulative collective doses of the BSEP and HBR2 have been higher than desired and we will continue to focus management attention and involvement in the ALARA Program to further reduce the doses.

Carolina Power & Light Company is serious in its commitment to maintain personnel exposures as low as reasonably achievable throughout the company. Significant resources have been and will continue to be dedicated to support the management of effective plant ALARA programs. Each plant is responsible for minimizing personnel exposure wherever practicable and each Project Department Manager is accountable for satisfactory program performance as evidenced by continued downward trends. The Company has established ALARA goals which are tracked as performance indicators. These goals are updated annually and approved by senior company management as achievable yet challenging targets.

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Weaknesses Identified by the NRC:

Unchallenging current and future annual exposure estimates. (BSEP)

Less than full management involvement in the ALARA program as evidenced by lack of management direction in achieving established goals. (BSEP and HBR2)

Consistently high numbers of personnel on site with measurable exposure relative to similar plants. (BSEP and HBR2)

An ineffective audit program which results in a lack of problem identification and program improvements. (BSEP and HBR2)

Lack of an effective mechanism for identifying jobs which require additional ALARA reviews prior to exceeding the dose projections. (BSEP and HBR2)

Poor attendance at ALARA Subcommittee meetings resulting in limited input and support. (BSEP and HBR2)

Failure to formally incorporate lessons learned from previous outages into planning for future outages. (BSEP and HBR2)

Response

The weaknesses identified by the Inspection Report were further described in the body of each facility report as significant issues which should be addressed by the licensee to increase the effectiveness of the ALARA program. Each of the issues is addressed below and includes an assessment of each of the weaknesses including actions taken or planned to correct each and the dates of completion of the actions where appropriate.

BSEP: "Increased management support and involvement is needed in the ALARA Program" (50-325/88-33-01); HBR2: "Management was not involved in managing collective dose on a frequency to achieve established dose goals" (50-261/88-26-01)

BSEP

Brunswick has created a Plant Management ALARA Review Committee comprised of the following management representatives:

- Plant Manager (Committee Chairman)
- Engineering and Construction Manager
- Outage Management Manager
- Operations Manager
- Maintenance Manager
- Environmental and Radiation Control Manager
- Technical Support Manager
- Construction Unit Manager
- Engineering Support Unit Manager
- QA/QC Director

The Brunswick Plant Management ALARA Review Committee has held scheduled bi-weekly meetings to discuss radiation exposure goals, successes, and problems, and to assign action items for resolution and follow-up when appropriate. This Committee provides a forum for plant management to receive up-to-date information and have an in-depth involvement in the ALARA Program. A newly created ALARA Committee, which replaces the previous ALARA Subcommittee, reports directly to the Plant Management ALARA Review Committee and provides information for review and action.

HBR2

The H. B. Robinson Environmental and Radiation Control Unit distributes Weekly Summaries to site management, detailing exposure goal status by group as well as by scheduled and nonscheduled tasks. These weekly reports also provide the site exposure goal status to date. In addition, plant supervision receives Individual Personnel Exposure Reports. The combination of the Weekly Summaries and Individual Personnel Exposure Reports keeps management and supervision aware of the current exposure status as it relates to exposure goals. The summaries and reports identify where the exposure has been received and by whom. When an exposure approaches or exceeds the established goal, plant management is responsible for imposing any necessary directives or corrective actions to control the situation.

The Manager of Environmental and Radiation Control at HBR2 presents a status of the cumulative radiation exposure to date during every Unit Manager's meeting. Typically, the meeting is held three days each week. Significant increases in the numbers presented are discussed in detail as to appropriate cause, work group(s) involved, and possible ways to limit future increases.

H. B. Robinson Unit 2 is currently evaluating the Brunswick concept of Plant Management ALARA Review Committee as well as other alternate means to more fully involve management in the ALARA Program. This evaluation and any appropriate programmatic and administrative changes will be implemented by June 30, 1989.

BSEP: "Annual exposure goals are not challenging and should be established at or below the industry norm" (50-325/88-33-02)

BSEP

Man-rem goals for the BSEP are established in accordance with the site procedure for project radiation exposure budgeting. The objective of this process is to determine the minimum amount of radiation exposure required to operate the plant. This radiation exposure is determined on an annual basis. The process takes into account outage projects, routine and special maintenance, and support activities such as health physics and operation. Carolina Power & Light Company believes the man-rem goals are both realistic and challenging. The exceeding of the goal in 1985 was caused by outage projects. Between 1985 and 1988, however, the actual radiation exposure was over the goal for that time period by only two percent.

The BSEP exceeded the 1988 annual goal by 147 man-rem, nine percent, primarily because of work required on the reactor recirculation piping and numerous valve repairs. A large portion of this required work has carried over into

1989, resulting in the need to raise the tentative 1989 BSEP annual goal to 1145 man-rem. Carolina Power & Light Company believes the 1989 BSEP annual goal to be near the 1988 average man-rem for BWRs in the United States. In light of the necessary scope of work required to complete the present outage and the work anticipated for the outage scheduled in the fall of 1989, CP&L believes this revised annual goal is realistic yet very challenging.

BSEP: "The number of personnel with measurable exposure is consistently higher than the industry norm" (50-325/88-33-03); HBR2: "The number of personnel accessing the RCA with measurable exposure is consistently higher than the industry norm" (50-261/88-26-02)

BSEP

Over the past several years, BSEP has gone through multiple major modifications on each of the two units, for example: torus upgrade, main condenser re-tubing, RWCU upgrade, recirculation piping induction heat stress improvement, weld overlays, mechanical stress improvement, and service water modifications. The large amount of work accomplished has required a large work force. Carolina Power & Light Company anticipates the end of this modification program and future planned outages are scheduled to be shorter, with less work. Studies have been initiated to review the scope and size of the required work force with an intent to reduce the number of personnel. The studies will be completed prior to 1990.

Brunswick does not believe it to be in the best interest of exposure reduction to establish goals that are impossible to meet, due to our work scope (i.e., industry norm). Brunswick's five-year forecast does show that our exposure will be below the industry norm.

HBR2

Over the past four years, HBR2 has made an effort to limit the number of workers utilized to perform operation, maintenance, and outage duties. H. B. Robinson Unit 2 will continue efforts to limit the onsite work force and will evaluate proposed jobs and modifications even more thoroughly, to reduce the amount of required work without jeopardizing nuclear or personnel safety. Activities unrelated to nuclear or personnel safety will be highly scrutinized as to need and benefit. Greater emphasis will be placed on preplanning required jobs and work activities. In addition, management will reinforce work groups' awareness that each group is accountable for minimizing the number of personnel in its work force while maintaining individual exposures ALARA.

BSEP: "The audit program is not resulting in ALARA program improvements" (50-325/88-33-04); HBR2: "The licensee's audit program is not resulting in ALARA program improvements" (50-261/88-26-03)

BSEP and HBR2

In the past, corporate quality assurance audits have dealt primarily with regulatory and procedural compliance rather than assessing the potential for programmatic improvements. Steps have been taken to add assessments to the audit program by utilizing experienced technical personnel from other plants

and departments and focusing more attention on overall program effectiveness. The practice of using technical specialists for corporate quality assurance audits was begun in 1985, expanded in 1987 and again in 1988, and will be continued in the future.

In 1988, the audit module used to perform quality assurance audits of the Environmental and Radiation Control Program was strengthened in the area of radiation exposure minimization. A complete revision of the company's "Radiation Control & Protection Manual" was implemented in July of 1988 and contains a chapter on ALARA with a section requiring periodic ALARA assessments. In addition, another revision to the manual is expected to be implemented in the first quarter of 1989 which further defines the company's Health Physics Assessment Program and the responsibility for conducting these assessments.

Carolina Power & Light Company has taken action to improve the effectiveness of the internal audit and assessment of the plant ALARA Programs and will continue to monitor the effectiveness of these audits and assessments and modify them as needed in the future to insure they continue to identify opportunities for improvement.

BSEP: "A mechanism should be established to require additional ALARA reviews prior to exceeding dose projections" (50-325/88-33-05)

BSEP

The BSEP has a mechanism to require additional ALARA reviews prior to exceeding dose projections. The ALARA staff monitors projects daily to ensure early identification of problems and development of satisfactory corrective actions to preclude the need to stop work. Project coordinators and site managers are frequently updated on the ALARA status of projects within their responsibility. The ALARA staff has the authority to stop any work should the staff believe a project's exposure is out of control. Plant supervision has been successful in effecting necessary changes to improve ALARA performance without the need to have stopped any project.

HBR2

H. B. Robinson Unit 2 instituted a pilot program for the 1988 Refueling Outage to provide for additional review of jobs approaching or exceeding the established exposure goals. This program consisted of continual tracking of exposure for tasks estimated to exceed one man-rem. The total task exposure was projected over the scheduled duration of the task. When a job reached 50 percent of the total estimated exposure, a review of radiation exposure performance was conducted with the responsible supervisor. If the actual job exposure remained within 120 percent of the projected day-to-day exposure, the job was reviewed by the ALARA staff weekly. If the actual job exposure exceeded 120 percent of the projected day-to-day exposure, the job was reviewed by the ALARA staff daily. If a job was considered out of control from a radiation exposure perspective, the Environmental and Radiation Control Manager had the authority to stop the work or perform reviews and effect corrective action as necessary to resolve the situation.

The pilot program at HBR2 has appeared to be quite successful in controlling job exposures during the Refueling Outage. The program will be further refined and formalized before the end of 1989.

BSEP: "The ALARA Subcommittee meetings have not been well attended by members or management" (50-325/88-33-06); HBR2: "ALARA Subcommittee meetings have not been well attended by members or management" (50-261/88-26-04)

BSEP

The Plant Management ALARA Review Committee has been created at BSEP to provide management with the opportunity and responsibility for discussing exposure goals, successes, and any problems with the ALARA Program. The former Plant Nuclear Safety Review Committee ALARA Subcommittee has been replaced with the ALARA Committee. The ALARA Committee is a standing committee reporting directly to the Plant Management ALARA Review Committee and provides input on Plant ALARA concerns from the worker level. The ALARA Committee Chairman attends the Plant Management ALARA Review Committee meetings as a direct interface between management and the ALARA Committee. This organization provides for direct, in-depth involvement in the Plant ALARA Program by management.

HBR2

H. B. Robinson Unit 2 recently implemented methods of documenting work group attendance in the minutes of the ALARA Subcommittee meetings. Plant management has been made aware of the concern over ALARA Subcommittee meeting attendance and has accepted responsibility to ensure adequate attendance in the future. As stated earlier in the response, HBR2 is evaluating other means to increase management involvement in the ALARA Program.

BSEP: "Exposures resulting from rework have not been adequately identified and tracked" (50-325/88-33-07)

BSEP

The Brunswick Maintenance, Technical Support, and Construction Units have each implemented programs to identify and track rework. The Construction Unit identifies projects requiring additional man-hours and defines the cause(s). The Technical Support Unit looks mainly at In-service Inspection projects, since this area is their only responsibility where rework results in additional radiation exposure. The Maintenance Unit has recently effected a major revision of their tracking system and has expanded the definition of rework.

The BSEP rework tracking systems were developed in 1988. When sufficient data is collected for an adequate evaluation of the systems' effectiveness, they will be reviewed and any corrective measures or improvements needed will be implemented prior to the end of the Unit 2 outage currently scheduled for September 9, 1989.

BSEP: "The process of estimating man-hours needed to perform a job are frequently overestimated and result in discrepancies between estimates and actual man-hours worked" (50-325/88-33-08); HBR2: "The process of estimating man-hours needed to perform a job are frequently overestimated and result in discrepancies between estimates and actual man-hours worked" (50-261/88-26-05)

BSEP and HBR2

The process of estimating man-hours needed to perform a job is complicated by the need to remove or disassemble damaged or malfunctioning components prior to determining the extent of repairs required. Both plants have implemented a computer based Automated Maintenance Management System, the AMMS, for tracking and controlling maintenance work activities. The AMMS provides a component history file containing actual man-hours expended in performing specific tasks.

The continued development of the AMMS data base and utilization of AMMS information for future job planning will allow the Maintenance Supervisor and planner to more accurately estimate man-hours required and man-rem expected. Additionally, Radiation Work Permits for similar tasks are reviewed. The information from the review is then used to improve dose saving techniques and reduce exposure costs each time a job is performed.

Both plants will continue to review the actual versus projected man-hour discrepancies to identify the cause(s) and effect corrective measures.

BSEP: "A significant amount of exposure is accumulated under general radiation work permits and therefore, not receiving specific ALARA review" (50-325/88-33-09)

BSEP

During past refueling and maintenance outages at BSEP, a significant amount of radiation exposure has been accumulated under general area activities such as housekeeping, restocking protective clothing bins, plant tours, and so on. During the present outage, entries into the outage unit are made on a Radiation Work Permit which has had an ALARA review. This has eliminated the large amount of exposure on the general area radiation work permit.

Brunswick Plant Management is reviewing the current access control program with the intent of having one personnel access point for the entire power block, with entries made on Radiation Work Permits. This action is expected to be completed by June 30, 1989.

HBR2: "Lessons learned from outages are not formally incorporated into planning for future outages" (50-261/88-26-06)

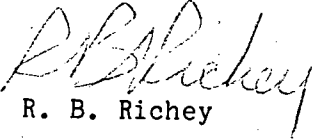
HBR2

H. B. Robinson Unit 2 utilizes a mechanism whereby lessons learned from past outages are identified and incorporated into the planning of future outages. The Outage Action Item list controlled by the Outage Planning and Scheduling group requires that items remain open until satisfactorily resolved. This mechanism has been effective in ensuring that historical data is used when

available for task planning and scheduling. In addition, post-outage ALARA reports provide documentation of jobs and exposures, suggestions for improvement, and other data of value in predictive exposure control. In the future, these planning tools will provide even greater detail as to problems encountered, the root cause(s), and the groups responsible.

This submittal provides the results of CP&L's assessment of each of the weaknesses identified by the NRC inspections of the Company's ALARA Program, as well as the issues found significant by the NRC inspection. Please contact Mr. L. I. Loflin at (919) 836-6242 if you have any questions regarding this submittal.

Yours very truly,


R. B. Richey

RBR/DAS/crs (204CRS)

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