

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

July 16, 1992

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 92-450
NL&P/JBL: R7
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
EXEMPTION REQUEST FROM THE REQUIREMENTS OF GDC-2
SERVICE WATER SYSTEM RESTORATION PROJECT

By letter dated May 18, 1992 (Serial No. 92-287), Virginia Electric and Power Company informed the NRC of plans to perform extensive refurbishment activities for restoration of certain portions of the service water system at North Anna Power Station. Implementation of the service water system repair and replacement project will require removing the surrounding earth and/or concrete encasement of certain portions of the normally buried service water headers, electrical system duct banks, and the emergency diesel generators' fuel oil supply piping. As a result, the normal design basis protection against natural phenomena afforded by the earth and concrete encasement will be temporarily removed from these components. Therefore, pursuant to 10 CFR 50.12(a), Virginia Electric and Power Company requests a temporary exemption from the requirements of 10 CFR Part 50, Appendix A, Criterion 2 (GDC-2), "Design basis for protection against natural phenomena," for Phase I of the service water system restoration project at North Anna Power Station.

As discussed in our May 18, 1992 letter, the activities associated with the service water system restoration project have been divided into two portions, designated as Phase I and Phase II. The Phase I activities consist of an extensive refurbishment program for approximately 2100 linear feet of buried or concrete encased 24-inch diameter service water piping. Approximately 1500 feet of the pipe will be repaired and coated, and the remaining 600 feet will be replaced. This piping primarily consists of the stagnant supply and return headers for the Unit 1 and Unit 2 recirculation spray heat exchangers, the auxiliary service water supply and return headers from Lake Anna, and the normally-flowing supply and return headers for the Unit 1 and Unit 2 component cooling water heat exchangers. Phase II of the service water restoration project includes potential reservoir relining, internal recoating of the 36-inch service water headers (which are currently coated), and repair and/or replacement of other accessible piping. These efforts will be evaluated and pursued as necessary at a later time.

9207200226 920716
PDR ADOCK 05000338
PDR

Accl
11

The Phase I work activities will be performed in five stages. The current schedule for Phase I is provided in Attachment 1. The general time frames for the five stages of Phase I are 1) during the Unit 1 steam generator replacement outage scheduled to begin in January 1993, 2) during the dual unit operating period between the Unit 1 steam generator replacement outage and the 1993 Unit 2 refueling outage, 3) during the Unit 2 refueling outage scheduled to begin in September 1993, 4) during a portion of the dual unit operating period throughout most of 1994, and 5) during the Unit 1 and Unit 2 refueling outages in 1994 and 1995, respectively. A temporary exemption from the requirements of GDC-2 is required for the first four stages of Phase I of the project.

As discussed between Mr. H. N. Berkow of the NRC and Mr. M. L. Bowling, we are submitting a single exemption request for Phase I of the project. However, the technical basis for the requested exemption provided in the attachments to this letter covers only those activities to be performed during Phase I, Stage 1 of the project. Additional information applicable to the other stages of the project will be provided in supplemental submittals.

The provisions of 10 CFR 50.12 provide that specific exemptions from the requirements of 10 CFR Part 50 may be granted provided the exemptions are authorized by law, are consistent with the common defense and security, are accompanied by special circumstances, and do not present an undue risk to the public health and safety. Virginia Electric and Power Company concludes that the activities sought to be conducted under this exemption request are clearly authorized by law and are consistent with the common defense and security.

As described in 10 CFR 50.12(a)(2), special circumstances must be present for the NRC to consider granting an exemption. Three of the examples of special circumstances stated in the regulation apply in this case. The first special circumstance is that compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted. The second special circumstance is that the completion of the project as proposed would result in an overall benefit to the public health and safety that compensates for any decrease in safety that may result from the granting of the exemption. The third special circumstance is that the exemption provides only temporary relief from the applicable regulation and that the licensee has made good faith efforts to comply with the regulation. A description of these special circumstances is provided in Attachment 2 to this letter.

In addition, in order to implement the service water system restoration project, we also intend to rely on Technical Specification 3/4.7.4.1 that permits us to remove one service water header from service for up to 168 hours in support of service water upgrade activities. Our restoration plan will require six entries into the 168-hour Action Statement during the first stage of the project (i.e., during the Unit 1 steam generator replacement outage). Additional entries will be required to complete the remainder of the Phase I restoration activities.

Because multiple entries into the Action Statement will be required, we have developed appropriate compensatory actions and contingency measures to ensure availability of required safety functions. These compensatory actions and contingency measures are discussed in the attached evaluation. As part of our evaluation supporting the restoration project, we have confirmed that the analyses and assumptions supporting Technical Specification 3/4.7.4.1 remain valid for all stages of the Phase I restoration project.

Attachment 2 to this letter provides detailed information and the basis for the exemption request for Phase I, Stage 1 of the project. The detailed discussion addresses the scope of work to be performed in conjunction with the North Anna Unit 1 steam generator replacement outage and the activities that require exemption for the period beginning approximately thirty days prior to the outage and ending approximately thirty days after the outage. The attachment provides an evaluation that ensures the effects resulting from the implementation of this temporary exemption will be acceptable. This evaluation includes compensatory actions and contingency measures to provide added assurance of the safe operation of the facility during the exemption period.

The changes to the facility as a result of work performed as Phase I, Stage 1 of the service water system restoration project have been evaluated in accordance with the requirements of 10 CFR 50.59. The changes to the facility will be in the form of repairs to the piping and coating of piping to prevent further degradation. Conditional on the acceptance of this exemption request, it has been determined that the changes to the service water system as described in the attachment do not involve an unreviewed safety question. This exemption request has been reviewed and approved by the Station Nuclear Safety and Operating Committee and has been reviewed by the Management Safety Review Committee.

In as much as the criteria established by 10 CFR 51.21 may require the NRC to perform an environmental assessment for the regulatory action of granting this temporary exemption request, we have reviewed the proposed work activities and temporary plant modifications and determined that they will have no significant effect on the quality of the human environment. A discussion of our evaluation is provided in Attachment 2.

North Anna Unit 1 is currently scheduled to conclude Cycle 10 operation and begin the steam generator replacement outage on January 2, 1993. To support the current project and outage schedules, we request your approval of this exemption request by November 13, 1992. In addition, as discussed in our May 18, 1992 letter, we are providing our proposed schedule for submittal and approval of the supplemental information supporting this exemption request for the remaining stages of the Phase I restoration project. Stage 2 and Stage 3 activities will be evaluated concurrently. The additional details supporting the exemption request for Stages 2 and 3 will be provided by November 20, 1992 and NRC approval is requested by April 16, 1993. Supporting details for Stage 4 of the exemption request will be submitted by May 7, 1993 and NRC approval is requested by November 19, 1993.

If you have any questions or require additional information, please contact us.

Very truly yours,



for W. L. Stewart
Senior Vice President - Nuclear

Attachments

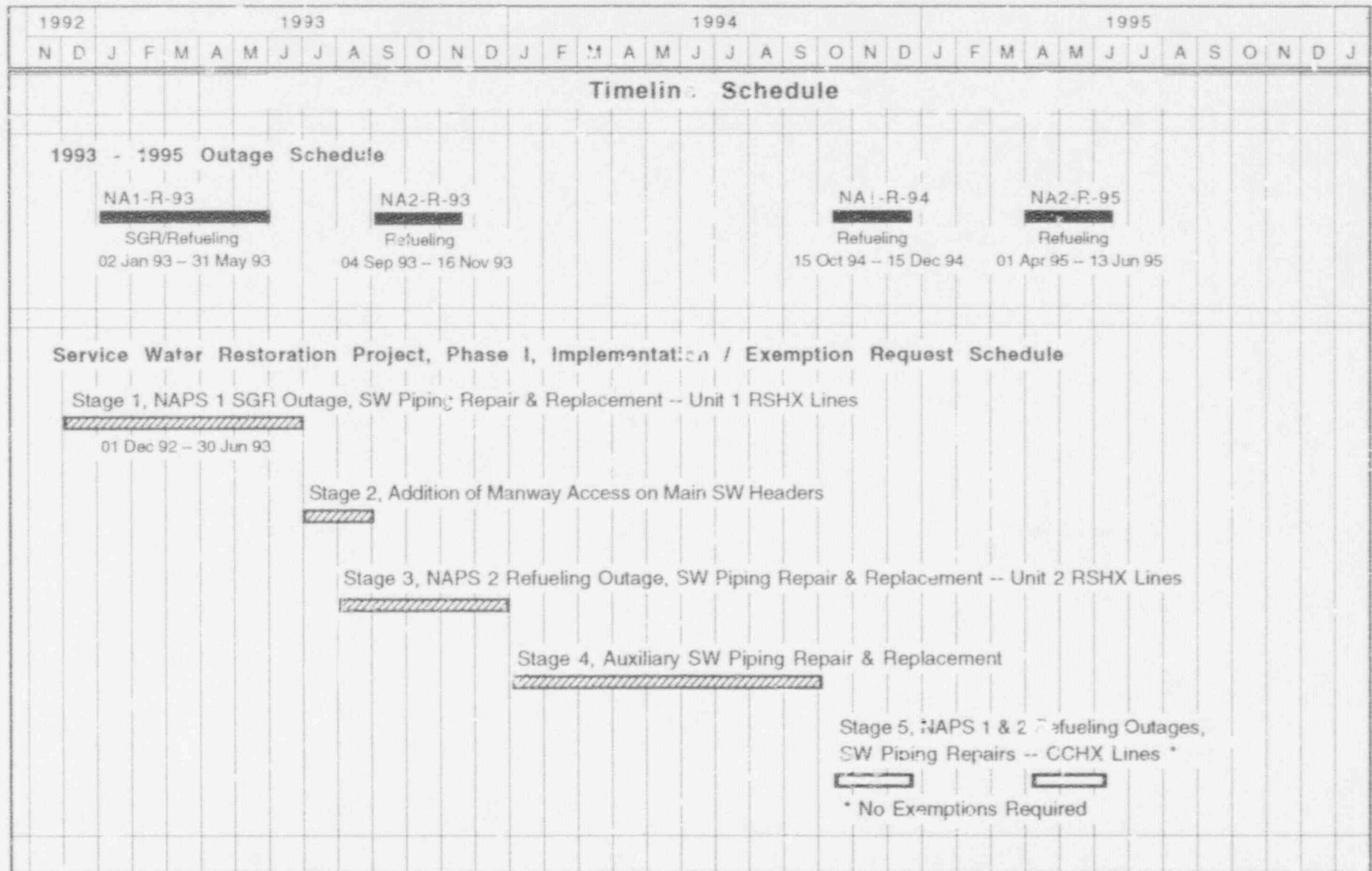
cc: U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Suite 2900
Atlanta, Georgia 30323

Mr. M. S. Lesser
NRC Senior Resident Inspector
North Anna Power Station

ATTACHMENT 1

NORTH ANNA POWER STATION

SERVICE WATER RESTORATION PROJECT -- PHASE I



ATTACHMENT 2

SERVICE WATER SYSTEM RESTORATION PROJECT

NORTH ANNA POWER STATION

VIRGINIA ELECTRIC AND POWER COMPANY

SERVICE WATER SYSTEM RESTORATION PROJECT NORTH ANNA POWER STATION

1.0 BACKGROUND

Virginia Electric and Power Company has performed an extensive evaluation of the material condition of the North Anna Power Station Units 1 and 2 service water system and has developed a comprehensive action plan to: 1) address and attempt to eliminate the root cause of the existing corrosion damage, 2) prolong the remaining life of currently acceptable portions of the system, and 3) provide repair and/or replacement designs for degraded sections.

The existence of pitting corrosion in the system has been known for some time. Only recently, however, have we been able to more accurately characterize microbiologically influenced corrosion (MIC) pitting depths and pit population densities in representative areas of the system. The 24-inch lines have been the most susceptible to general and pitting corrosion largely due to the stagnant and low flow conditions present. Of particular concern are the inaccessible 24-inch lines, i.e., those that are direct buried or encased in concrete.

Numerous upgrades have been implemented over the last decade in response to the initial discovery of system corrosion problems. These have included the replacement of smaller distribution lines, redesign and replacement of the spray arrays and headers in the service water reservoir, mechanical and chemical cleaning of service water piping, and improvements in chemical addition and control in the service water system. These efforts have contributed to significant improvements in the condition of service water system components and in water chemistry and water quality. However, in spite of these efforts, additional work is required to address the effects of MIC on the larger uncoated header piping which is buried in soil and encased in concrete.

Virginia Electric and Power Company is planning an extensive refurbishment program for the existing uncoated, buried, and concrete encased 24-inch service water pipe sections. This program consists of a combination of in-place cleaning, assessing, repairing, and internal coating of certain portions of piping and replacement of other portions of piping as described in the following section.

2.0 PLANNED MODIFICATIONS -- PHASE I, STAGE 1

Plans for the current system upgrade have been divided into two portions, designated as Phase I and Phase II. The specific upgrade activities were ranked based on such factors as safety significance, perceived benefits, current condition of components, cost and schedule. Those activities viewed as a high priority are grouped into Phase I, with lower priority items being Phase II. Phase I activities are further subdivided into five stages. These activities are planned 1) during the Unit 1 steam generator replacement outage currently scheduled to begin in January 1993, 2) during the concurrent operating period between the

Unit 1 steam generator replacement outage and the 1993 Unit 2 refueling outage, 3) during the Unit 2 refueling outage currently scheduled to begin in September 1993, 4) during the concurrent operating period throughout most of 1994, and 5) during the Unit 1 and Unit 2 refueling outages in 1994 and 1995, respectively. Phase I, Stage 1 activities are the focus of this submittal. Phase II, which includes potential reservoir relining, internal recoating of the 36-inch headers (which are currently coated), and repair and/or replacement of other accessible piping, will be evaluated and pursued in the future as necessary.

Phase I

The principal Phase I effort consists of an extensive clearing, assessing, repairing, internal coating, and replacement program for over 2100 linear feet of buried or concrete encased 24-inch diameter pipe. Approximately 1500 feet of pipe will be repaired and coated, and the remaining 600 feet of pipe will be replaced. This piping primarily consists of the stagnant supply and return headers to the Unit 1 and Unit 2 recirculation spray heat exchangers, the auxiliary supply and return headers from Lake Anna, and the normally-flowing supply and return headers to the Unit 1 and Unit 2 component cooling water heat exchangers.

The major difficulty to be encountered in addressing these pipe sections is a lack of access and confined conditions. The only built-in access ports into the 24-inch piping are located in the basement of the auxiliary building. The rest of the piping has no provision for access except via removal of certain expansion joints or valves. Personnel safety issues and confined area entry requirements make entries into the pipe for visual inspections or in-situ repairs difficult and time consuming activities.

The overall objective of this effort is to clean and restore internal pipe surfaces as required to assure continued structural integrity and apply a protective coating to minimize or eliminate further corrosion. In general, the refurbishment process which is discussed below will only be used on concrete encased pipe sections. Pipe sections which are direct buried (24-inch diameter) will be replaced with new piping similarly coated internally and protected externally from corrosion. Where possible, new accesses will also be added in strategic locations to facilitate pipe repair and coating as well as future inspections and maintenance.

Phase I, Stage 1 Description

The following sequence outlines the work activities required to perform interior restoration and coating work on these pipe sections during the upcoming Unit 1 steam generator replacement outage. The activities required for the interior restoration and coating work will be tested on a full-scale mock-up that will demonstrate under simulated conditions that the procedures, techniques, equipment and personnel can accomplish the objectives of the project. The mock-up will also be used to train and qualify personnel and will stress personnel safety requirements. The sequence of activities presented below

details the four major processes involving initial cleaning and surface preparation, condition assessment, repairing, and coating application and inspection.

1. Initial cleaning and surface preparation may involve a combination of hydrolazing (high pressure water blasting) and abrasive blasting or abrasive blasting alone. After removing gross deposits of dirt, mud, silt, debris and corrosion products, a production abrasive blast cleaning will be performed to prepare the surface for assessing general condition and corrosion damage of the pipe interior.
2. A manual in-line condition assessment technique will be used to accurately assess the actual pipe condition following cleanup. The technique will be a combination of visual, mechanical, and UT measurement based on the following considerations: personnel safety, technique accuracy and repeatability, relative ease of implementation, and overall cost effectiveness. The internal examination will be carried out to assess overall pipe conditions and identify the need for weld repairs based on required minimum wall thickness criteria.
3. Pitted areas identified by the condition assessment as requiring base metal repair will be filled by welding.
4. Following required weld repairs and final surface preparation, a coating system will be applied. Application of an epoxy patch compound will be applied to pits and other surface irregularities requiring filling to assist in the subsequent application of epoxy coating. Two coats of 100% solids epoxy coating will be applied over the prepared substrate. Final coating inspection will include continuity and final dry film thickness readings.
5. Each of the repair steps will be followed by inspection, as necessary, by certified inspectors to ensure quality.

Approximately 800 feet of concrete encased piping will be refurbished in this manner during this Phase I, Stage 1 effort. Approximately 160 feet (4 parallel lines approximately 40 feet in length) of buried piping will be exposed and replaced. This buried piping is located in the alleyway between the service building and the quench spray pump house. The new piping will be furnished with a similar epoxy coating on the interior and a protective coating / wrapping on the exterior. The new piping will also be cathodically protected. In addition, new manway accesses will be installed in the alleyway piping.

The replacement of this section of buried piping necessitates the excavation for which this exemption is being requested. In addition to the buried 24-inch service water lines, the alleyway also contains two concrete encased electrical duct banks, a concrete encasement which enclosed the 4-inch service water lines to the Unit 1 control room chillers, and various non-safety related storm drains. Appropriate temporary supports will be used to maintain seismic

qualification of the critical components. The existing structures which surround the alleyway on three sides will enclose the excavation with shoring needed on one end only.

3.0 IMPLEMENTATION SCHEDULE -- PHASE I, STAGE 1

In order to accomplish these activities during the scheduled outage, the buried portions of the service water supply and return lines to the Unit 1 containment recirculation spray heat exchangers must be excavated during a pre-outage period beginning approximately 30 days prior to the scheduled outage start date. Likewise, the exposed piping will be recovered by backfilling during a 30-day post-outage period. Therefore, based on the current North Anna Unit 1 outage schedule, we request the exemption period for Phase I, Stage 1 of the service water restoration project to be from December 1, 1992 until June 30, 1993.

The actual repair and replacement of the 24-inch service water piping will begin after the unit is shut down for the outage.

Attachment 1 to this letter is a timeline schedule diagram of the exemption periods requested for Phase I of the service water restoration project.

4.0 ENGINEERING EVALUATION -- PHASE I, STAGE 1

The work to be performed in conjunction with the North Anna Unit 1 steam generator replacement outage and the activities that require exemption for the period beginning thirty days prior to the outage and ending thirty days after the outage have been evaluated to ensure safe operation of the plant. As part of our engineering evaluation of these efforts, we have included specific contingency measures and compensatory actions to provide added assurance of the safe operation of the facility during each exemption period. In addition, as part of this evaluation, a Probabilistic Risk Assessment (PRA) was performed for both units by Halliburton NUS Environmental Corporation. A summary of the assessment results and a description of the compensatory actions and contingency measures are provided below.

A PRA approach was employed to verify that the activities associated with this improvement project will have an insignificant impact on safe plant operations. Based on the results of a comprehensive screening analysis, the evaluation focused on two major issues: 1) the excavation and backfill of the alleyway which will expose and subsequently re-cover the service water piping and certain electrical duct banks during Unit 1 and Unit 2 operation and 2) the use of the 168-hour Action Statement a total of six times during the Unit 1 steam generator replacement outage while Unit 2 is in operation.

In each case, a three step process was followed. First, an assessment was made to identify what potential hazards would be introduced during various project activities and what components could be vulnerable to damage as a result of

these potential hazards. Second, using the plant models being created for the North Anna Individual Plant Examination (IPE), the affect on core damage frequency (CDF) was obtained based on postulated component failures or unavailabilities. Third, based on critical items identified in the second step, a list of candidate contingency measures was evaluated to minimize the affect on CDF. Those contingency measures determined to be the most effective were chosen for implementation.

Probabilistic Risk Assessment (PRA) Results

The service water system restoration project PRA analysis is based on the current North Anna IPE fault tree and event tree models. The draft of the IPE is currently undergoing second level review and significant changes to models are not expected. The results of the PRA analysis show that implementation of the project as planned will have an insignificant effect on plant risk. Specific compensatory actions and contingency measures were included to further enhance safe implementation. These measures are targeted at three areas:

- 1) To minimize the possibility of occurrence and the affect of postulated construction mishaps.
- 2) To minimize the effect of severe weather and tornado / high wind generated missiles.
- 3) To enhance system reliability through use of back-up cooling water sources to critical components during the 168-hour Action Statements (during one header operation).

Compensatory Actions and Contingency Measures

Compensatory actions and contingency measures are grouped into the three main categories described in the previous section.

Actions to Minimize Construction Mishaps

The PRA analysis shows that the risk to the plant due to construction mishaps is more pronounced than the risk due to natural phenomenon. Therefore, the following compensatory actions are planned:

- Electronic scanning and nondestructive locating methods will be used to accurately determine underground locations of piping, duct banks, and other buried utilities prior to excavation.
- Machine excavation will be limited to near surface depths. The bulk of the excavating will be by hand operated power and manual tools.
- Physical barriers will be used to keep vehicles a safe distance from the excavation.

- Loose materials in and around the excavation will be limited to only those absolutely necessary for activities in progress.
- All lifting and rigging components will be inspected and load tested. Lifting of equipment or construction materials over the excavation will be prohibited while the piping is exposed and operable.
- Direct verbal communication (using dedicated radios, if necessary) will be maintained between equipment operators and supervisors / observers.
- Temporary supports will be utilized to ensure that exposed safety-related components retain their seismic qualification.
- Engineering reviews will be performed for shoring and temporary supports in the excavation.
- The duration of the actual exposure of the service water piping will be minimized to the extent possible by careful sequencing of construction activities.
- Worker training and shift briefings will be conducted.

Actions to Minimize Severe Weather Affects

- Severe weather procedures will be utilized to provide notification to construction forces to clear the area of vehicles and loose materials in the event of a tornado watch or other high wind conditions.
- Adequate wind protection and heating will be provided during freezing weather conditions.

Actions During 168-hour Action Statements

- A temporary back-up supply and return path to the Unit 1 control room chillers from the common bearing cooling header will be installed. This will remain available for the entire duration of the Unit 1 service water outage work.
- A temporary water supply from either the primary grade water or fire water systems will be available as a contingency to the charging pump coolers should the normal service water supply be interrupted.
- Emergency pipe repair materials will be staged in key areas to reduce response time in the event of a leak or rupture. Procedures for emergency pipe repairs will be developed and plant personnel will be trained in the use of these procedures and materials.

- As required by the Technical Specification Action Statement, three of the four main service water pumps and both auxiliary service water pumps will be operable as a prerequisite for entry into the Action Statements. There will be no planned maintenance on the service water pumps during the Action Statement period.
- Flood prevention and mitigation measures will be in place.

5.0 ASSESSMENT OF 168-HOUR ACTION STATEMENT ENTRIES

In order to implement the service water system restoration project, we intend to rely on Technical Specification 3/4.7.4.1 which permits us to remove one service water header from service for up to 168 hours in support of service water upgrade activities. Our current schedule will require six entries into the 168-hour Action Statement during the first stage of the project. The primary purpose for entering the Action Statements is to install blocking devices which will isolate portions of the service water piping for the repair and replacement activities. Two Action Statement entries each are planned for initial installation, relocation, and final removal of these blocking devices.

For example, following unit shutdown, the 168-hour Action Statement would be entered to isolate one service water loop. This service water loop will be opened and blocking devices installed in the supply and return lines to the recirculation spray heat exchangers to temporarily isolate the repair area from the main portion of the service water loop. The service water loop would then be returned to service. After an appropriate period of time (approximately 24 hours), the 168-hour Action Statement would be entered a second time to isolate the other service water loop and install blocking devices. This evolution would be repeated for relocation of the blocking devices during the outage and final removal of the blocking devices at the end of the outage. Thus, a total of six entries will be needed.

As part of our evaluation supporting the restoration project, we have performed an assessment of the analyses and assumptions supporting the Technical Specification 3/4.7.4.1 168-hour Action Statement. The following is a summary of our assessment.

The original Probabilistic Safety Assessment (PSA) submitted to and approved by the NRC in 1985 was reviewed to examine the assumptions made, data used, results obtained, and conclusions reached. The PSA was evaluated against the findings and results of the nearly finalized North Anna IPE as well as the PSA performed in support of this submittal. The result of this evaluation confirms that the originally established system success criteria, the assumptions and methodology used, and the conclusions stated which supported the increase in the Limiting Condition for Operation Action Statement time period from 72 hours to 168 hours remain valid and acceptable for use during this restoration project.

With the noted compensatory actions and contingency measures in place, multiple entries into the Action Statement will be accommodated while ensuring availability of required safety functions.

6.0 BASIS FOR EXEMPTION REQUEST

Pursuant to 10 CFR 50.12(a), Virginia Electric and Power Company requests an exemption from the requirements of 10 CFR 50, Appendix A, General Design Criterion 2 (GDC-2). This exemption will permit the temporary removal of the earth which provides missile protection and seismic protection for the service water system piping and electrical system duct banks.

As detailed above, the exemption is necessary to permit restoration activities to the service water system piping without extension of the North Anna Unit 1 steam generator replacement outage schedule. These modifications will result in increased reliability of the service water system. The Phase I, Stage 1 efforts will be started during the pre-outage exemption period and completed during the post-outage exemption period. Completing the excavation work during this exemption period will allow the restoration work to be performed more efficiently. For Phase I, Stage 1, the exemption is necessary primarily for the 30-day period from early-December, 1992 until the beginning of the 1993 steam generator replacement/refueling outage and for a 30-day period following completion of the outage. During the outage, when Unit 1 is in Modes 5 or 6 and service water pipe sections are out of service, the exemption is technically not necessary since Unit 2 is not affected.

Earth and concrete protect the piping systems from the effects of severe weather events at the North Anna site, such as tornadoes, for conformance with the requirements of GDC-2. The excavation of the service water lines will affect only the missile shield protection aspects of GDC-2 with seismic support being retained. While producing some increase in missile interaction risk, excavation of the piping does not result in total vulnerability to missiles. The lines are substantially below grade and are surrounded on several sides by heavily reinforced concrete structures. This will prevent some lateral aspects of missile vulnerability.

The procedures set forth in 10 CFR 50.12 provide that specific exemptions from the requirements of 10 CFR Part 50 may be granted which:

- are authorized by law,
- are consistent with the common defense and security,
- will not present an undue risk to the public health and safety, and
- are accompanied by special circumstances.

Virginia Electric and Power Company submits that the activities sought to be conducted under this exemption request are clearly authorized by law and are consistent with the common defense and security. As detailed below, the remaining standards for the exemption are also satisfied.

No Undue Risk to Public Health and Safety

The likelihood of missile damage to the service water lines or electrical duct banks resulting from natural phenomena is small at the North Anna site during the periods for which the requested exemption would apply. The principal "natural phenomena" risk from the excavation of the service water piping is from tornado generated missiles. The risk associated with failures due to seismic events is eliminated by providing temporary seismically qualified supports. An engineering evaluation and probabilistic risk assessment have been performed for this Phase I, Stage 1 of the service water system restoration project. We have assessed the likelihood of such an event using regional meteorological information and concluded that the risk is acceptably low.

In addition, Virginia Electric and Power Company will take specific actions to reduce the risk of missile damage to the exposed systems during the periods of the exemption. Operations personnel will remain cognizant of approaching weather systems. Those responsible for supervising the installation of the modification will be notified if a tornado watch, or other notification of high winds, is issued for the plant site. If a watch is issued, a concerted effort will be made to clear the excavation area of vehicles and loose material before the arrival of the storm. This effort will be limited only by the need to ensure the safety of the individuals performing the work. Equipment needed to carry out this effort will be kept available on site. Additional actions are discussed in detail above.

Moreover, the proposed exemption will not otherwise affect radiological plant effluents, nor result in any significant occupational exposure. Thus, there are no significant radiological or non-radiological environmental impacts associated with the proposed exemption.

Special Circumstances Exist

Special circumstances are present to warrant granting the requested exemption. Three of the examples of special circumstances, as provided in 10 CFR 50.12(a)(2)(iii), (iv), and (v), apply in this case. The first special circumstance, paragraph (iii), is that compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted. The second special circumstance, paragraph (iv), is that the completion of the project as proposed would result in an overall benefit to the public health and safety that compensates for any decrease in safety that may result from the granting of the exemption. The third special circumstance, paragraph (v), is that the exemption provides only temporary relief from the applicable regulation and that the licensee has made good faith efforts to comply with the regulation. It has been determined by PRA methods that the temporary relief does not affect the safe operation of either unit.

The unnecessary extension of the scheduled outage would result in additional unplanned outage days for the unit. As the NRC is well aware, replacement power costs to the Company result in substantial undue hardship. In addition, the exemption will indirectly result in benefits to the public from increased reliability of the upgraded service water system. The public will thus be better assured of the system's capability to perform its safety function. Finally, the exemption would provide only temporary relief from the applicable regulations. The exemption is requested only for a specified time, i.e., for Stage 1, from December 1, 1992 to June 30, 1993 (approximately 30 days prior to the beginning of the 1993 Unit 1 steam generator replacement outage to approximately 30 days after the outage). We are committed to making good faith efforts to provide protection for the service water system during the exemption periods. As noted above, we will perform a survey and will take steps to remove potential missiles from the area and will take other compensatory measures to ensure adequate protection of the site from externally generated missiles.

Special circumstances exist in that we have made a good faith effort in considering alternatives to an exemption request and have concluded that the project could only be conducted without an exemption during a period when both units are shutdown and defueled. As there are no dual unit outages planned or scheduled, we believe that this alternative represents an undue hardship. The impact of scheduling such a dual unit outage and simultaneously defueling both units would have potentially significant consequences in terms of power supply, fuel storage capacity, and replacement power costs. We believe that it was never the intent of the regulation to require such actions to ensure compliance with the design criterion. Also, the schedule that we are proposing for this portion of the service water project will accelerate the timetable for restoring the portions of the service water system that have become degraded. Therefore, we conclude that several of the criteria described in the special circumstances portion of the regulations are met.

7.0 SCHEDULE FOR REMAINING PHASE I WORK (STAGES 2 THRU 5)

The current plans for competing Phase I of the service water restoration project are discussed below.

Stage 2 -- Manway Addition to 36-inch Service Water Headers

This portion of the project will add manways in the 36-inch main service water supply and return headers just south of the service building. This effort will involve excavation to the 36-inch headers in similar fashion as described herein. This excavation will also expose the buried fuel oil lines which serve the emergency diesel generators' day tanks. The work is currently scheduled during the concurrent operating period immediately following the completion of the Phase I, Stage 1 work. This effort will require temporary exemption from GDC-2 and will require two entries into the 168-hour Action Statement.

Stage 3 -- Unit 2 Recirculation Spray Heat Exchanger Piping Repair

This portion of the project will provide for repair and replacement of sections of the 24-inch service water piping to the Unit 2 containment recirculation spray heat exchangers in very similar fashion to that described in this submittal for Unit 1. This effort will involve temporary exemption from GDC-2 for a period of time beginning approximately 30 days prior to and ending approximately 30 days following the Unit 2 outage scheduled to begin in September of 1993. It will also involve four entries into the 168-hour Action Statement.

The Stage 2 and Stage 3 activities will be evaluated as requiring concurrent exemption periods for part of the schedule. Additional supporting details for this exemption for Stages 2 and 3 will be provided by November 20, 1992 and NRC approval is requested by April 16, 1993.

Stage 4 -- Auxiliary Service Water Supply Piping Repair

This stage will address repair and replacement of the two 24-inch auxiliary service water lines from Lake Anna. New access manways will also be added as part of this effort. This work is scheduled for the concurrent operating period in 1994 up to the Unit 1 refueling outage scheduled to start in October of 1994. Temporary exemption from GDC-2 will again be required but at this time we believe that no Action Statement entries will be required.

Supporting details for Stage 4 of the exemption request will be submitted by May 7, 1993 and NRC approval is requested by November 19, 1993.

Stage 5 -- Component Cooling Water Heat Exchanger Piping Repair

This final part of Phase I will address the 24-inch service water supply and return piping to the Unit 1 and Unit 2 component cooling water heat exchangers. Repair of this piping will be performed as previously described herein for other sections. This effort will not involve a GDC-2 exemption but will involve several Action Statement entries during implementation on Unit 1 (during the October 1994 outage) and Unit 2 (during the April 1995 outage).

8.0 ENVIRONMENTAL ASSESSMENT

Pursuant to 10 CFR 50.12(a), Virginia Electric and Power Company is requesting an exemption from the requirements of 10 CFR 50, Appendix A, General Design Criterion 2 (GDC-2) for North Anna Power Station for Phase I, Stages 1 thru 4, of the service water restoration project. This exemption will permit the temporary removal of the earth which provides missile protection for portions of the service water system piping, electrical system duct banks, and the emergency diesel generators' fuel oil supply piping.

The proposed exemption is needed in order to permit the completion of repair and replacement activities on the service water system without unduly extending the next several scheduled refueling outages. The proposed exemption would permit part of the pre-outage work to be accomplished prior to and between the outages discussed above.

The proposed exemption does not involve any measurable environmental impacts during normal operation since the plant configuration is changed only minimally and plant operation is not changed. The likelihood of tornado-generated or other high wind-generated missile damage during the time the exemption would be in effect which would affect equipment required to operate to avoid radiological impact is low. Thus, the proposed exemption would not significantly affect the probability or consequences of potential reactor accident, and would not otherwise affect radiological plant effluents. Consequently, there are no significant radiological impacts associated with the proposed exemption.

With regard to potential non-radiological impacts, the proposed exemption involves features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, we conclude that there are no significant non-radiological environmental impacts associated with the proposed exemption.

The principal alternative to requesting the temporary exemption for implementation of the service water restoration project would be to comply with the restrictive requirements of GDC-2. However, this alternative would not significantly enhance the protection of the environment, and would result in a significant loss of power generation as the next several refueling outages for North Anna Units 1 and 2 would have to be extended considerably.

Based on the above assessment, we conclude that the NRC granting of the requested exemption for the four stages of the service water restoration project discussed above would not have a significant effect on the quality of the human environment.