

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

May 13, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 96-206
NL&OS R2
Docket Nos. 50-280/50-281
50-338/50-339
License Nos. DPR-32/DPR-37
NPF-4/NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA AND SURRY POWER STATIONS UNITS 1 AND 2
RESPONSE TO NRC BULLETIN NRC 96-02

On April 11, 1996, the NRC issued NRC Bulletin 96-02, "Movement of Heavy Loads Over Spent Fuel, Over Fuel in the Reactor Core, or Over Safety-Related Equipment." The Bulletin requested that licensees: 1) review their plans and capabilities for handling heavy loads in accordance with NUREG-0612 (Phase 1) and Generic Letter 85-11 and within their licensing basis as previously analyzed in the final safety analysis report, while the reactor is operating, and 2) report to the NRC whether and to what extent they have complied with the requested actions contained in this bulletin. Virginia Electric and Power Company's response to the requested actions is included in Attachment 1 to this letter.

Virginia Electric and Power Company previously performed a reevaluation of the Surry and North Anna NUREG-0612 programs that resulted in changes to the programs. These changes are summarized in Attachment 2 to this letter. We will continue to perform self-assessments of the NUREG-0612 program in the future to ensure proper implementation. In addition, we have prepared UFSAR updates for Surry and North Anna to reflect our current NUREG-0612 programs. These updates will be incorporated into the next revision of each UFSAR.

Should you have any questions regarding this response, please contact us.

Very truly yours,



James P. O'Hanlon
Senior Vice President - Nuclear

Attachments

9605200144 960513
PDR ADOCK 05000280
Q PDR

IEH
||

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

Mr. M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

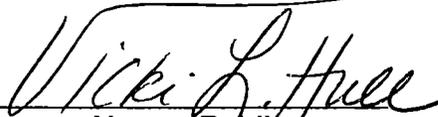
Mr. R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by J. P. O'Hanlon, who is Senior Vice President - Nuclear, of Virginia Electric and Power Company. He is duly authorized to execute and file the foregoing document in behalf of that Company, and the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 13TH day of May, 1996.

My Commission Expires: May 31, 1998.


Notary Public

(SEAL)

Attachment 1

RESPONSE TO NRC BULLETIN NRC 96-02: MOVEMENT OF HEAVY LOADS OVER SPENT FUEL, OVER FUEL IN THE REACTOR CORE, OR OVER SAFETY- RELATED EQUIPMENT

Requested Actions

Review plans and capabilities for handling heavy loads while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) in accordance with existing regulatory guidelines. Determine whether the activities are within the licensing basis and, if necessary, submit a license amendment request. Determine whether changes to Technical Specifications will be required in order to allow the handling of heavy loads (e.g., the dry storage canister shield plug and associated lifting devices) over fuel assemblies in the spent fuel pool.

Required Response

- (1) For licensees planning to implement activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safety-related equipment within the next 2 years from the date of this bulletin, provide the following:

A report, within 30 days of the date of this bulletin, that addresses the licensee's review of its plans and capabilities to handle heavy loads while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) in accordance with existing regulatory guidelines. The report should also indicate whether the activities are within the licensing basis and should include, if necessary, a schedule for submission of a license amendment request. Additionally, the report should indicate whether changes to Technical Specifications will be required.

Virginia Power Response

Both Surry and North Anna have reviewed movement of heavy loads with the reactor at power and have determined that the heavy loads programs are being implemented in accordance with applicable Technical Specifications, Updated Final Safety Analysis Report, and are consistent with our NUREG-0612 (Phase 1) submittal and Generic Letter 85-11. Both Surry and North Anna are PWRs with subatmospheric containments when operating above 200°F. Therefore, no heavy loads are moved inside containment during power operations. Since the issuance of the Phase I Technical Evaluation Reports (TER) in 1984, changes have been made to both the Surry and North Anna heavy loads programs. These changes include the issuance of Technical Specifications Amendments and the licensing of Surry's dry storage cask facility. Additional program changes were evaluated for conformance to the NUREG-0612 Phase I requirements. These changes included addition and deletion of heavy load handling devices, use of restricted areas in place of safe load paths for selected heavy loads in containment, and elimination of the Phase II requirement for specific load height restrictions. In addition, minor

changes were also incorporated to correct editorials, lift weights, etc. As part of our UFSAR update process, these heavy load program changes were evaluated in accordance with our 10 CFR 50.59 safety evaluation program. A summary of the major changes to the heavy load programs is provided in Attachment 2.

- (2) For licensees planning to perform activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) and that involve a potential load drop accident that has not previously been evaluated in the FSAR, submit a license amendment request in advance (6-9 months) of the planned movement of the loads so as to afford the staff sufficient time to perform an appropriate review.

Virginia Power Response

Surry does not currently have any plans to perform any activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safe shutdown equipment while the reactor is at power that would involve a potential load drop accident that has not previously been evaluated. If such an activity would become necessary, the appropriate licensing action would be initiated and prior NRC approval would be obtained.

Except as noted below, North Anna does not have any plans to perform any activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safe shutdown equipment while the reactor is at power that would involve a potential load drop accident that has not previously been evaluated.

- North Anna is currently refurbishing the Service Water System. The majority of the project is planned for implementation with the units at power, including the replacement of the service water pumps. In order to replace these pumps the missile shields on top of the Service Water Pump House are required to be removed and the service water pumps lifted from their cubicles. These lifts meet the guidelines (weight of lift) for a heavy load over safe shutdown equipment. However, per our interpretation of NUREG-0612, mobile cranes are not required to be formally included in the heavy load program. The loss of a service water pump, valves, or a header have been previously analyzed in the UFSAR (Sections 9.2.1.1 and 9.2.12.1). Therefore, the consequences of a dropped service water pump have been previously analyzed. Although not included in our heavy load program, to prevent construction mishaps, lifting and rigging procedures that follow NUREG-0612 guidelines will be used during service water pump replacement.
- North Anna is currently in the process of licensing a dry storage cask facility under 10 CFR 72. An evaluation of the handling of the spent fuel storage casks over the spent fuel pool and the fuel building, including the radiological consequences of a dropped cask will be completed and a license amendment, if necessary, will be submitted prior to moving a spent fuel cask into the fuel building.

- Due to future storage limitations in the spent fuel pool, North Anna is planning to perform a drop analysis of the fuel transfer door to justify movement of the fuel transfer door over spent fuel. Upon completion of this evaluation, we intend to request a Technical Specification change to permit movement of the fuel transfer door over spent fuel in the spent fuel pool.
- (3) For licensees planning to move dry storage casks over spent fuel, fuel in the reactor core, or safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled) include in item 2 above, a statement of the capability of performing the actions necessary for safe shutdown in the presence of radiological source term that may result from a breach of the dry storage cask, damage to the fuel, and damage to safety-related equipment as a result of a load drop inside the facility.

Virginia Power Response

Surry has a licensed dry storage cask facility and handling of the spent fuel storage casks over the spent fuel pool and the fuel building, including the offsite radiological consequences of a dropped cask, have been previously evaluated and approved in Technical Specification Amendments 84 and 85 for Surry Units 1 and 2, issued March 4, 1983. This evaluation confirms that a postulated cask drop will not damage any equipment necessary for plant operations or safe shutdown.

North Anna is currently in the process of licensing a dry storage cask facility under 10 CFR 72. An evaluation of the handling of the spent fuel storage casks over the spent fuel pool and the fuel will be completed and a license amendment, if necessary, will be submitted prior to moving a spent fuel cask into the fuel building.

- (4) For licensees planning to perform activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safety-related equipment while the reactor is at power (in all modes other than cold shutdown, refueling, and defueled), determine whether changes to Technical Specifications will be required in order to allow the handling of heavy loads (e.g., the dry storage canister shield plug) over fuel assemblies in the spent fuel pool and submit the appropriate information in advance (6-9 months) of the planned movement of the loads for NRC review and approval.

Virginia Power Response

As noted above, activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safe shutdown equipment while the reactor is at power, as well as in cold shutdown, refueling, or defueled are controlled by our NUREG-0612 program and implemented by administrative and maintenance procedures. Changes to the program or procedures are controlled and evaluated by our 10 CFR 50.59 safety evaluation program. In accordance with 10 CFR 50.59, if the change represents an unreviewed safety question or requires a license amendment the change will be submitted to the NRC for review and approval prior to implementation. In addition, a summary of the safety evaluations is provided to the NRC in accordance with 10 CFR 50.

Surry does not currently have any plans to perform activities involving the handling of heavy loads over spent fuel, fuel in the reactor core, or safety-related equipment while the reactor is at power other than those currently licensed (i.e., movement of fuel transfer door over spent fuel and spent fuel casks in the spent fuel pool).

As noted above in our response to Required Response 2, due to future storage limitations in the spent fuel pool, North Anna is planning to perform a load drop analysis to support spent fuel cask operation in the spent fuel pool and movement of the fuel transfer door over spent fuel. If necessary, Technical Specifications changes will be submitted for NRC review and approval.

Attachment 2

SUMMARY OF MAJOR CHANGES TO THE SURRY AND NORTH ANNA NUREG-0612 PROGRAMS

Surry

- The reactor vessel inspection tool was originally listed as a NUREG-0612 lift. Since the reactor vessel is completely defueled before lifting the tool, a tool drop could not effect items of concern to NUREG-0612. Therefore, the reactor inspection tool lifts are not subject to NUREG-0612 and have been removed from the program.
- The containment polar crane bottom block and hook were originally listed as a NUREG-0612 lift. Our Nine Month Report (Phase II) identified that the bottom block and hook were eliminated from our NUREG-0612 program. The bottom block and hook are considered an integral part of the containment polar crane assembly and as such do not constitute a heavy load. Furthermore, there is no safe shutdown or decay heat removal equipment below the limit switch testing location of the crane bottom block and hook. Therefore, the containment polar crane bottom block and hook are not considered subject to NUREG-0612 and have been removed from the program.
- The new fuel crane was originally listed as subject to NUREG-0612. This handling system has been re-examined and removed from the heavy loads program consistent with NUREG-0612 guidelines because existing physical restrictions on the crane operating area prevent loads from being lifted over targets of concern to NUREG-0612 (irradiated fuel and safe shutdown equipment).
- The Fuel Building Trolley was originally listed as subject to NUREG-0612. The trolley can only run in the north-south direction and cannot lift a load directly over irradiated fuel or safe shutdown equipment. Furthermore, spent fuel cask handling activities were evaluated and approved in Technical Specifications Amendments 84 and 85 for Surry Units 1 and 2. The potential consequences of a postulated spent fuel cask drop in the Fuel Building were evaluated and submitted to the NRC in September 23, 1982, with the attached safety analyses entitled, "A Summary of Information in Support of the Handling of Spent Fuel Casks in the Surry Power Station Unit Nos. 1 and 2 Fuel Building." This resulted in a requirement for cask impact pads to be placed on the bottom of the spent fuel pool in the cask handling area and provided for the two-region spent fuel pool. This analysis concluded:

The cask impact pads will protect the fuel pool floor from damage during a cask drop accident.

Tipping of a cask into the fuel pool wall following a drop will cause only minor structural damage to the liner.

Sufficient sources of borated makeup water are available to compensate for any anticipated amount of leakage.

If tipping of a cask into the fuel racks following a cask drop is postulated such that damage will result to any or all of the first three rows of racks, fuel stored in these racks that could be damaged by the cask will not achieve criticality or result in unacceptable offsite doses if the stored fuel has sustained sufficient burnup and decay following shutdown. Fuel not meeting these criteria will be excluded from storage in racks within 28 feet of the 125-ton Fuel Building Trolley.

Potential damage to the Fuel Pool Cooling System piping along the cask load path will not result in unacceptable consequences.

Since the Fuel Building Trolley also runs through the Decontamination Building to a truck loading area in the yard, a postulated cask drop in these areas was also evaluated and it was concluded that a drop will not result in unacceptable consequences. As part of the above Technical Specifications amendment the NRC permitted spent fuel cask handling operations in these areas. Our commitments to the NRC governing cask handling have been implemented independent of the NUREG-0612 program. Therefore, the Fuel Building Trolley is not in our heavy load program. Cask handling activities are controlled by procedures for each approved cask design.

Although operation of the Fuel Building Trolley is currently evaluated and licensed independent of NUREG-0612 requirements, we are reassessing the Fuel Building Trolley handling activities for inclusion into the NUREG-0612 program.

- The Decontamination Building crane was originally listed as subject to NUREG-0612. This handling system has been removed from the heavy loads program because no safe shutdown or decay heat removal equipment nor irradiated fuel assemblies are located inside the crane operating limits. Therefore, it is concluded that the Decontamination Building crane is not subject to NUREG-0612 and has been removed from the program.
- The Auxiliary Building filter cartridge removal monorail was originally listed as subject to NUREG-0612. The monorail is positioned vertically above five filter housings, only services the room in which it is installed and cannot transfer heavy loads from other auxiliary building load handling systems. The heaviest items normally lifted by the filter cartridge removal monorail are small concrete floor plugs which weigh less than 2000 pounds each. This handling system is not subject to NUREG-0612 and has been removed from the program specifically because the heavy loads program is only applicable to loads greater than 2000 pounds.
- The Service Building Unit 1 normal switchgear room monorail was originally listed as subject to NUREG-0612. However, after additional review and evaluation it was determined that there is no safe shutdown or decay heat removal equipment that could be damaged by a postulated load drop. Therefore, the monorail has been removed from the NUREG-0612 program.
- The NRC's Technical Evaluation Report (TER) for the Six Month Report stated that safe load paths will be clearly marked on the floor. Although some painted load paths may still be visible on the floor, these markings no longer control the movement of heavy loads. Safe load paths are shown in station procedures which

control the work. In containment, the majority of the operating floor consists of removable hatches and mechanical equipment and is typically covered with contamination control material during outages. This makes safe load path floor markings impractical. The person in charge reviews the safe load path with the crane operators prior to a lift being made, and a signalman then guides the operator along the safe load path during the lift operation. This is also consistent with North Anna use of safe load paths. The TER for North Anna concluded that the object of providing a visual aid for operators is accomplished by having supervisory personnel review the procedures with the crane operator and providing a signalman to guide the operator. Therefore, the painted safe load paths no longer control the path of heavy loads.

- The TER indicates specific load paths for some heavy loads such as concrete floor plugs that are routinely shuffled from laydown area to laydown area during outages. Having different load paths adds to the confusion, making procedures difficult to use. Drawings have been developed which indicate operating floor capacities that are used by Containment Coordinators to control laydown areas in conjunction with the Heavy Loads Program. Restricted areas are used in the containment in lieu of multiple safe load paths for several heavy loads that are routinely shuffled to several laydown areas during outages. These restricted areas currently include: above the reactor, the steam generators, and the main steam/feedwater riser area.
- A safe load path was not shown in the TER for the upper internals lifting rig. A safe load path for the lift rig was added to program to control movement of this lift rig.
- Although not identified in the TER, a safe load path sketch for the reactor lower internals was submitted with the Six Month Report. The reactor vessel is completely defueled before lifting the lower internals. Therefore, the lower internals lift is not subject to NUREG-0612 and has been removed from the program.
- The TER only identified the reactor head lift rig, the reactor internals lift rig, and the reactor coolant pump motor lift rig as "special lifting devices." The reactor cavity seal ring lift rig, the charging pump cubicle wall lifting beam, and the spent filter cask spreader beam have been added to the classification as "special lifting devices" and incorporated into the program.
- The TER listed the following containment lifts as being subject to 0612:

Recirculation Spray Cooler
Regenerative Heat Exchanger
RHR Heat Exchanger

Existing maintenance procedures for these items do not address lifting of the entire heat exchanger. If these lifts, or any other heavy load lifts not currently covered by the NUREG-0612 program, are planned in the future, compliance with NUREG-0612 commitments will be determined on a case-by-case basis.

- The TER listed the recirculation spray pump motor as a lift subject to NUREG-0612. The motor is only removed when the unit is shutdown, the lift only occurs immediately over the affected spray pump and a drop would have no impact on RHR components. The lift is not made over operating shutdown or decay heat removal equipment. Therefore, this lift is not subject to NUREG-0612 and has been removed from the program.
- New RHR pump motor lifting lugs were added to the station after issue of the TER and have been classified as subject to NUREG-0612 and included in the program.

North Anna

- The polar crane auxiliary hook weight was listed as 50 tons in the TER. This weight was based on an error in the Six Month Report. Crane vendor drawings indicate 15 ton capacity based on normal 4-part reeving.
- The reactor vessel lower internals are listed in the TER as subject to NUREG-0612. However, since the reactor vessel is completely defueled and the fuel transfer gate valve is closed before lifting the lower internals, this lift is not subject to NUREG-0612 and has been removed from the program.
- The reactor vessel inspection tool was originally listed as a NUREG-0612 lift. Since the reactor vessel is completely defueled before lifting the tool, a tool drop could not affect items of concern to NUREG-0612. Therefore, the reactor inspection tool lift is not subject NUREG-0612 and has been removed from the program.
- The recirculation fan weight was listed as 2.8 tons in the TER. This was based on an error in the Six Month Report. The actual weight is 3.9 tons.
- Filter cask weight was listed as 4.0 tons in the TER. This was based on an error in our Six Month Report. The actual weight is 7.2 tons which was incorporated into the handling procedure.
- The new fuel crane was originally listed as subject to NUREG-0612. This handling system has been removed from Virginia Power's heavy loads program because existing physical restrictions on the crane operating area prevent loads from being lifted over targets of concern to NUREG-0612 (irradiated fuel and safe shutdown equipment). Therefore, the new fuel crane is not subject to NUREG-0612 and has been removed from the program.
- The TER identified a load greater than 2500 pounds as a heavy load. This was corrected to 2000 pounds in the Nine Month Report and is the basis for a heavy load in our program.
- The TER noted safe load paths and noted maximum lift heights were established to correspond with floor capacities based on structural capacities. The requirement to perform load drop calculations to establish maximum lift heights in order to

demonstrate floor integrity after a load drop accident was a requirement of Phase II of the NUREG-0612 program. Phase II does not form part of the regulatory commitment to NUREG-0612. The original Phase I submittal (Six Month Report) stated that the identification of safe load paths assumes that the structural integrity of the floors is maintained following the postulated load drops and did not contain lift height restrictions. Lift height restrictions were included on safe load path sketches for the Phase II submittal (Nine Month Report). Some heavy loads cannot be moved along their designated safe load paths while maintaining the maximum lift height restrictions due to physical interferences. The final TER, which was issued more than two years after both Phase I and Phase II submittals, included a statement that maximum lift heights were established to correspond with the floor capacities (from the Phase II submittal). The lift height restrictions were clearly part of the Phase II submittal and do not constitute a Phase I commitment to NUREG-0612 and are therefore not included in our heavy loads program. Thus, specific maximum lift heights have been removed and replaced with guidance (requirement) to maintain the load as low as possible while maintaining adequate vertical clearance over obstructions.

- The TER (from the Six Month Report) indicates specific load paths for some heavy loads such as concrete floor plugs that are routinely shuffled from laydown area to laydown area during outages. Having different load paths adds to the confusion, making procedures difficult to use. Drawings have been developed which indicate operating floor capacities that are used by Containment Coordinators to control laydown areas in conjunction with the Heavy Loads Program. Restricted areas are used in the containment in lieu of multiple safe load paths for several heavy loads that are routinely shuffled to several laydown areas during outages. These restricted areas currently include: above the reactor, the steam generators, and the main steam/feedwater riser area.
- The TER only identified the reactor head lift rig, the reactor internals lift rig, and the reactor coolant pump motor lift rig as "special lifting devices." The reactor cavity seal ring lift rig, the spent filter cask spreader beam, and the charging pump cubicle wall lifting beam have been added to the classification as "special lifting devices" and incorporated into the program.
- The Auxiliary Building monorails were originally listed as 12 ton capacities. A Design Change removed the old hoists and installed a single 8 ton hoist for the crane. The original monorail was not changed, however, the capacity is limited by the new hoist to 8 tons.
- The TER did not include a loaded reactor stud rack as a heavy load. This lift was added to the NUREG-0612 program with a weight of 6500 pounds.