

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
LICENSEE REQUEST FOR ADDENDUM TO EXEMPTION FROM
CERTAIN REQUIREMENTS OF APPENDIX R TO 10 CFR PART 50
NORTH ANNA POWER STATION UNITS 1 AND 2
DOCKET NOS. 50-338 AND 50-339

1.0 INTRODUCTION

By letter dated December 11, 1992, Virginia Electric and Power Company (VEPCO), the licensee for North Anna Units 1 and 2, requested an addendum to Exemption 1, which was approved by the NRC in a letter to the licensee dated November 6, 1986. The original exemption was from the technical requirements of Section III.G.3 of Appendix R to 10 CFR Part 50 to the extent that fire detection and fixed suppression systems are not installed throughout the Auxiliary, Fuel, and Decontamination Buildings (Fire Area 11). The original safety evaluation, transmitted with the November 6, 1986 letter, stated that the charging pump cubicles have 3 hour fire-rated walls, and that the penetrations in these walls are sealed to a rating of 3 hours. The addendum revises the original exemption to account for the non-fire rated penetration seals and unprotected openings located in the south wall of the charging pump cubicles. The lack of rated penetration seals was identified in inspection report 50-338,339/92-18.

2.0 DISCUSSION

The licensee requested an addendum to a previously approved exemption from the technical requirements of Section III.G.3 of Appendix R to 10 CFR Part 50, to the extent that non-fire rated penetration seals and unprotected openings exist in the south wall of the charging pump cubicle. The 19 non-fire rated penetration seals and the unprotected openings, that are the subject of this request, are all located in the south wall of the charging pump cubicles. This wall is common to all 6 pump cubicles. The walls separating each charging pump from the adjacent pump(s) are fully qualified as 3-hour barriers. Hose stations and portable fire extinguishers are available in the area for manual suppression.

Two charging pumps are required to achieve safe shutdown of both units. A cross-connection is provided to tie the discharge header of the unit 1 pumps to the discharge header of the unit 2 pumps. The valves to open this connection are located in pump cubicles 1-1C and 2-1A. This connection is normally closed and would not be required to be opened unless all 3 charging pumps for one unit were unavailable.

3.0 EVALUATION

The original exemption for the lack of full area detection and fixed suppression was approved by the staff on the basis of low combustible loading in the area, smoke detection installed in each cubicle and in the ventilation ducts to each cubicle, and separation of the charging pumps by 3-hour rated fire barriers. The pipe chase and corridor adjacent to the south wall of the

charging pump cubicle have a low combustible load (equivalent fire severity of less than 20 minutes). The corridor adjacent to the south wall is free of fixed combustibles. The combustible load in each pump cubicle is also low (equivalent fire severity of less than 5 minutes). The combustibles that are present consist primarily of cable insulation and oil contained in the charging pumps. Each cubicle has a blackout opening in the south wall 2' x 3.5' in size, leading to a pipe chase. These penetrations are sealed with a metal plate covered by a 1" thick layer of Thermo-Lag fire barrier material. These penetration seals, although not fire rated, would restrict the propagation of fire to the unexposed side of the barrier for a fire in either the pipe chase or the pump cubicle. In each pump cubicle there are two openings, each 2" in diameter, in the south wall leading into the corridor, for valve reach rods. These penetrations are sealed with metal plates installed on the corridor side of the barrier. The licensee is modifying one of the penetrations in each pump cubicle by removing the reach rod and sealing the opening with a metal plug on each side of the barrier with a threaded rod running through the penetration to secure the plugs in place. No combustible materials traverse these penetrations. These seals, although not fire rated, will restrict the propagation of fire to the unexposed side of the barrier for a fire in either the corridor or the pump cubicle. The unprotected openings are located near the ceiling in the southwest corner of cubicle 1-1C. The unprotected openings are part of the horizontal and vertical pipe chases. There are no combustible materials within these unprotected openings. The other 5 pump cubicles do not have any unprotected openings.

The fire protection provided for the charging pump cubicles provides reasonable assurance that at least one charging pump for each unit will remain operable after a fire in this area. This determination is based upon; (1) the low combustible loading in the pipe chase, corridor and pump cubicles, (2) the smoke detection installed in each pump cubicle and in the ventilation ducts to each pump cubicle, (3) the manual fire suppression equipment located in the area, (4) the fully qualified 3-hour fire barriers that separate each pump cubicle from the adjacent cubicle(s), (5) the lack of unprotected openings into the pump cubicles, with the exception of cubicle 1-1C and, (6) the non-fire rated seals provided for the penetrations into the corridor and pipe chase.

4.0 CONCLUSION

On the basis of this evaluation, the staff concludes that the lack of fire-rated penetration seals in the south wall of the pump cubicles does not change the conclusion that there is no undue risk to the public health and safety, notwithstanding that fire detection and fixed suppression systems are not installed throughout Fire Area 11. Such installation is not necessary to achieve the underlying purpose of Section III.G.3. to Appendix R, which is to ensure that safe shutdown capability is maintained.