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 AUTH. NAME AUTHOR AFFILIATION
 SORESENSEN, G.C. Washington Public Power Supply System
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SUBJECT: Requests for temporary relief from tornado missile design criteria as it relates to protective soil cover requirements above underground safety related diesel oil storage tanks.

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February 9, 1993
G02-93-028

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21
REQUEST FOR TEMPORARY RELIEF FROM
TORNADO MISSILE DESIGN CRITERIA**

Reference: Letter G02-91-116, dated June 7, 1991, GC Sorensen (SS) to NRC
"Request for Approval to Revise Tornado Design Criteria"

The Supply System hereby requests temporary relief from the WNP-2 tornado missile design criteria as it relates to protective soil cover requirements above the underground safety related diesel oil storage tanks. This relief is requested to facilitate installation activities of a new diesel fuel oil polishing system to be installed during the spring 1993 refueling outage.

Current design requirements for protection of under ground safety related components from tornado missile hazards are defined in FSAR Section 3.5.3.3. Based on the requirements of this section, five feet of soil cover is provided above underground safety related components to insure that safety related functions are maintained following a design basis tornado. This requirement is based on providing protection for the following design basis tornado missiles as specified in FSAR 3.5.1.4:

Missile	Weight (lbs)	Dimensions	Horizontal Impact Velocity (ft/sec)
Utility Pole	1600	14" dia. x 35 ft long	241
1" Steel Rod	8	1" dia x 3 ft long	259

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The velocities were developed for a postulated maximum tornado wind speed of 360 mph. Based on information contained in the referenced letter, NUREG/CR-4461, and previous discussions with the NRC Staff, a design wind speed of 192 mph appears to be a more realistic design basis and is currently being considered by the staff as the revised design basis for WNP-2. A wind speed of 192 mph will result in a significantly reduced tornado missile hazard. In the referenced letter, the following revised design basis missiles were proposed:

Missile	Weight (lbs)	Dimensions	Horizontal Impact Velocity (ft/sec) (see discussion below)
Wood Plank	115	3.6" x 0.94' x 12' long	167
6" Sch 40 Pipe	287	6.6" dia x 15' long	17
1" Steel Rod	8.8	1" dia x 3' long	20
Utility Pole	1124	13.5" dia. x 35' long	- -
12" Sch 40 Pipe	750	12.75" x 15' long	13
Automobile	3990	16.4' x 6.6' x 4.3'	- -

The utility pole and the automobile are not considered to be credible missiles for wind velocities less than 200 mph. The remaining missiles are considered to strike surfaces in any direction. Vertical velocities are taken to be 70 percent of the horizontal velocities except the 1" steel rod which is assumed to have the same velocity for any direction. The impact velocities of credible missiles are based on studies documented in EPRI Report NP-748 and are conservatively based on a maximum wind speed of 240 mph. The technical justification for adopting these missiles as the WNP-2 design basis is provided in the referenced letter.

The Supply System has performed preliminary evaluations of these missiles for postulated impacts above the safety related diesel storage tanks and concluded that 2 feet of soil cover provides adequate protection for the tanks. The evaluations will be formalized and verified before soil cover is removed.

The justifications for adopting the above tornado protection criteria for the installation of the diesel fuel oil polishing system are as follows:

The probability of tornado hazards exceeding the proposed temporary design criteria during the installation of the diesel fuel oil polishing system is extremely small. NUREG/CR-4461 estimates the annual probability of a tornado strike to be 4.88×10^{-6} . Tornado wind speeds within the vicinity of WNP-2 have never been observed to be as

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high as 192 mph. Therefore, even if a tornado was to strike the facility, the median expected value of the wind speed will be less than 192 mph. See the referenced letter and NUREG/CR-4461 for additional discussions of tornado hazards in the vicinity of WNP-2.

The two foot soil cover requirement is conservative. The largest penetration depth of any of the above missiles is substantially less than 2 feet. Therefore, there is a significant margin for potentially more damaging missiles.


Although the Supply System's tornado missile protection evaluations have not directly evaluated an automobile missile at velocities comparable to those specified in the applicable NRC Standard Review Plan, two feet of soil cover will provide adequate protection for a hazard consisting of an automobile tumbling along the ground surface.

The activity of exposing the tanks is expected to begin March 1, 1993 and be complete by May 31 1993. The temporary relief is requested for the time period of March 1, 1993 to August 1, 1993. The additional duration is requested to provide contingency in accomplishing the modification.

After the installation activities are complete, the soil cover will be returned to the design basis of 5 feet. At no time during the installation will the soil cover be less than 2 feet above a tank required to support diesel generator operability.

To provide for adequate planning for the installation of the diesel fuel oil polishing system, a response is requested from the NRC staff by February 15, 1993.

Sincerely,



G. C. Sorensen, Manager
Regulatory Programs (Mail Drop 280)

cc: JB Martin - NRC RV
NS Reynolds - Winston & Strawn
JW Clifford - NRC
R Copeland - Siemens

DL Williams - BPA/399
NRC Site Inspector - 901A