



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555

August 27, 1981

OFFICE OF THE  
SECRETARY

MEMORANDUM FOR: Leonard Bickwit, Jr., General Counsel  
FROM: Samuel J. Chilk, Secretary  
SUBJECT: SECY-81-453 - DIRECTOR'S DENIAL OF 2.206  
RELIEF (IN THE MATTER OF TENNESSEE  
VALLEY AUTHORITY)

This is to advise you that the Commission (with three Commissioners approving) has decided that there is no need for a review of this decision of the Director of Nuclear Reactor Regulation. Commissioners Gilinsky and Bradford voted to defer review of this decision until it is supplemented by the Director, NRR.

The Commission believes that the record of the Director's decision with respect to the tornado strike probably should be clarified by the staff.

The Office of the General Counsel was informed of this decision on August 25, 1981.

cc: Chairman Palladino  
Commissioner Gilinsky  
Commissioner Bradford  
Commissioner Ahearne  
Commissioner Roberts  
Commission Staff Offices  
EDO  
ELD  
Director, NRR  
Chief, Docketing & Service  
Branch, SECY

CONTACT:  
E. W. McGregor (SECY)  
41410

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555



*Asley*  
*Mar*

August 14, 1981

MEMORANDUM FOR: Commissioner Ahearne  
FROM: Jim Beckerley *J.B.*  
THRU: Dennis Rathbun *D.R.*  
SUBJECT: SECY-81-453 - DIRECTOR'S DENIAL OF 2.206 RELIEF (IN THE  
MATTER OF TENNESSEE VALLEY AUTHORITY)

In response to your request, I have studied the tornado discussion in the Director's Decision, specifically pages 4 through 7 of Attachment 2 of SECY-81-453. On page 4 it is stated that "... the probability that a tornado will strike the facility is about once every 10,000 years." This is more than an order of magnitude smaller than the tornado strike probability calculated in WASH-1300 ("Technical Basis for Interim Regional Tornado Criteria" by E.H. Markee, Jr., J.G. Beckerley, K.E. Sanders; USAEC Office of Regulation, May 1974). The figure given on page 10 of WASH-1300,  $1.33 \times 10^{-3}$  per year, corresponds to a recurrence interval of about 750 years.

The statement, also on page 4 of the Director's Decision, that the probability of a tornado with wind speed of 95 mph or greater is about  $5 \times 10^{-5}/\text{yr}$  (or  $0.5 \times 10^{-4}/\text{yr}$ ) is consistent with the tornado strike probability of  $1 \times 10^{-4}/\text{yr}$ . Figure 13, on page 13 of WASH-1300, shows that about 50 percent of the tornadoes that occur have wind speeds equal to or greater than 95 mph.\* It is my understanding that inclusion of more recent data does not appreciably alter Figure 13.

I have been unable to find out what data were used to conclude that the tornado strike probability at the Browns Ferry site is  $1 \times 10^{-4}/\text{yr}$ . As shown in WASH-1300 the area affected by a tornado (path length times path width) is a critical factor in calculating the strike probability. On the basis of data available in 1974 we assumed a mean area of 2.82 square miles. I understand that data accumulated during the past decade indicate that the area may be significantly smaller. A smaller area would reduce the strike probability. Perhaps this is the basis for the downward revision of the tornado strike probability. Unfortunately, the individual in NRR who performed the calculation is on vacation (due to return about August 31), and the files are not clear on this point.

\* TVA's estimate of  $7 \times 10^{-4}/\text{yr}$  for tornado wind speeds higher than 95 mph (page 7 of Attachment 4 of SECY-81-453) appears to be based on WASH-1300, i.e. 50 percent of  $1.33 \times 10^{-3}/\text{yr}$  is  $7 \times 10^{-4}/\text{yr}$ .

*Dupe 8109220100*

The lower strike probability is also reflected in the tabulation on page 6 of the Director's Decision. In this connection, the table on page 6 implies that the presently accepted design basis tornado for this region has a mean recurrence interval appreciably larger than the 10,000,000 years stated in Regulatory Guide 1.76 (Table 1 on page 1.76-2).

I do not believe that a reduction in the tornado strike probability from the value  $1 \times 10^{-4}/\text{yr}$  cited in the Director's Decision to the value  $1.3 \times 10^{-3}/\text{yr}$  cited in WASH-1300 -- and implicitly endorsed in Regulatory Guide 1.76 and Standard Review Plan 2.3.1 -- would affect the final decision itself. The decision appears to depend much more on the minimal potential radiological consequences (estimated in a conservative bounding analysis) than on the probability that the consequences will be realized.

On the other hand, it may be undesirable to have on the record a decision essentially stating, without providing supporting data, that the tornado strike probability is less than one-tenth the value given in WASH-1300 and used in developing the design basis tornado criteria. If you consider the latter situation should be rectified, you may wish to defer your decision whether to review the Director's Decision until the basis for the tornado strike probability cited in that decision can be clarified. As noted above, I believe a clarification will be available by the first week in September.

cc: Chairman Palladino  
Commissioner Gilinsky  
Commissioner Bradford  
Commissioner Roberts  
L. Bickwit  
S. Chilk  
W. Dircks  
H. Denton