

SUPPLEMENTAL TESTIMONY
TO FINAL ENVIRONMENTAL STATEMENT
related to construction of
DAVIS-BESSE NUCLEAR POWER STATION
TOLEDO EDISON COMPANY and
CLEVELAND ELECTRIC ILLUMINATING COMPANY



Docket No. 50-346

Issue 2

INTRODUCTION

In considering the environmental consequences resulting from damage to station structures from storm damage, high water and tornadoes were considered the storms having the greatest potential for adverse consequences to station structures.

FLOODING

The major station structures and the roadway at the Davis-Besse Nuclear Power Plant site are constructed on an area graded up to an elevation of 584 feet. These structures include, among other buildings, the containment building, the auxiliary building, the turbine building, the office building, and the cooling towers. The switchyard is located at elevation 582 feet. A wave protection dike has been constructed along the eastern and northern side of the area to an elevation of 591 feet. Flooding of the area was examined in detail by the staff during the construction permit review and this evaluation is found in Section 3.4 of the Safety Evaluation Report for the Davis-Besse Nuclear Power Station. The effects of wind induced surge, seiche, and wave runup conditions on the lake were evaluated in determining the necessary

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requirements for the protection of the vital components and structures of the plant essential for safe shutdown for the most severe event considered reasonably possible at the site (called a probable maximum surge). The evaluation of such an event is based upon a deterministic (as opposed to probabilistic) evaluation of the most severe combination of hydrometeorologic parameters considered reasonably possible at the plant site. This event is more severe than any flood situation recorded in the region, and is considered to have a probability approaching zero.

As reported in the applicant's Final Safety Analysis Report Section 2.4.2.1, the highest recorded static water level was 572.8 feet above mean sea level in May 1952, and the highest water level which included wind tide effect but not wave action was 577.1 feet above mean sea level in February 1936. The staff concluded that the design basis provided for flood protection was acceptable. This subject is again being reviewed for the FSAR evaluation and the recent high lake levels in November 1972 and in April 1973 have not altered the staff's conclusions concerning flooding. Since the Davis-Besse Nuclear Power Station is adequately protected from lake flooding, the environmental impacts enumerated in the Final Environmental Statement properly evaluates the environmental consequences of plant operation during high lake levels in the area.

TORNADO

The tornado loading for structures at the Davis-Besse Station has been previously evaluated by the staff in the Safety Evaluation for the Davis-Besse Nuclear Power Station during the radiological health and

safety review. In Section 5.1 of the Safety Evaluation, the staff concluded that the applicant's tornado design criteria were acceptable and that the structures that are essential for safe shutdown of the reactor and that can be subjected to tornado loadings would be designed to withstand loads resulting from a tornado having tangential and translational velocities of 300 mph and 60 mph, respectively, and a differential pressure of 3.0 psi in 3 seconds acting outward, and to withstand the effects from tornado-borne missiles. Allowable stresses will not exceed:

- (1) 90% of the guaranteed minimum yield strength of structured steels,
- (2) the American Concrete Institute (ACI) 318 capacity reduction factor times for the minimum guaranteed yield strength of reinforcing steels,
- and (3) 75% of the ultimate strength of concrete.

Therefore, if a large tornado were to strike the facility, the radiological environmental consequences would be negligible because those structures required to safely shut down the plant are designed to withstand the tornado. Although natural phenomena could be considered as initiating events for some of the eight classes of accidents (such as a small steam line break), the consequences of these events would not be greater than those described in Section 7.1 of the Final Environmental Statement.

Tornado induced damage to those station structures not required to safely shutdown the plant are anticipated to be no more severe than damages to a non-nuclear facility. Resultant damages to the environment are anticipated to be minor. For example, if a tornado driven missile penetrated the diesel oil tank, the oil would probably be contained with the

surrounding concrete structure. If that concrete structure were also penetrated, the oil would be collected by the yard drainage system which would collect the oil in the drainage ditch. Once in the drainage ditch, the oil could be treated.

SUMMARY

The staff has evaluated the environmental consequences of a spectrum of accidents, some of which could conceivably be initiated by a severe storm. On the basis of this evaluation, the staff has concluded (1) that the radiological environmental consequences are small even assuming that the events described in Section 7.1 of the FES occurred, (2) that, when these consequences are considered with the probability of occurrence, the risk to the surrounding population from postulated accidents as a result of plant operation is very small, and (3) that the environmental risk from other causes, such as oil spills, due to storm damage to the plant is also small.