

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION

In the Matter of

THE TOLEDO EDISON COMPANY and
THE CLEVELAND ELECTRIC ILLUMINATING
COMPANY

Davis-Besse Nuclear Power Station

Docket No. 50-346

APPLICANTS' PROPOSED FINDINGS OF FACT AND
CONCLUSIONS OF LAW IN THE FORM OF
AN INITIAL DECISION

PRELIMINARY STATEMENT

1. On August 1, 1969, The Toledo Edison Company (Toledo Edison) and The Cleveland Electric Illuminating Company (hereinafter collectively referred to as the Applicants) filed with the Atomic Energy Commission (AEC or Commission) a joint application for a license to construct and operate a nuclear power station. The proposed station, to be known as the Davis-Besse Nuclear Power Station, will utilize a pressurized water nuclear power reactor with an initial core power level of 2633 thermal megawatts (Mwt) and an ultimate expected level of 2772 Mwt. The station is to be located on the south shore of Lake Erie in Ottawa County, Ohio, 20 miles east of Toledo. The station will be jointly owned by the two Applicants as tenants-in-common, with Toledo Edison assuming responsibility for the design, construction and operation.

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2. Following review of the application by the Commission's Regulatory Staff (Staff) and the Advisory Committee on Reactor Safeguards (ACRS), the Commission, pursuant to the Atomic Energy Act of 1954, as amended, (Act) and its own regulations, announced by publication in the Federal Register on November 4, 1970,^{1/} that a public hearing would be held before this Atomic Safety and Licensing Board (Board) to consider whether a construction permit should be granted to the Applicants. The notice of hearing established the time and place of the hearing and provided for a prehearing conference. It also explained how interested persons could petition for leave to intervene in the proceedings as parties and how persons wishing to express their views at the hearing could do so without becoming intervening parties.

3. In accordance with the notice of hearing, a public hearing was held before this Board on December 8-10, 1970, January 5-7, and 25-29, 1971, and February 8-12, 1971, in Port Clinton, Ohio, about nine miles from the site, following a prehearing conference which had been held in Port Clinton on November 23, 1970. The parties to this proceeding are the Applicants, the Staff, the Coalition for Safe Nuclear Power (Coalition), Mr. Glenn Lau, a local resident, and Living in a Finer Environment (LIFE) along with two individuals, Dr. Irwin I. Oster^{2/} and Mr. William E. Reany. The Coalition, Lau and LIFE intervened in the proceeding in opposition to the proposed station. The hearing was a contested proceeding within the meaning of section 2.4(n) of the Commission's Rules of Practice. The issues to be considered

^{1/} 35 Fed. Reg. 16999.

^{2/} By letter dated February 8, 1971, to the Board, Dr. Oster withdrew as an intervenor in opposition to the station. Tr. pp. 1608-15.

by this Board in a contested proceeding as the basis for determining whether a construction permit should be issued to the Applicants were set forth in the notice of hearing.^{3/}

3/ The Commission's notice of hearing published on November 4, 1970, at 35 Fed. Reg. 16999 specified the following issues to be considered in the event the hearing should become a contested proceeding.

1. Whether in accordance with the provisions of 10 CFR §50.35(a):
 - (a) The applicants have described the proposed design of the facility including, but not limited to, the principal architectural and engineering criteria for the design, and have identified the major features or components incorporated therein for the protection of the health and safety of the public;
 - (b) Such further technical or design information as may be required to complete the safety analysis and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;
 - (c) Safety features or components, if any, which require research and development have been described by the applicants and the applicants have identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and
 - (d) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facility, and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.
2. Whether the applicants are technically qualified to design and construct the proposed facility;
3. Whether the applicants are financially qualified to design and construct the proposed facility; and
4. Whether the issuance of a permit for the construction of the facility will be inimical to the common defense and security or to the health and safety of the public.

4. The Coalition, consisting of a number of organizations and individuals in north central Ohio, filed an initial petition for leave to intervene in the proceeding on November 18, 1970. As a result of a Board order at the prehearing conference granting the Coalition leave to amend its petition which did not conform to the requirements of section 2.714 of the Commission's Rules of Practice, an amended petition was filed on December 7, 1970, setting forth a number of contentions in opposition to the proposed nuclear power station. The Coalition's amended petition was granted by the Board on December 9, 1970, subject to conditions, pursuant to section 2.714(d), limiting the matters in controversy to those of the Coalition's contentions which were relevant to the issues in the proceeding, set forth in reasonably specific detail as required by section 2.714(a), and listed in the original petition.^{4/}

5. The notice of hearing specified that petitions for leave to intervene must be received by the AEC not later than November 18, 1970. Lau's petition, filed December 8 but dated November 18 and represented to be an extension of a letter which Lau had sent to the Commission on November 18, was accepted as timely. Lau was also given the opportunity to amend his petition which was deficient and was admitted as a party on December 9 on the basis of the amended petition dated December 8, 1971, subject to conditions limiting the matters in controversy to those of Lau's contentions

^{4/} Tr. pp. 384-7.

which were relevant to the proceeding and which were presented in reasonably specific detail.^{5/}

6. The two co-chairmen of LIFE, a student group from Bowling Green University, submitted an undated letter, docketed by the AEC on November 16, 1970, which indicated the wishes of LIFE to intervene in the proceedings. The letter did not relate the petitioner's interests or how its interests would be affected. At the prehearing conference on November 23, 1970, it was noted that LIFE appeared among the list of Coalition members in the Coalition's petition for leave to intervene, and the co-chairman of LIFE announced that LIFE would participate in the proceeding as a part of the Coalition rather than as a separate intervenor. When the hearing commenced on December 8, LIFE, along with Dr. Oster and Mr. Reany, (hereinafter collectively referred to as LIFE) filed a separate petition for leave to intervene in the proceeding. The petition was denied for not being timely filed and because of the absence of a showing by the petitioners of good cause for failure to file on time.^{6/} On December 26, LIFE filed a petition for reconsideration of the Board's rulings relating to the denial of LIFE's intervention. The petition for reconsideration recited LIFE's reasons for late filing of its intervention petition and set forth two contentions, the first relating to AEC's compliance with the National Environmental Policy Act of 1969 (NEPA), and the second relating to the

^{5/} Tr. p. 382.

^{6/} Tr. p. 349.

adequacy of the radiological safety standards in Part 20 of the Commission's regulations. LIFE was allowed to intervene^{7/} for the purpose of pursuing these two contentions to the extent that such challenges are permitted in adjudicatory proceedings as set out in the Commission's regulations and, in particular, the Commission's memorandum dated August 8, 1969, in the Calvert Cliffs proceeding.^{8/}

7. A petition for leave to intervene filed by Richard E. Webb, a resident of Columbus, Ohio, alleging the unconstitutionality of the Act was denied at the prehearing conference. The constitutional question was beyond the scope of the proceeding and the petitioner had failed to set forth his interest in the proceeding and how it would be affected by the proposed issuance of the construction permit.^{9/}

8. Pursuant to section 2,715 of the Commission's Rules of Practice, limited appearances were granted by this Board to allow the presentation of unsworn statements on behalf of the Ohio Department of Health and by a number of other persons on their own behalf and on behalf of organizations they represented. Applicants and the Staff responded to the matters raised by the limited appearors.^{10/}

^{7/} Tr. pp. 608-11, 618-20.

^{8/} In the Matter of Baltimore Gas and Electric Company,
AEC Docket Nos. 50-317 and 50-318.

^{9/} Tr. pp. 10-18.

^{10/} Tr. pp. 518-525, Applicants' Exhibit No. 10, and Staff Exhibit No. 15.

ISSUES TO BE DECIDED IN THIS PROCEEDING
AS A BASIS FOR DETERMINING ISSUANCE OF
A CONSTRUCTION PERMIT

Issue No. 1(a). Whether in accordance with the provisions of 10 CFR §50.35(a) the applicants have described the proposed design of the facility including, but not limited to, the principal architectural and engineering criteria for the design, and have identified the major features or components incorporated therein for the protection of the health and safety of the public.

9. The application and the record of the proceeding contain a wide range of information about the proposed facility. This information includes detailed information about the site and the basis of its suitability, the design of the facility including the principal architectural and engineering criteria, and the features, components, and systems incorporated in the facility for the protection of the health and safety of the public. Features of the station requiring additional information to be developed by the Applicants prior to completion of construction of the facility are described in the application and the record of the proceeding which also includes the Applicants' technical and financial qualifications, the Applicants' quality assurance program, and the proposed station's bearing upon the common defense and security.^{11/}

^{11/} Applicants' Summary Description of Application for Licenses Under the Atomic Energy Act of 1954, as amended, for Davis-Besse Nuclear Power Station (Applicants' Summary) November 6, 1970, pp. 1-3, 37. Tr. p. 472.

The Staff's safety evaluation explains the considerations which were given by the Staff to the important safety features of the proposed facility.^{12/} The intervenors did not controvert the testimony and evidence in support of an affirmative finding on Issue No. 1(a).

Issue No. 1(b). Whether in accordance with the provisions of 10 CFR §50.35(a) such further technical or design information as may be required to complete the safety analysis and which can reasonably be left for later consideration, will be supplied in the final safety analysis report.

10. Applicants have testified,^{13/} and the Staff agrees,^{14/} that such further information as may be required to complete the safety analysis and which can reasonably be left for later consideration will be supplied in the final safety analysis report (FSAR). The FSAR is prepared by an applicant in an AEC licensing proceeding as part of its application for an operating license and is usually submitted about a year and a half prior to the scheduled date for initial fuel loading. The intervenors did not controvert the testimony in support of an affirmative finding on Issue No. 1(b).

^{12/} Safety Evaluation by the Division of Reactor Licensing (Staff Safety Evaluation), November 2, 1970, pp. 1-4, 86. Tr. p. 494.

^{13/} Applicants' Summary, p. 37.

^{14/} Staff Safety Evaluation, p. 86.

Issues No. 1(c) and 1(d)(1). Whether in accordance with the provisions of 10 CFR §50.35(a) safety features or components, if any, which require research and development have been described by the applicants and the applicants have identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components and, on the basis of the foregoing, there is reasonable assurance that such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facility.

11. Applicants and the Staff recognize that, in order to complete the final detailed design of some components, additional information will be needed. The research and development programs, most of which have been completed since submission of the application, consist primarily of proof testing of engineered designs, confirmatory tests to confirm analytically predicted conditions, or analytical studies to evaluate design or accident conditions. The areas of development include core xenon instability analyses, core thermal and hydraulic design, the effects of fuel rod clad failure on core cooling, control rod drive testing, prototype testing of the once-through steam generator, testing of self-powered neutron detectors, and analyses of the effects of blowdown forces on core internals. The programs are timely, are reasonably designed to accomplish their objectives before completion of construction of the station, will provide adequate information on which to base analyses of the design and performance, and should lead to

acceptable designs for the systems involved.^{15/} The intervenors did not controvert the testimony and evidence in support of affirmative findings on Issues No. 1(c) and 1(d)(i).

Issue No. 1(d)(ii). Whether in accordance with the provisions of 10 CFR §50.35(a), on the basis of the foregoing, there is reasonable assurance that, taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

Site Considerations

12. The proposed Davis-Besse Nuclear Power Station will be located on the south shore of Lake Erie in Ottawa County, Ohio, approximately nine miles northwest of the City of Port Clinton, the Ottawa County seat. The City of Toledo is twenty miles to the west and the Village of Oak Harbor is six miles southwest of the site. The site consists of at least 900 acres of which about half is marshland which will be leased to the U. S. Bureau of Sports Fisheries and Wildlife for management as a national wildlife refuge. The site and surrounding area terrain is virtually featureless with marsh areas along the lake shore and with farmland further inland.^{16/}

13. The minimum distance between the reactor and the outer boundary of the exclusion area (the area in which

^{15/} Applicants' Summary, pp. 29-32, 37; Staff Safety Evaluation, pp. 75-81, 86.

^{16/} Applicants' Summary, pp. 4-6; Staff Safety Evaluation, pp. 5-6.

the Applicants have the authority to determine all activities for purposes of 10 CFR Part 100 of the Commission's regulations) is 2400 feet. No one resides within the exclusion area. The low population zone surrounding the station, with a radius of two miles, has a permanent resident population of approximately 650 and a 1969 summer population of 1564. The nearest population centers (population greater than 25,000) are Toledo and Sandusky, each of which is approximately twenty miles from the site.^{17/}

14. The station design takes into account site geology, meteorology, hydrology and ground water conditions and the possibility of tornados, floods, and earthquakes.^{18/} The containment and engineered safety features of the station design, and all other components of the facility which bear significantly on the acceptability of the site under site evaluation factors identified in 10 CFR Part 100 have been analyzed and evaluated by the Applicants and the Staff for a core power level of 2772 Mwt, the ultimate power level expected for the reactor.^{19/}

15. Lau contended that the exclusion area and low population zone around the site, and the population center distance, as defined in 10 CFR Part 100 of AEC regulations, were incorrectly calculated in contravention of the Commission's

^{17/} Applicants' Summary, pp. 4-6; Staff Safety Evaluation, pp. 5-6.

^{18/} Applicants' Summary, pp. 6-10; Staff Safety Evaluation, pp. 6-9.

^{19/} Applicants' Summary, p. 2; Staff Safety Evaluation, pp. 1-2.

own guidelines. Similarly, the Coalition contended that the Commission had violated its own guidelines for siting reactors.^{20/} The purpose of Part 100 of AEC regulations is to provide guideline criteria for determining the adequacy of a specific site for a specific facility. Part 100 references an AEC document (TID-14844) as a point of departure for calculating particular site requirements. The intervenors apparently misinterpreted Part 100 and the method with which TID-14844 is to be used, and extrapolated the exclusion zone radius and low population zone radius directly from a table set out in TID-14844 which was based on an assumed reactor having a simple containment and no other engineered safety features. The calculational model in TID-14844 does not reflect the numerous engineered safety features of the proposed facility, such as the emergency core cooling system, the concrete shield building surrounding the steel containment vessel, and an emergency ventilation system with redundant full capacity fan and filter systems. Part 100 allows the substitution of engineered safety features and favorable site characteristics for distance in determining site parameters.^{21/}

^{20/} Tr. pp. 809-19, 1274-76, 1399-1412.

^{21/} Section 100.10 makes it clear that a number of factors, including engineered safety features, are to be considered in evaluating proposed reactor sites. Section 100.10(d) specifically provides that a site with unfavorable site characteristics may be acceptable if "appropriate and adequate compensating engineered safeguards" are used. A note at the end of Part 100 which references TID-14844 states that the calculations described therein "may be used as a point of departure for consideration of particular site requirements . . ." The Statement of Consideration which accompanied the publication of Part 100 on April 12, 1962, stated that the Applicants are "free and indeed encouraged to demonstrate to the Commission the applicability and significance of considerations other than those set forth in the guides". (27 Fed. Reg. 3509).

In this regard, we find that the Staff has been consistent with the provisions of Part 100 and its past regulatory practices in evaluating the suitability of the proposed site for the Davis-Besse Nuclear Power Station.^{22/}

16. Lau contended that Applicants' meteorological studies of the site were inadequate in that they (1) analyzed data for only six months and (2) ignored two recent severe storms in the area. The application contains eighteen months of temperature data through February 1970 at three levels and eighteen months of wind data at the 300-foot level. It also contains six months of wind data at the 20-foot level. The Staff noted that the Applicants will provide a year's data at the twenty-foot level prior to review of the application for an operating license, and, for purposes of this proceeding and to determine the suitability of the site, evaluated the site using a calculational model with diffusion parameter assumptions more conservative than the Applicants' six-month data at the twenty-foot level would indicate to be warranted. In regard to dispersion, "more conservative" means the assumption of lower wind speeds and other factors which would indicate less dispersion of the gasses in the atmosphere than the actual observed meteorological conditions would indicate. The Applicant has subsequently collected well over a year's worth of data at the twenty-foot level which confirms the conservatism of the calculational model used.^{23/} Severe storms were considered relative to the structural adequacy of the station. The reactor structures are being designed to withstand tornadoes of substantially greater magnitude than any windstorms

^{22/} Tr. pp. 645-52, 696-702, 834-41, 1094-1100, 1126-46.

^{23/} Tr. pp. 655-61, 700-2.

measured in the area of the site, including the two storms mentioned by Lau.^{24/}

17. Lau also contended that inadequate considerations had been given to population growth in the area. Applicants and the Staff testified, however, that the application indeed contained population growth projections for the area through the year 2000 based on U. S. Census figures. The Staff also noted that the AEC retains close and continuous regulatory supervision over the plant throughout its lifetime and the AEC is empowered to take regulatory measures which might be necessary to deal with any unexpected population increase.^{25/}

18. Applicants have provided the information required by Appendix E of Part 50 concerning preliminary plans for developing emergency procedures to be implemented in the unlikely event of an accident condition which would require evacuation of people within the low population zone.^{26/} Lau contended, however, that evacuation of residents from the low population zone could not be accomplished in periods of flooding or heavy storms and produced a number of local residents of the nearby Sand Beach area who testified to the severity of the winter snowstorms with resultant snow drifting which caused private local streets to be blocked by snow for at least several days during several years.^{27/} The record shows there are no residences

^{24/} Tr. pp. 660, 700-2.
^{25/} Tr. pp. 654, 836-41.
^{26/} Tr. pp. 1650-58, 1712-14, 2179-82.
^{27/} Tr. pp. 2052-2106.

within the exclusion area and that there was a fluctuating population of from 637 to 1,564 during 1969 in the low population zone, with a projected population growth rate of 1.6 percent per year. Detailed emergency procedures to provide for an orderly evacuation will be fully prepared prior to operation of the station in coordination with local and state law enforcement agencies, the Ottawa County Civil Defense Corps, and the U. S. Coast Guard. Applicants have made preliminary contacts with the Ottawa County Commissioner, the Ottawa County Sheriff, the Ottawa County Engineer, the Civil Defense Director, the Oak Harbor Fire Department, the Highway Department, and the Ohio Highway Patrol, all of whom have indicated a willingness to cooperate with Applicants in formulating a detailed evacuation plan. Suitable vehicles will be available to aid in the timely evacuation of individuals under the adverse snow and flood conditions expected in the area.^{28/} The testimony of Lau's witnesses indicated that, even though the residents were often snowbound in the sense that they were unable to use their automobiles, egress on foot or by other suitable vehicles was not precluded. Applicants' expert testimony demonstrated that initially, under maximum hypothetical conditions requiring evacuation, only a selected, downwind portion of the low population zone would have to be promptly evacuated. This would involve moving a small number of people over distances of under a mile. Although the testimony indicated

^{28/} Tr. pp. 653-4, 1093-94, 1100-1109, 1118-26, 1648-50, 2044-51, 2149-50, 2152, 2165-66, 2182-84.

that evacuation could be undertaken during the course of violent weather conditions, such evacuation would not have to occur during such conditions because of the favorable dispersion characteristics afforded by the high wind speeds associated with such conditions. ^{29/} The Ottawa County Engineer, an elected official in charge of snow removal in the area, testified that, with proper notification, it is feasible to evacuate the low population zone under any weather conditions within short time periods. ^{30/} Testimony by the Staff complemented and corroborated Applicants' testimony. ^{31/}

19. Lake Erie surface areas and certain air spaces in the vicinity of the station have been established by the U. S. Corps of Engineers and the Federal Aviation Agency as restricted areas reserved for use by segments of the armed services and industrial organizations located within the Erie Industrial Park for training and testing activities of aircraft, ground weapons, and airborne weapons. The Coalition contended that these activities constituted an unacceptable hazard in relation to operation of the facility. The Staff and the ACRS had given special attention to these activities during their review of the application and both had concluded that no significant hazard existed as a result of these activities. Evidence presented at the hearing by both

^{29/} Tr. pp. 2184-92, 2193-97.

^{30/} Tr. pp. 2143-66.

^{31/} Tr. pp. 2193-97, 2197-99, 2200-2206, 2207-08.

the Staff and the Applicants concerning the frequency of flights in the area, types of aircraft, flight paths, types of weapons tested, locations of firing ranges, and procedures for controlling aircraft and weapons testing activities in the areas confirmed the conclusions of the Staff and the ACRS. In addition, Applicants introduced letters from David Packard, Acting Secretary of Defense, and from Dana L. Stewart, The Adjutant General, State of Ohio, providing assurance that all military and ordnance testing activities in the area will be carefully controlled to avoid hazard to the health and safety of the public.^{32/}

Features of the Station

20. The nuclear steam supply system for the Davis-Besse Nuclear Power Station is a two-loop pressurized water reactor supplied by the Babcock & Wilcox Company (B&W) similar to other B&W pressurized water reactors such as Three Mile Island Nuclear Power Station Units 1 and 2 for which construction permits have been issued by AEC.^{33/} The reactor will be fueled with slightly enriched uranium dioxide pellets sealed within zircaloy tubes. Core reactivity is controlled by a

^{32/} Applicants' Summary, p. 10; Staff Safety Evaluation, pp. 11-13; Tr. pp. 683-6, 712-19, 731-49, 751-56, 841-50, 1636-43, 1715-17, 1908-14.

^{33/} Applicants' Summary, p. 29; Staff Safety Evaluation, p. 14.

combination of movable control rod assemblies, a neutron absorber dissolved in the reactor coolant water, and burnable poison rod assemblies. ^{34/} The two-loop reactor primary coolant system includes the reactor vessel, four reactor coolant pumps, two steam generators, a pressurizer and inter-connecting piping. The water circulating in the primary system is used as a heat transfer medium to transfer heat from the reactor core to the steam generator where steam is produced in the secondary system to drive the turbine generator. ^{35/} The reactor containment, consisting of a free standing steel containment vessel and a reinforced concrete shield building, completely encloses the reactor and the primary coolant system and is designed to withstand the peak pressure which could result in the unlikely event of a loss-of-coolant accident. ^{36/} In addition to the reactor containment, the station has a number of engineered safety features designed for limiting the consequences of accidents, including the highly unlikely loss-of-coolant accident. These engineered safety features include emergency core cooling systems, containment atmosphere cooling systems, and an emergency ventilation system. The station has a reactor protection system designed to shutdown the reactor when preestablished limiting safety system settings are reached. ^{37/}

^{34/} Applicants' Summary, pp. 16-17.

^{35/} Applicants' Summary, p. 15.

^{36/} Applicants' Summary, pp. 16-17; Staff Safety Evaluation, pp. 26-30.

^{37/} Applicants' Summary, pp. 17-20; Staff Safety Evaluation, pp. 35-54. Tr. p. 511.

21. During the course of the proceeding the Board raised a number of questions relating to some of the safety features of the station. In response, evidence was presented, for example, that main steam and feedwater penetrations of the containment vessel will be tested for leakage and can be repaired, if necessary, when the station is shutdown for refueling.^{38/} Other evidence relating to station safety features was presented in response to Board inquiries relating to the adequacy of multi-component piping and valves,^{39/} the functioning of the atmospheric dump valves,^{40/} the emergency diesel cooling system,^{41/} and the design of the reactor coolant pump flywheels.^{42/}

Radioactive Effluents

22. Radioactive gaseous and liquid wastes will be treated by the radwaste disposal system which is designed to reduce radioactivity to a level which will permit reuse of the decontaminated waste water and release of effluents at levels well below applicable regulatory limits. Processed effluents will be isolated and sampled prior to release to the environment to ensure that adequate provisions for safe discharge are made. In addition, effluents will be continuously monitored during release, and if their activity

^{38/} Applicants' Response to Questions Asked by the Atomic Safety and Licensing Board at the Prehearing Conference (Applicants' Response), December 4, 1970, Q. 4, Tr. pp. 474, 500, 506-7.

^{39/} Applicants' Response, Q. 5, Tr. pp. 474, 500.

^{40/} Applicants' Response, Q. 6, Tr. pp. 474, 500, 507-10, 690-91.

^{41/} Applicants' Response, Q. 7, Tr. pp. 474, 500.

^{42/} Tr. pp. 516-17, 687-90.

should exceed low preset values, their release will be stopped automatically. Applicants testified that gaseous wastes will normally be held for a period of sixty days, and in no event less than thirty days, before being filtered and released. This processing and hold-up time for decay ensures that radionuclides of biological concern, including Cesium-137, Cesium-138, and Strontium-90, will not be released in the gaseous effluents and will not result from decay of any of the radionuclides in the gaseous effluents. Applicants' testimony also indicated that the design of the liquid radwaste system, which employs degasification, filtration, ion exchange, and distillation, incorporates the most efficient proven technology available for reducing the radioactive content of the liquid effluent. The capabilities for sampling and monitoring, along with the inherent capacity and flexibility of the system, permit the exercise of positive control over liquid and gaseous releases from the station to ensure that all discharges of radioactive material from the site will be maintained as low as practicable and well below the limits of 10 CFR Part 20.^{43/}

23. The Coalition contended that there had been an insufficient examination of the critical exposure routes in considering the effluent discharge.^{44/} Testimony by Applicants and the Staff bearing on the Coalition's contention and in

^{43/} Applicants' Summary, pp. 22-23; Staff Safety Analysis, pp. 55-58; Tr. pp. 783-84, 790-91, 799-804, 854-61, 863-67, 1253-54, 1269-74, 1464-85, 1643-47, 1897-1904, 1940-44, 1958-66.

^{44/} Tr. pp. 35, 768-804, 815-16, 1227-74, 1277-1330, 1386-90, 1647.

response to questions asked by the Coalition on cross examination and by the Board indicated that the Applicants had adequately taken into account the critical exposure routes and that, using extremely conservative assumptions pertaining to reconcentration in the food chain, resultant doses would be far below AEC limits.^{45/}

Accident Analysis

24. In determining the safety of the reactor design, detailed safety evaluations and analyses were made by Applicants and the Staff, and reviewed by the ACRS, to determine the capability of the station to mitigate the consequences of a loss-of-coolant accident should it occur.^{46/} The Coalition contended that the analyses by the Applicants and the Staff are inadequate in that they did not include the consequences of an uncontrolled meltdown of the nuclear fuel. The Coalition contended that there is no reasonable assurance that a meltdown can be avoided, but offered no direct evidence which supported the contention.^{47/} Evidence introduced by Applicants and the Staff, however, indicated that a core meltdown is precluded by the incorporation into the station design of highly

^{45/} Applicants' Response, Q. 1, 2, Tr. p. 47⁴; Tr. pp. 499, 677-81, 707-12, 1662-75, 1917-71, Applicants' Exhibit No. 7.

^{46/} Applicants' Summary, pp. 24-25; Staff Safety Evaluation, pp. 62-67.

^{47/} Tr. pp. 820-33, 1659-60.

redundant systems of engineered safety features to cool the core in the event of a loss-of-coolant accident. These safety features also assure the integrity of the containment system for mitigating the release of fission products to the atmosphere.^{48/} Nevertheless, for conservatism, the Applicants' evaluation and the Staff's evaluation of the radiological consequences of the maximum hypothetical accident take into consideration a fission product release which would result from an arbitrarily postulated core meltdown and which would be far greater than calculated for the worst loss-of-coolant accident. Safety evaluations by both the Applicants and the Staff demonstrate that the doses from such a remote and hypothetical accident are well within the guideline values of 10 CFR Part 100.^{49/}

Environmental Monitoring

25. A comprehensive environmental monitoring program will be commenced prior to operation of the Davis-Besse Nuclear Power Station to determine the magnitude of the natural radioactivity in the surrounding environment. The program will include environmental sampling of lake and well water, soil, air particulate matter, farm products, lake biota, and lake bottom sediments. This program will continue after station operation begins, to detect and evaluate any change in radioactivity of the environment due to operation of the station. The planning

^{48/} Tr. pp. 661-76, 702-3, 862-3, 884-903.

^{49/} Applicants' Summary, p. 25; Staff Safety Evaluation, p. 63.

and conduct of this program will be done in cooperation with interested federal and state agencies and will take into account the recommendations of the Fish and Wildlife Service, U. S. Department of the Interior. Additionally, Applicants have been conducting a study of the local Lake Erie area since 1968. One purpose of this study is to determine the type and nature of the lake biota to ascertain the extent that these biota could concentrate radionuclides which might be discharged from the station during operation. Information obtained from this continuing study and from the environmental monitoring program will be used, among other purposes, to assure that the small amount of liquid radioactive releases will not adversely affect aquatic ecological systems and will not prevent normal utilization of the lake environment.^{50/}

Quality Assurance

26. Applicants have established a comprehensive quality assurance program to assure that the station will be fabricated and constructed in accordance with all applicable codes and standards. The program, which meets the requirements of Appendix B, 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants," is implemented by

^{50/} Applicants' Summary, pp. 10-11; Staff Safety Evaluation, pp. 10-11.

a quality assurance organization under the direction of Toledo Edison's Quality Assurance Engineer. Bechtel, Toledo Edison's architect-engineer and construction manager, acts as Toledo Edison's agent in monitoring the quality assurance programs of The Babcock & Wilcox Company and other equipment suppliers, and of the construction contractors. The quality assurance program functions independently of construction responsibilities and the Quality Assurance Engineer has the authority to stop work in the event of nonconformance with drawings, specifications, or procedures. ^{51/} In response to inquiry by the Board, the Staff testified that the detailed quality assurance program will be under surveillance by the Division of Compliance and will be audited throughout the construction of the station. ^{52/}

^{51/} Applicants' Summary, pp. 26-28; Staff Safety Evaluation, pp. 72-75.

^{52/} Tr. p. 513

Issue No. 2. Whether the applicants are technically qualified to design and construct the proposed facility.

26a. Of the two Applicants, Toledo Edison has the responsibility for the engineering, design, construction, and operation of the Davis-Besse Nuclear Power Station. Toledo Edison, in addition to being qualified and experienced in the design, construction, and operation of fossil fueled generating stations, has participated extensively in the Enrico Fermi Fast Breeder Project and has key personnel who have had considerable experience in all phases of that project. Toledo Edison has 90 engineers on its staff, including employees with degrees in the nuclear discipline, and has employees with nuclear operations experience. In addition, an extensive training program has been established which will ensure that a highly competent and fully trained staff will be available for operation of the Davis-Besse station. The nuclear steam supply system is to be designed and supplied by the Babcock & Wilcox Company, a highly experienced nuclear reactor supplier whose reactors have been incorporated into many plants approved for construction and operation in this country and abroad. Bechtel will perform the architect-engineering services and will act as construction manager. Bechtel is extensively experienced in the nuclear industry and is presently engaged in the design and construction of 23 nuclear power units. ^{53/} This issue was not a matter in controversy in the proceedings.

^{53/} Applicants' Summary, pp. 33-35; Staff Safety Evaluation, pp. 68-72, Tr. pp. 1134-35.

Issue No. 3. Whether the applicants are financially qualified to design and construct the proposed facility.

27. The two Applicants will share ownership of the Davis-Besse Nuclear Power Station as tenants-in-common with Toledo Edison holding a 52.5 percent share and The Cleveland Electric Illuminating Company a 47.5 percent share. Each Applicant is in a strong financial position with sound financing, adequate resources, and a high level of earnings, and anticipates financing its share of the construction costs from internal sources, from the sale of debt securities, and from the issuance of capital stock in such a manner as to maintain its sound and conservative capital structure.^{54/} This issue was not a matter in controversy in the proceeding.

Issue No. 4. Whether the issuance of a permit for the construction of the facility will be inimical to the common defense and security or to the health and safety of the public.

28. The application reflects that the activities to be conducted at the Davis-Besse Nuclear Power Station would be within the jurisdiction of the United States. All the directors and principal officers of each Applicant are citizens of the United States. The Applicants are not owned, dominated or controlled by an alien, a foreign corporation or a foreign government. The activities to be conducted do not involve any restricted data, but the Applicants have agreed to safeguard any such data which might become involved in accordance with the

^{54/} Financial Qualifications of The Toledo Edison Company, November 6, 1970, Tr. p. 478; Financial Qualifications of The Cleveland Electric Illuminating Company, November 27, 1970, Tr. p. 478; Staff Safety Evaluation, pp. 84-5.

requirements of 10 CFR Part 50. The Applicants will rely upon obtaining fuel as it is needed from sources of supply available for civilian purposes, so that no diversion of special nuclear material for military purposes is involved.^{55/}

29. The findings in paragraphs 9 through 27 apply also to this Issue No. 4.

AEC RADIOLOGICAL SAFETY STANDARDS

30. Intervenor LIFE contended in its petition for reconsideration that "the proposed facility will not be operating without undue risk to the health and safety of the public" even if it complies with the radiological safety standards in 10 CFR Part 20 of the Commission's regulations, "Standards for Protection Against Radiation." LIFE contended that the AEC standards are "outmoded and inadequate" and, as such, do not constitute a reasonable exercise of the broad rule making discretion given the Commission under the Act.

31. A challenge to the validity of the radiation standards in AEC regulations is unusual, although it was attempted once before in the Calvert Cliffs proceedings in 1969.^{55/} A Commission memorandum in that case, dated August 8, 1969, clearly stated that findings in an adjudicatory proceeding such as this must be made in accordance with AEC regulations which establish the standards for reactor construction

^{55/} Applicants' Summary, p. 36; Staff Safety Evaluation, pp. 83-4.

^{56/} Supra, note 8.

permit determinations, and that such regulations, which are general in nature and which are established in public rule making proceedings where the Commission may consider the views of all interested persons, are not subject to amendment by Atomic Safety and Licensing Boards in individual licensing proceedings. The memorandum did, however, permit a challenge to the validity of AEC regulations in licensing hearings such as this on "limited grounds if the contested regulation relates to an issue in the proceeding". The three limited grounds were (1) "whether the regulation was within the Commission's authority," (2) "whether it was promulgated in accordance with applicable procedural requirements," and (3) "as respects the Commission's radiological safety standards, whether the standards established are a reasonable exercise of the broad discretion given to the Commission by the Atomic Energy Act for implementation of the statute's radiological safety objectives." LIFE's challenge to the validity of 10 CFR Part 20 was limited to the third of the three limited grounds for challenge, namely, that the Part 20 standards are not a reasonable exercise of the Commission's broad discretion. To establish that the radiation standards are invalid, LIFE would have had to show that the Part 20 standards represent an arbitrary and capricious exercise by the Commission in abuse of its broad statutory discretion. This LIFE has failed to do.

32. Testimony challenging the validity of Part 20 was presented by Dr. Ernest Sternglass testifying on behalf of LIFE ^{57/} and by Dr. Arthur Tamplin who testified at the invitation of the Board. ^{58/}

33. Citing studies that were initiated in England in the 1950's and which have been continued through the last decade of mothers who had been exposed to diagnostic X-rays during pregnancy, Dr. Sternglass asserted that at least with regard to fetal exposures there is evidence of a linear relationship between the number of X-rays given and the chance of cancer and leukemia. He also asserted that such studies demonstrate that the early embryo in the first trimester of pregnancy was more sensitive to radiation than is the fetus in the latter stages of pregnancy. ^{59/}

34. Dr. Sternglass also recited the results of his studies in which he alleged a causal relationship between fallout deposition and infant mortality and a causal relationship between low level radioactivity releases from certain nuclear facilities and infant mortality in neighboring counties. ^{60/} In support of his argument Dr. Sternglass also mentioned certain animal and laboratory studies including studies at

^{57/} Tr. pp. 1335-87, 1387-92, 1414-36, 1437-56, 1457-61.

^{58/} Tr. pp. 1499-1511, 1523-58, 1558-60.

^{59/} Tr. pp. 1337, 1341-47.

^{60/} Tr. pp. 1347-92.

the University of Rochester involving exposures of rats during pregnancy to "small amounts of tritium". Dr. Sternglass reported that such studies showed detectable effects on fetal and infant mortality due to low level radiation and that other animal studies have also shown strontium 90 "which was believed to reconcentrate only in the bone of animals actually leading to severe damage to the ova, the testes, and other organs that had not been anticipated." ^{61/}

35. Dr. Sternglass incorporated in his testimony, on behalf of LIFE's contention, his earlier testimony which he presented on behalf of the Coalition. ^{62/} This testimony related to reconcentration in the food chain of certain isotopes such as Cesium 137 and 138 and strontium 90 which Dr. Sternglass associated with gaseous releases from nuclear facilities.

36. Dr. Tamplin urged an immediate reduction in the radiation protection guides of 500 millirem per year for whole body exposure of individual members of the public and 170 millirem per year to the population based on his allegation that such exposures will result in much higher carcinogenic effects than had heretofore been assumed. He cited the 1969

^{61/} Tr. pp. 794, 800, 1367-68, 1442-44.

^{62/} Tr. p. 1387.

Publication No. 14 of the International Commission on Radiological Protection. Dr. Tamplin also asserted that the radiation standards fail to take into account the biological concentrating mechanisms in the food chain. In support of this point of view Dr. Tamplin presented the results of his dosage calculations based on the presence of Cesium 137 in the environment at the maximum permissible concentration specified in Table II, Appendix B of Part 20, which he claimed results in doses higher than the radiation protection guides due to such concentrating mechanisms. ^{63/}

37. Cross examination of Dr. Sternglass and Dr. Tamplin and rebuttal testimony by experts testifying on behalf of the Applicants and the Staff demonstrated that:

(a) The AEC's radiation protection standards are based upon and fully consistent with the recommendations of the Federal Radiation Council (FRC), a statutory body established by the Congress to provide guidance to all Federal agencies in the formulation of radiation standards. ^{64/}

(b) The AEC's radiation protection standards and the guidance of the FRC are compatible with the recommendations of the National Council on Radiation Protection and Measurements (NCRP), an organization chartered by

^{63/} Tr. pp. 1501-11.

^{64/} Tr. pp. 1693-96, 1717-53.

Congress to bring current and expert scientific knowledge to bear on the problems of evaluating the biological effects of ionizing radiation, and with the recommendations of the International Commission on Radiological Protection (ICRP).^{65/}

- (c) The National Academy of Sciences - National Research Council Advisory Committee to the FRC, which is currently reviewing the whole state of knowledge of the effects of ionizing radiation, in 1970 reviewed the allegations of Dr. Tamplin and his colleagues and concluded that there is no justification for an immediate revision of the existing radiation protection standards.^{66/}
- (d) NCRP Report No. 39 , dated January 15, 1971, based on a reevaluation and a comprehensive survey of the latest work done in the area of radiation effects, recommended retention of the present standards as they apply to the general population and recommended only a small number of adjustments in the standards as they apply to workers employed in the radiation industry.^{67/}
- The Board presumes that these very recent recommendations currently are under review by the AEC and the recently established Environmental Protection Agency.

^{65/} Tr. pp. 1690-93, 1717-26.

^{66/} Tr. pp. 1696-99.

^{67/} ACRP Report No. 39, §§247, 251; Tr. pp. 1690-93, 1800-04, 1990-96, 1997-2003, 2023-25.

- (e) The ICRP, NCRP, FRC and AEC, for purposes of conservatism and in the absence of conclusive proof that there is a threshold level of exposure below which no harm will result, have long used a working assumption of a linear relationship between doses and somatic and genetic harm.^{68/} Similarly the extra radio-sensitivity of fetuses and children has long been recognized in scientific literature and by the standard setting bodies.^{69/}
- (f) While NCRP Report No. 39 dated January 15, 1971, recommended a reduction of the permissible dose to fertile women employed in the radiation industry to assure that the maximum dose equivalent to the fetus from occupational exposure to the expectant mother does not exceed 500 millirem, that Report recommended retention of the radiation limits applicable to the general population, including fertile women. The average population dose limit recommendation considers genetic effects.^{70/}
- (g) The studies by Dr. Sternglass alleging a causal relationship between fallout deposition and infant and fetal mortality utilize

^{68/} Tr. pp. 1681, 1779, 1789.

^{69/} Tr. pp. 1693-96; ICRP Publication No. 6, ¶49(a).

^{70/} Tr. p. 1691.

statistical and analytical methods which are deficient in a number of important respects.^{71/} Some examples of these deficiencies are (i) a postulation of an association between leukemia incidence and fallout deposition based on the number of leukemia cases observed over a period of time without relating the number of cases to a base population, (ii) assumption that patterns of fetal and infant mortality rates are independent of well recognized influences such as epidemics, advances in medical science and changes in socioeconomic conditions, (iii) utilization of fetal mortality data from areas in the United States using different statistical reporting requirements, (iv) the unexplained omission of certain data points in fetal death rates for New York State, and (v) the arbitrary selection and presentation of data for certain time intervals arbitrarily ignoring different results which would be obtained by examining data for other time intervals. Upon evaluation of the data presented by Dr. Sternglass, expert epidemiologists in the Environmental Protection Agency concluded that Dr. Sternglass's data "do not appear to indicate any relationship between the change in rate of decline of

^{71/} Tr. pp. 1821-53, 1950-57, 2014-17.

infant mortality and the deposition of fallout in the United States." ^{72/}

- (h) The Committee on Environmental Hazards of the American Academy of Pediatrics evaluated Dr. Sternglass's study of the alleged relationship between fallout deposition and infant mortality and concluded that "his conclusions are completely unfounded and unsubstantiated". ^{73/}
- (i) Dr. Sternglass's studies of the relationship between emissions from the Dresden Nuclear Power Station and infant mortality in the nearby counties are based on a mistaken calculation of the actual external radiation exposure to the population in the environs of that plant which ignored the effect of the variable wind direction at Dresden and on an erroneous determination by Dr. Sternglass of those nearby counties that are predominantly down-wind from the Dresden plant. ^{74/} Experts previously employed by the U. S. Public Health Service and currently employed by the Environmental Protection Agency testified that their "analysis of the epidemiologic data presented by Sternglass does not support his contention

^{72/} Tr. p. 1847.

^{73/} Tr. pp. 1228-1229.

^{74/} Tr. pp. 1854-1871.

that an association exists between exposure to radioactive emissions from Dresden and infant mortality".^{75/}

- (j) The "small amounts of tritium" fed to rats in the University of Rochester study referenced by Dr. Sternglass which the experimenters in Rochester believed to demonstrate significant effects is equivalent to about 2000 times the maximum permissible dose for tritium to individuals in the general population under the current standards.^{76/}
- (k) A ten-year experiment investigating possible hazards from strontium,utilizing beagle dogs, has disclosed no pathologic effects at doses below 2000 millirads a day and that it is physiologically impossible to get substantial doses to the testes, seminal fluid and ovaries without first seeing rapid and lethal effects from the bone and bone marrow irradiation.^{77/}
- (l) The gaseous radwaste system in the Davis-Besse station which provides for a minimum hold-up time of 30 days for radioactive decay before discharge to the environment precludes the dis-

^{75/} Tr. pp. 1869-1870.
^{76/} Tr. pp. 1673-75.
^{77/} Tr. pp. 1871-88.

charge of cesium 137 and 138 and strontium 90. There will be no radioactive materials emitted in the gaseous wastes other than the noble gases. The noble gases are not re-concentrated in the food chain.^{78/}

- (m) ICRP Publication 14 does not support Dr. Tamplin's assertion that the present standards for whole body exposure is high by a factor of ten. It provides that the concept of a doubling dose for somatic hazards such as cancer, which is a foundation premise of Dr. Tamplin's thesis, is "a specific example of the misuse of the ratio of cancer rates."^{79/}
- (n) It is highly improbable if not impossible to expose a significant portion of the general population in the vicinity of a nuclear power plant to more than a very small fraction of the 170 millirem per year radiation protection guide if the 500 millirem per year guide for individuals is met. NCRP Report No. 39 agrees. The Tamplin thesis rests largely on the assumption

^{78/} Tr. pp. 1251-63, 1662-71.

^{79/} Tr. pp. 1681-87.

that a significant portion of the total population can be exposed to an average dose of 170 millirems per year.^{80/}

- (o) Section 20.106(e) of the current standards in Part 20 allows the AEC, and indeed is used by the AEC, to anticipate the possibility of reconcentration in the food chain or sensitive body organs of radioisotopes which may be released from nuclear facilities.^{81/}
- (p) AEC regulations provide that all AEC licensees are required to make every reasonable effort to maintain radiation exposures and releases of radioactive materials in effluents to unrestricted areas as far below the Part 20 limits as practicable.^{82/}

38. In view of the foregoing, it is clear that the radiation protection standards in 10 CFR Part 20 are a reasonable exercise of the broad discretion given to the Commission by the Atomic Energy Act of 1954, as amended, for implementation of that statute's radiological safety objectives. Among other things that Act calls for the development and utilization of atomic energy for peaceful purposes consistent with protection

^{80/} Tr. pp. 1676-79, 1684, 1691-2, 1728-29, 1893.

^{81/} Tr. pp. 1676-77, 1730, 1893, 1904-08.

^{82/} 10 CFR §20.1(c) and §50.36(b); Tr. pp. 1731-32, 1735-40, 1744-46, 1893.

of the health and safety of the public.^{83/} There is no substantial question as to the validity of 10 CFR Part 20.

39. This Board's finding of no unreasonable exercise of the Commission's discretion in establishing the Part 20 standards is dispositive of LIFE's contention. We would go further, however, because we recognize that this is the first case involving a challenge to the validity of Part 20 since the Commission issued its Calvert Cliffs memorandum, and we feel that the challenge put forth in this hearing has been broader than that contemplated by the Commission. The Calvert Cliffs memorandum specified that a licensing board cannot amend Part 20 and that the limited challenge permitted must be related to an issue in the proceeding. Accordingly, this Board cannot conduct a general inquiry into the validity of Part 20 independent of any other considerations in this proceeding. We are limited to an inquiry into the validity of Part 20 as it applies to the Davis-Besse Nuclear Power Station.

40. The Challenge to the validity of Part 20 cannot be based on radionuclides that will not be released from the Davis-Besse facility. Similarly the challenge cannot be based upon an examination of the reasonableness of the maximum permissible concentration value set forth in Table II, Appendix B of Part 20 for any single isotope which may be released from the Davis-Besse facility, if that isotope is not physically releasable without accompanying isotopes.

^{83/} Sections 3d and 161b.

Due regard must be taken of the note at the end of the tables in Appendix B of Part 20 which provides that where there is a mixture in air or water of more than one radionuclide, the permissible concentration for each such radionuclide is reduced to a value which is less than the value set out in the tables for that radionuclide. Thus, much of the testimony by Dr. Sternglass and Dr. Tamplin insofar as they discussed the effects of Cesium 137 and 138 and strontium, which will not be released in the gaseous effluent from the Davis-Besse facility, was irrelevant. LIFE did not demonstrate that the maximum permissible concentrations for isotopes, which will be released from the Davis-Besse facility, taking into account both the note at the end of the tables in Appendix B of Part 20 and the provisions of Section 20.106(e) of Part 20, were unsafe. This Board finds therefore that, within the framework of the Commission's memorandum in the Calvert Cliffs proceedings, the evidence in this proceeding does not present a substantial question as to the validity of 10 CFR Part 20 and that the challenge to the validity of Part 20 by LIFE was not related to an issue in the proceeding

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

41. (The Applicant will propose findings and conclusions on this matter in its brief on this subject which will be filed on March 4, 1971)

REVIEW OF APPLICATION BY
THE REGULATORY STAFF AND THE ACRS

42. Since the filing on August 1, 1969, the application has been under constant review by the Staff. In the course of the evaluation, during which eleven amendments to the application were submitted with additional and clarifying information, the Staff held numerous meetings with representatives of the Applicants to discuss and clarify the information submitted.^{84/} Approximately thirteen Staff engineers participated in the major part of the review during the sixteen-month review period, consuming an estimated 625 man-days of effort.^{85/} The Staff made use of studies by independent experts in its evaluation of such aspects as site geology and hydrology (Geological Survey, U. S. Department of Interior),^{86/} air dispersion of gaseous effluents (Air Resources Environmental Laboratory, U. S. Environmental Science Services Administration),^{87/} site seismicity (U. S. Coast and Geodetic Survey),^{88/} ecological effects (Fish and Wildlife Service, U. S. Department of the Interior),^{89/} and seismic design criteria (John A. Blume & Associates, Engineers).^{90/} The results of the Staff's review and evaluation of the application are contained in the Staff Safety Evaluation which has been made available to the public and which has been admitted into

^{84/} Staff Safety Evaluation, pp. 2-3.
^{85/} Tr. pp. 513-16
^{86/} Staff Safety Evaluation, App. D, pp. 96-99.
^{87/} Staff Safety Evaluation, App. C, pp. 94-95.
^{88/} Staff Safety Evaluation, App. E, pp. 100-103.
^{89/} Staff Safety Evaluation, App. F, pp. 104-118.
^{90/} Staff Safety Evaluation, App. G, pp. 119-126.

evidence in this proceeding. The Staff, in finding in the affirmative for Issues Nos. 1 - 3 in this proceeding and in the negative for Issue No. 4, has concluded that the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.^{91/}

43. The ACRS also conducted an independent review of the application and, after identifying several items for resolution between Applicants and the Staff during construction and making several recommendations, concluded that the station can be constructed with reasonable assurance that it can be operated without undue risk to the health and safety of the public.^{92/} The items identified by the ACRS have been considered by the Staff in its evaluation of the application, and have been specifically responded to by the Applicants by submission of Amendment No. 11 to the application.^{93/}

CONCLUSIONS

44. On the basis of this Board's review of the entire record in this proceeding and of the foregoing findings, this Board concludes that:

1. In accordance with the provisions of 10 CFR §50.35(a):

^{91/} Staff Safety Evaluation, pp. 85-87.

^{92/} Letter from Joseph M. Hendrie, Chairman, ACRS, to the Honorable Glenn T. Seaborg, Chairman, U. S. Atomic Energy Commission, August 20, 1970.

^{93/} Applicants' Summary, p. 2; Staff Safety Evaluation, pp. 82-83.

- (a) The Applicants have described the proposed design of the facility including, but not limited to, the principal architectural and engineering criteria for the design, and have identified the major features or components incorporated therein for the protection of the health and safety of the public;
- (b) Such further technical or design information as may be required to complete the safety analysis and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;
- (c) Safety features or components, if any, which require research and development have been described by the Applicants and the Applicants have identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and
- (d) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily

resolved at or before the latest date stated in the application for completion of construction of the proposed facility, and (ii) taking into consideration the site criteria contained in 10 CFR Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

2. The Applicants are technically qualified to design and construct the proposed facility;
3. The Applicants are financially qualified to design and construct the proposed facility; and
4. The issuance of a permit for the construction of the facility will not be inimical to the common defense and security or to the health and safety of the public.

ORDER

45. Pursuant to the Act and the Commission's regulations, IT IS ORDERED that the Director of Regulation issue a construction permit to The Toledo Edison Company and The Cleveland Electric Illuminating Company substantially in the form of the

proposed construction permit introduced as Staff Exhibit 2.
IT IS FURTHER ORDERED in accordance with 10 CFR 2.760, 2.762,
2.764, 2.785 and 2.786 of the Commission's Rules of Practice
that this Initial Decision shall be effective immediately upon
issuance and shall constitute the final decision of the
Commission subject to the review thereof pursuant to the above
cited rules.

ATOMIC SAFETY AND LICENSING BOARD