PUBLIC PARTICIPATION IN NUCLEAR POWER PLANT LICENSING: THE GREAT DELUSION

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Operation of nuclear power plants involves inherent risk to the health and safety of the public. The AEC licensing process ostensibly seeks to determine whether plant design, construction, and operation adequately protect the public from the potential perils of nuclear power. Whereas many other highly beneficial technologies involving substantial risk also are licensed and regulated to enable society to enjoy their benefits without being subject to excessive hazards, the process of licensing nuclear power plants is unique in one major respect: the Atomic Energy Act contemplates that safety determinations will be made on the basis of public hearings in which concerned members of the public may participate as parties. This Article will explore the usefulness of this technique in resolving safety issues and will demonstrate that the process, at least as heretofore implemented, is at best a charade and at worst a sham.

I. THE RISKS INHERENT IN NUCLEAR POWER

There are two categories of risk inherent in the operation of nuclear power plants. First is the possibility that incident to a plant's normal operations the public will be exposed to excessive levels of radiation. Of equal or greater concern is the risk that an accident will result in a nuclear explosion. Part 20 of the AEC's regulations requires that nuclear power plants be operated in such manner that no member of the public is exposed to radiation in excess of certain specified limits, that concentrations of radioactive effluents be kept within certain specified limits, and that radioactive discharges be maintained as far below these limits as practicable. These regulations, evidencing the determination by the AEC that power plant operation in compliance therewith adequately protects public health and safety, reflect a balancing of the

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2. Id. § 20.1(c).
benefits to be gained from the use of nuclear power against the risks inherent in normal plant operation.  

It is only since the beginning of the atomic era in 1945 that man-made radiation has been discharged into the environment in significant quantity. Although there is no scientifically accepted evidence that somatic injury has resulted from exposure to radiation within the levels contemplated by existing radiation protection guides such as Part 20, it has been established that exposure to large amounts of radiation at one time, or cumulatively over a period of time, can result in such injury. Moreover, scientists have been unwilling to accept the premise that there is a threshold of radiation exposure below which no injury will result. Such a determination can be made only through sophisticated epidemiological studies over a very long term. At this time, therefore, it cannot be said that cumulative exposure to even extremely low levels of radiation over a long period involves no somatic risk.

Radiation exposure also involves genetic risks. It is generally accepted by scientists that any exposure of the gonads to radiation tends cumulatively to produce undesirable genetic mutations. Accordingly, all such exposures resulting from the operation of nuclear power plants

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3. For example, the requirement that radiation exposures and discharges of radioactive effluents be as far below Part 20 limits as practicable entails maintenance of such discharges "as low as is practicably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and in relation to the utilization of atomic energy in the public interest." Id. (emphasis supplied).

4. NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL, REPORT OF THE ADVISORY COMMITTEE ON THE BIOLOGICAL EFFECTS OF IONIZING RADIATION ON "THE EFFECTS ON POPULATIONS OF EXPOSURE TO LOW LEVELS OF IONIZING RADIATION" 205 (1972) [hereinafter cited as BEIR REPORT].

5. NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS, BASIC RADIATION PROTECTION CRITERIA 6-9 (1971) [hereinafter cited as NCRP REPORT]. The NCRP is generally regarded as the most authoritative source of radiation protection standards in the United States. Part 20 of the AEC regulations is based upon, and essentially equivalent to, standards recommended by the NCRP.

6. Id. at 57. On the other hand, it is said that rejection of a threshold is based upon "conservative planning." Id.

7. BEIR REPORT, supra note 4, at 205-10.

8. The no-threshold concept "involves the thesis that there is no exposure limit free from some degree of risk." NCRP REPORT, supra note 5, at 59. Whatever risks exist may be substantially greater for some persons than for others. For example, risks are greater for pregnant women, women exposed shortly before conception, the fetus, and young children.

9. BEIR REPORT, supra note 4, at 90-128; NCRP REPORT, supra note 5, at 8-9.
must be presumed to have at least a tendency towards producing genetic injury in the population.10

The basic premise underlying radiation protection standards is that any exposure to man-made radiation is undesirable and may be harmful and that, therefore, exposure should be tolerated only as long as the benefits outweigh the risks.11 Part 20 of the AEC regulations reflects that agency's judgment that the benefits of nuclear power justify the levels of exposure permitted. It may be, of course, that further scientific research or experience demonstrating that the hazards are greater than presently believed will necessitate a tightening of Part 20 standards. Until such evidence is forthcoming, however, there exists the possibility that the public is, and for a considerable period of time has been, exposed to injurious levels of radiation under present standards.12

The second category of risk involves the potential for a catastrophic accident. As the nuclear power plant operates, an inventory of waste fission products is built up in the fuel elements, these elements being removed periodically for chemical reprocessing and replacement. The fission products are extremely toxic, by unit of weight one million to one billion times more toxic than any other substance known to man.13 An accident causing release of these waste products into the environment could result in enormous damage to life and property many orders

10. It should be noted that the somatic and genetic effects of radiation from nuclear power plants are cumulative and must be considered in the light of exposure to radiation from other sources, such as background natural radiation and medical and dental x-rays.

11. Report of the Federal Radiation Council, May 13, 1960, 1 CCH ATOM. EN. L. REP. ¶ 4046, at 9115. A similar recommendation was included in the BEIR REPORT, supra note 4, at 7. The NCRP REPORT, supra note 5, at 24, states: "From the probably extreme viewpoint of the conservationist-biologist, the most desirable objective would be to eliminate all radiation exposure except natural radiation. This attitude is incompatible with the utilization of radiation for beneficial purposes."

12. It should be noted that radiation exposure resulting from nuclear power activities constitutes only a small fraction of the population's total exposure to radiation. It has been estimated that the total average annual whole-body dose exposure of the population in the United States in 1970 was 182 millirem, of which 102 millirem was attributable to natural radiation, 73 millirem to medical exposures, and only 0.003 millirem to radiation from nuclear power activities. It has been estimated that by the year 2000 the average dose from nuclear power sources will be 0.17 millirem. BEIR REPORT, supra note 4, at 23-39. Of course, some individuals and groups are exposed to radiation levels substantially in excess of these averages.

of magnitude greater than that conceivably resulting from any other existing technology.

The probability of such an accident is extremely low. Great care is taken in designing, constructing, and operating nuclear power plants not only to protect against occurrence of a serious malfunction but also to ensure that fission products could be contained without reaching the environment should there be a malfunction. The stringency of AEC regulation and the multiple levels of independent review in the licensing process provide further assurance against such an occurrence. Nevertheless, the possibility of catastrophic accident is explicitly recognized. Licensees are required to establish plans for the evacuation of the population in the event of a serious accident, and the Price-Anderson Act amendments to the Atomic Energy Act establish an unprecedented half-billion dollar government indemnity with a statutory limit on aggregate liability of $560 million in the event of such an accident.

There is little question that, given present scientific and technological knowledge and capability, licensed nuclear power plants are as safe as possible, consistent with their operation in an economically viable manner. On the other hand, obvious and significant risks remain. The 40 years for which plants are licensed to operate is more than twice the period any plant in the United States has been in operation to date. Many safety features are regarded as adequate on the basis of theoretical analysis only, unsupported by experimental verification or the lessons of experience. Safe operation is dependent upon a system's behavior in the manner predicted by experts and the absence of unforeseeable events or acts of God more severe than can reasonably be foreseen.

Safety is, of course, also dependent on the human factor. AEC regulations explicitly recognize, for example, that individuals operating reactor controls must have no physical or mental condition impairing their motor functions or sound judgment, and medical examinations are required. Obviously, however, the fact that an operator receives a clean bill of physical and mental health one day does not eliminate the possibility that a serious, unobserved medical or psychiatric problem may develop the next.

II. THE OPPOSITION TO NUCLEAR POWER

That such risks exist does not mean that nuclear power plants should not be constructed and operated. Danger to health and safety is in-

herent in almost every aspect of our complex society. There is, however, a legitimate question whether the risks associated with nuclear power, particularly that of an immensely catastrophic accident, should be thrust upon the public merely by virtue of a utility's decision to operate a nuclear power plant and the AEC's licensing decision that the risks are acceptable. It certainly is debatable, for example, whether meeting energy demands warrants subjecting a possibly unwilling public to these risks or whether alternative forms of power generation, such as coal, oil, or gas, may not be preferable notwithstanding higher costs and other forms of environmental pollution resulting from their use.

Issues of this kind are appropriately resolved at the political level. Although the Atomic Energy Act itself could be regarded as entailing such a political determination, neither passage of the Act in 1954, nor subsequent amendments thereto, nor the appropriation of funds to the AEC has involved any real public or political discussion or debate over the acceptability of the risks or the balance to be struck between the benefits and risks of nuclear power. This situation is largely attributable to the role of the Joint Congressional Committee on Atomic Energy and its symbiotic relationship with the AEC. These two bodies, convinced that nuclear power is necessary, desirable, and adequately safe, have cooperated over the years in efforts to avoid disclosure of the risks, for fear of unduly alarming the public, and to smother opposition to nuclear power. These efforts have been successful because of the unique nature of the JCAE, its domination of the atomic energy program, and its evolution as a power center functionally independent of the Congress as a whole. The power of the JCAE in controlling the consideration of atomic energy matters in the Congress has made it impossible for opponents of nuclear power to press their contentions effectively at the political level.

As a consequence of their inability to contest nuclear power in the legislative arena, critics of nuclear power have concentrated their efforts in opposition to licensing of individual plants. The vehicles for such opposition are local groups of citizens and national organizations dedicated to environmental values, frequently aided by a loose nationwide network of nuclear power opponents. In the experience of the author,

17. Nowhere in the legislative history is there explicit, or even implicit, resolution of these issues.
18. For a description of the Joint Committee and its relationships with the AEC, see H. Green & A. Rosenthal, Government of the Atom: The Integration of Powers (1963).
these groups are composed of intelligent, well-meaning individuals who have attempted to educate themselves on nuclear power and who are seriously concerned about the risks. They are not, as has at times been suggested, puppets for economic interests opposed to nuclear power. Their efforts, stemming from a generalized fear of nuclear power, in some instances are aimed at blocking construction of a plant completely, while in other cases their objective is to ensure that a plant will be “as safe as possible.”

Characterization of the opposition to nuclear power as “irresponsible” is excessively harsh. Although some positions and statements of opponent groups are so grossly inaccurate or exaggerated as to suggest irresponsibility, it is necessary to identify the cause of this situation. Critics of nuclear power are severely limited in resources with which to frame their objections. Because of the suppression of candid discussion of the risks of nuclear power by the atomic energy establishment, there is no body of authoritative information readily accessible to the concerned public describing the nature and dimensions of such risks. Nor do such groups generally have access to scientific talent to assist them in framing their concerns in a factual and scientific manner. While this is especially true for local citizen groups, even the experts who are available to national organizations tend to be individuals understandably outside the mainstream of knowledge and experience with respect to the risks of nuclear power. The input of whatever experts may be available, in person or through their writings, tends to be translated into political rhetoric, their pronouncements being relied upon by the anti-nuclear network for want of any better information.

19. It may be observed that nothing, including nuclear power plants, can ever be “as safe as possible.” Everything can always be made safer at greater cost. A nuclear power plant can be as safe as possible only if it does not operate at all. If it is to operate, it can always be made to operate more safely if greater costs are incurred. Inevitably, however, a point is reached at which the costs of enhancing safety are disproportionately and unrealistically large in comparison to the incremental safety to be achieved. The decision to license operation of a plant is based, therefore, on a determination that the plant’s operation will be adequately safe and that making it “safer” would be unnecessarily costly. See Green, Safety Determinations in Nuclear Power Licensing: A Critical View, 43 Notre Dame Law. 633, 655 n.125 (1968).


21. The real experts on nuclear power safety are employed at one level or another in the nuclear power program. It is hardly to be expected that they will be available, at least openly, to challenge the proposition that nuclear power is adequately safe.
These difficulties are exacerbated by the role of the AEC staff. Ideally, the public should look to a regulatory agency as the unequivocal defender of the public interest. In the context of nuclear power licensing, the ideal requires that the AEC appear to subject license applications to the most searching and skeptical inquiry, exposing all risks to the utmost scrutiny. Unfortunately, the AEC's licensing procedures do not produce this image. Although the license application is in fact subjected to exceptionally careful and stringent review, this process takes place on a relatively informal basis beyond public view. Once the regulatory staff is satisfied that the application is in order, that all questions have been resolved satisfactorily, and that the license should be issued, it becomes an active and vigorous proponent of issuance. Moreover, it is this role of the staff in justifying its conclusion which has high public visibility. Rather than hearing the staff candidly discuss the risks, the public hears only comments designed to allay public concern and reflecting the view that the risks are acceptable.\textsuperscript{22}

Thus, the regulatory staff tells the public,\textsuperscript{23} for example, that radiation discharges from a plant in normal operation will be only a small fraction of natural background radiation; that such discharges are well within Part 20 limits; and that a person living on a plant's perimeter for a year will receive less exposure to radiation than he would receive in a single round-trip jet flight from New York to Los Angeles. Nothing is said, of course, concerning the possible adverse somatic or genetic consequences of exposure to any incremental man-made radiation. Similarly, the public is told all the reasons why a serious accident is highly improbable. Postulated accidents are discussed on the unstated premise that safety systems will work as predicted to limit the consequences of a malfunction. No reference is made to the various uncertainties arising from the absence of experimental data, the limited operating experience with nuclear power plants, and the possibility of human error or unforeseeable events. There is no discussion of the consequences if the system does not work as advertised, nor is there mention of the significance of the Price-Anderson Act.\textsuperscript{24} In short, the position and statements of the regulatory staff are calculated to en-

\textsuperscript{22} Indeed, in licensing cases critics of nuclear power usually regard the AEC staff, rather than the applicant, as the principal adversary.

\textsuperscript{23} The staff's position is set forth in a document known as the safety evaluation report and in the environmental impact statement prepared pursuant to the requirements of the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347 (1970).

\textsuperscript{24} See note 15 supra & accompanying text.
courage the public belief that only some kind of "nut" would be concerned about a plant's safety.

The staff's role encourages those members of the public who have some prior basis for concern to believe that the AEC is willfully concealing the real facts. Such a belief leads, naturally, to attacks on the integrity of the AEC and its licensing process. It also results in the determination on the part of these concerned individuals to intervene in the licensing process to attempt to force the real facts into the open.

III. HEARING PROCEDURES IN NUCLEAR LICENSING

The recent focal point of opposition to nuclear power plants has been the public hearings involved in the licensing process.25 Of primary importance to those seeking to block issuance of construction permits and operating licenses for individual plants is section 189(a) of the Atomic Energy Act, which provides that in any licensing proceeding "the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding."26 The Commission has followed a liberal policy of granting intervention by members of the public who allege in their petitions for intervention that their lives, health, or property may be adversely affected by normal operation of the plant or by a potential accident. An examination of the historical development of section 189(a) is essential to appreciation of the present nature of the licensing process.

Legislative history of the original section 189(a), enacted as part of the Atomic Energy Act of 1954, is sparse. It is indeed remarkable that, although the 1954 Act produced a voluminous legislative history27 and itself reflects an obsessive concern with health and safety,28 the risks of nuclear power and its health and safety implications were scarcely discussed in the hearings, committee report, or floor debates. A careful reading of the legislative history provides little reason to believe that Congress ever contemplated that section 189(a) would be used by

27. Most of the discussion centered upon the controversy as to public, as opposed to private, power generation.
28. There are no less than 25 references to "health and safety of the public" (or similar phrases) in the Act.
intervenors seeking to contest issuance of licenses on health and safety grounds. A more reasonable inference is that the section was regarded as a vehicle for the contesting of licenses on economic grounds.

Nevertheless, only two years after the Act became law, section 189(a) was used as a basis for health and safety intervention in a nuclear power licensing case. Three international labor unions employed the section to intervene in an effort to set aside issuance of a construction permit to the Power Reactor Development Company. The permit was issued notwithstanding a secret (but leaked) report by the Commission’s prestigious Advisory Committee on Reactor Safeguards indicating that there were serious unresolved safety questions. Significantly, issuance of the permit was politically controversial since it was opposed by the Democratic-controlled JCAE.

As a result of these developments, Congress in 1957 amended section 189(a) to mandate a hearing on every nuclear power plant construction permit and operating license application. The report of the JCAE on the bill observed: "[F]ull, free, and frank discussion in public of the hazards involved in any particular reactor would seem to be the most certain way of assuring that the reactor will indeed be safe and that the public will be fully apprised of this fact." In 1962, section 189(a) was again amended. The requirement for mandatory hearings was eliminated with respect to operating licenses but retained for construction permits. Thus, under the present version of the Act, a hearing is held on each construction permit application, whether or not anyone intervenes in opposition. If there is an intervention, the intervenors become parties in the mandatory hearing. Hearings at the operating license stage, however, are held only if there is an intervention.

In most mandatory hearings until the late 1960's, there were no interventions and therefore no opposition to issuance of the license. Only the applicant and the AEC regulatory staff, both supporting issuance of the license, were parties to the proceeding. Any elements of contro-
versity were, for the most part, attributable to questions raised sua sponte by the presiding officer at the hearing. Under these circumstances, the Commission came to view the hearings as an educational process through which it could be demonstrated to the public that nuclear power plants were indeed safe and that the Commission's review processes were meticulously thorough and careful. Moreover, although the uncontested mandatory hearings were extremely burdensome to the AEC and the applicant, both made a virtue of their necessity and pointed to the public hearings as providing further evidence that nuclear power plants were safe.

Beginning about 1968, however, interventions in opposition to issuance of construction permits and operating licenses became more the rule than the exception. In addition, as concern about environmental values became more faddish, public interest lawyers, many of whom were skilled trial attorneys, joined the fray as counsel to intervenors. Hearings have tended to become long and acrimonious with much procedural wrangling, the entire process has become extremely costly in terms of dollars, and there have been some delays in commencement of nuclear power plant construction and operation. Despite these obstacles, however, the nuclear power licensing program moves inexorably forward. Although in a few cases intervenors have won minor conces-

34. In 1965, the AEC constituted a seven-member Regulatory Review Panel of outside experts. This panel characterized the significant functions of public hearings in uncontested cases as follows: to give the public a "firsthand impression of the applicant's character and competence"; to show the public that "the AEC has been diligent in protecting the public's interest" and that the regulatory staff and the ACRS "have only the public's interest in mind"; to give the public a "convincing demonstration" that there has been a "thorough and competent review" of the application; to develop a factual record in public; and to provide the public with a "forum for recording its views, both pro and con." REPORT TO THE ATOMIC ENERGY COMMISSION BY THE REGULATORY REVIEW PANEL 5-9 (July 14, 1965) [hereinafter cited as REVIEW PANEL].

35. See, e.g., Atomic Industrial Forum, Background Information on Atomic Power Safety 30 (1968).

36. An extreme case was the application of Long Island Lighting Company to construct the Shoreham Nuclear Power Station. The application was filed May 15, 1968, and notice of hearing was published February 25, 1970. As a result of procedural skirmishing and questions relating to implementation of the National Environmental Policy Act, hearings did not commence until September 21, 1970. Hearings on radiological health and safety issues consumed 56 days. After over 5,000,000 words of testimony in 15,000 pages of transcript, the decision of the Atomic Safety and Licensing Board was released April 12, 1973. Although strenuous opposition by intervenors was a major cause of the protracted proceedings, it should be noted that the necessity for compliance with the National Environmental Policy Act contributed to the delay. In re Long Island Lighting Co., No. 50-322 (AEC, Apr. 12, 1973).
sions, it is difficult to identify any case in which it is clear that intervenors have been “successful,” since in each case a construction permit or license, substantially as requested, has been granted at the end of the proceeding.

IV. THE USEFULNESS OF THE HEARING PROCEDURES

A nuclear power licensing case is not set for hearing until the AEC regulatory staff has determined that a construction permit or operating license, as the case may be, should be issued. Upon filing, an application is reviewed thoroughly by the staff. Through personal exchanges and correspondence, questions are raised by the staff and answered by the applicant, and the application may be amended to meet the staff’s concerns. Simultaneous with this process, the application is reviewed by the Advisory Committee on Reactor Safeguards. Much of the result of these procedures is available to public scrutiny in the AEC’s public document room; nevertheless, a case does not really “go public” by the setting of a hearing on a construction permit or provision of notice of proposed issuance of an operating license (triggering an opportunity to petition for intervention) until both the staff and the ACRS are satisfied that the permit or license should be issued. Although some differences of opinion between the applicant and the regulatory staff may surface publicly in this process, differences of opinion among the staff’s experts, resolved through hierarchical processes leading to unitary staff conclusions, remain hidden from public view. Similarly, the public record does not reveal differences of opinion among members of the ACRS, whose reports reflect an obvious attempt to reach consensus, or between the ACRS and the regulatory staff. As a result, much of the initial licensing process operates to conceal from the public the weak or questionable safety aspects of a plant. Moreover, for an intervenor to prevail, he must successfully challenge the ultimate conclusions reached by the applicant and its team, including the applicant’s reactor supplier, architect-engineer, and array of outside consultants; the AEC staff, including its array of outside consultants; and the ACRS.

37. In only a very few cases have ACRS members submitted dissenting or separate statements.

38. The Regulatory Review Panel (see note 34 supra) recommended that every effort be made to conceal differences of opinion between the ACRS and regulatory staff from public view. It proposed that joint meetings be held to reconcile differences and that divergent reports be made public only if agreement cannot be reached. Review Panel, supra note 34, at 13.
This obviously is no small undertaking. The applicant and the staff can produce scores of outstandingly qualified and experienced expert witnesses to testify in support of issuance. Intervenors, on the other hand, are typically faced with a lack of funds with which to produce expert witnesses. Furthermore, even if limited funds are available, it is highly unlikely that experts capable of matching the competence and experience of the aggregate of talent on the other side can be gathered. In most cases, therefore, the intervenors are forced to attempt to make their case, or substantial portions of it, on cross-examination. This is, however, difficult to do effectively without competent technical assistance.

A factor somewhat alleviating these difficulties is that hearings are before a three-member Atomic Safety and Licensing Board, two members of which are scientists or engineers with considerable knowledge and experience in the nuclear power field. Although the performance of the Board is far from uniform, questions inadequately raised by intervenors occasionally are pursued by members of the Board. Nevertheless, it is difficult to discern, given the limited resources and technical competence available to intervenors, how appropriate resolution of health and safety questions is served by intervenor participation in the licensing process. The most that can be said is that the right to intervene provides concerned members of the public an opportunity to vent their frustrations and concerns and to force a public response (although usually in language not readily comprehensible to the public) by the applicant and the staff to the questions raised.

The problems facing intervenors are exacerbated by the relation between the manner in which hearings are structured and the generalized concern about the safety of a nuclear power plant which, in most cases, is at the heart of opposition to nuclear power. Rather than being troubled by specific aspects of the mechanics of plant operation, inter-

39. In 1962, the Commission was authorized to establish Atomic Safety and Licensing Boards, “each composed of three members, two of whom shall be technically qualified and one of whom shall be qualified in the conduct of administrative proceedings,” to conduct hearings and make intermediate or final decisions as specified by the Commission. Act of Aug. 29, 1962, Pub. L. No. 87-615, § 1, 76 Stat. 409. This provision subsequently was amended to state that the two members formerly required to be technically qualified “shall have such technical or other qualifications as the Commission deems appropriate to the issues to be decided.” 42 U.S.C. § 2241 (1970) (emphasis supplied). In practice, two members of an ASLB are always “technically qualified” in licensing proceedings in which health and safety issues predominate.

40. In each proceeding, the three-member ASLB is drawn from a panel of full-time and part-time participants.
venors seek to press their contention that radioactivity may emanate from a plant, as a total system, in normal operation and as a result of accidents. The AEC's procedures, however, do not permit intervenors to pursue these generalized concerns. The essence of the Commission's position is that its regulations establish adequate safety standards and that a finding that a nuclear facility has been constructed and will operate in conformity with the regulations requires issuance of a license. Moreover, under the Commission's rules of practice, the adequacy of its regulations in protecting the health and safety of the public may not be challenged in a licensing proceeding. The only course open to intervenors, therefore, is to attempt to establish that radioactive effluents in normal plant operation will be in excess of Part 20 limits or to discredit the staff's optimistic analyses of postulated accidents and their consequences by demonstrating that a specific type of accident with specific consequences can occur. Any effort to establish that operation of a plant in conformity with the regulations may nevertheless unreasonably endanger health and safety is barred. As a result, hearings become forums for considering matters with respect to which intervenors have the least interest and competence. Correspondingly, the results of a hearing are substantially preordained.

41. The author recently represented intervenors in a nuclear power licensing case in which the Commission's position was challenged as, in effect, reducing to a superfluous nullity requirements that issuance of a license not be inimical to the health and safety of the public (42 U.S.C. §§ 2133(d), 2134(d) (1970); 10 C.F.R. § 50.57(a)(6) (1973)) and that there be reasonable assurance that activities under the license can be conducted without endangering the health and safety of the public (10 C.F.R. § 50.57(a)(3) (1973)). Although the latter determination is not explicitly required by the Act, section 182(a) thereof requires that a license application contain such information as will enable the AEC to find that the utilization of special nuclear material, that is, nuclear fuel, "will provide adequate protection to the health and safety of the public." 42 U.S.C. § 2232(a) (1970). The "reasonable assurance" determination required by the Commission's regulations has been interpreted to be the equivalent of this statutory requirement. Power Reactor Dev. Co. v. International Union of Elec., Radio, & Mach. Workers, 367 U.S. 396, 407 (1961). The contention of the intervenors in this recent challenge was that the Commission's rules and regulations establish only minimum standards to be met by each licensed facility and that the risks remaining after full conformity with the rules and regulations must be assessed and dealt with in the context of the "reasonable assurance" and "not inimical" determinations. The intervenors' position was rejected by the Commission. In re Maine Yankee Atomic Power Co., No. 50-309, ALAB-161 (AEC, Nov. 30, 1973). A petition for review of the Commission's decision has been filed in the Court of Appeals for the District of Columbia Circuit.

42. 10 C.F.R. § 2.758 (1973).
Provisions of the Atomic Energy Act making public hearings an integral part of the licensing process and permitting easy access to participation through intervention in effect entice opponents of nuclear power to expend substantial time and money in what amounts to a futile exercise. Although it may be argued that providing opponents with the opportunity to intervene and participate, as they see fit, is enlightened public policy, the structuring of hearings to preclude those who choose to intervene from pursuing the specific issues of paramount concern to them substantially diminishes the benefits of such a policy. Nevertheless, restrictions in the hearing procedures may be justifiable on the ground that hearings otherwise would be unduly protracted, diffuse, and burdensome.

It is time that the present system be reconsidered from the standpoint of what it really contributes to sound decisions on the licensing of nuclear power plants. A utility considering construction of a nuclear power plant faces the certainty of a hearing at the construction permit stage and the likelihood of a second hearing at the operating license stage. These hearings may be protracted and lead to delays in construction or operation. If delay occurs at the operating license stage, substantial costs to the utility may result, since the plant stands idle while interest, wages, and salaries must nevertheless be paid. It makes no sense to saddle persons, even utilities, with such burdens unless some useful purpose is served.

It is highly doubtful that the Commission's hearing procedures contribute in any appreciable way to the safety of nuclear power plants. It may be argued that the hearings enhance safety in a psychological sense in that the applicant and the regulatory staff, aware that their judgments may be subject to public scrutiny in an adversary hearing, will be more cautious, careful, and thorough than otherwise would be the case. On the other hand, the hearing procedures tend to diffuse responsibility and accountability for safety determinations. As has been noted, the decision that a plant is adequately safe actually is made by the regulatory staff before the case reaches the hearing arena. If a licensed plant turns out to have demonstrably adverse consequences to the health and safety of the public, it can be readily conceived that the regulatory staff will contend that it did the best it could, that its efforts were subject to review by the Atomic Safety and Licensing Board, and that there was full opportunity for members of the public to participate.

43. See text preceding note 22 supra.
and to call deficiencies to the attention of the Board. The process thus can result in shifting responsibility for mistakes from the staff, where the mistakes were really made, to the ASLB or to the public generally.

Moreover, the hearing procedures are counterproductive from the standpoint of gaining public acceptance of nuclear power plants. Those concerned about the safety of a plant are not persuaded by the conclusions reached in the hearing process. On the contrary, they typically are frustrated and infuriated by the role of the regulatory staff at the hearings. Indeed, it usually is the staff, rather than the applicant, which emerges as the major proponent of issuance of a license and the principal villain of the opponents. In addition, the ASLB generally is viewed as a biased puppet of the nuclear establishment that merely goes through the motions of respectfully tolerating the interloping intervenors.

V. IMPROVING THE LICENSING PROCESS

Public hearing procedures and the availability of intervention in nuclear power licensing appear to be primarily cosmetic devices, providing the illusion but not the reality of public participation in the process. The illusion, moreover, is maintained at substantial and unnecessary economic cost to the applicant, the government, and intervenors, resulting in at most minimal contributions to the safety aspects of nuclear power, public confidence in the licensing process, and the credibility of the AEC.\textsuperscript{44} The very fact that a substantial number of license applications are contested by intervenors purporting to represent the public interest indicates a public belief that the regulatory staff of the AEC, and perhaps the Commission as well, is not representing the public interest.

Nevertheless, the Commission's response to the problems has been merely to tinker with its rules of practice. This tinkering has been based on the assumption that public opposition to nuclear power will continue to be manifested in interventions in licensing cases. Recognizing that its policies have led to well-founded allegations that important information

\textsuperscript{44} Former AEC Commissioner James T. Ramey, who was Executive Director of the Joint Committee on Atomic Energy at the time the Act was amended to make hearings mandatory (see notes 29-33 supra & accompanying text), has characterized the role of intervenors as one of "nuclear blackmail," that is, a process whereby intervenors' counsel "would threaten to drag out a case interminably unless various debatable concessions were made by the applicant." Ramey, Jim Ramey's Viewpoint, Part III: Today's Regulatory Woes Date Back to the Fermi-I Case, NUCLEONICS WEEK, Dec. 20, 1973, at 9-10.
was withheld from intervenors, the AEC has adopted new procedures to make more information available as a matter of course and to facilitate and broaden discovery procedures.\textsuperscript{45} The restructured rules, however, tighten the requirements for intervention,\textsuperscript{46} require intervenors to specify their contentions in detail, and limit the scope of the intervenors' discovery and case to those contentions so specified.\textsuperscript{47} In addition, the Commission is presently attempting to resolve through rulemaking proceedings a number of major generic questions which arise in the course of licensing cases,\textsuperscript{48} with the expectation that the promulgation of regulations dealing with these questions will remove them from the scope of the licensing proceedings.

These actions have had little effect in changing the widespread belief in the nuclear power establishment, government, and industry that the present licensing process requires fundamental revision. Unfortunately, however, the view persists that public hearings are an indispensable part of the process, not because they contribute to proper resolution of important issues but rather because it is politically infeasible to eliminate them. As one authoritative establishment spokesman recently observed:

\begin{quote}
We made a decision 20 years ago to involve the public in these decisions and, right or wrong, we are prisoners of that decision today. It is highly unlikely that the environmental community and others interested in due process would be willing to agree to the elimination of the hearings entirely.\textsuperscript{49}
\end{quote}

\textsuperscript{45} See AEC Press Release No. P-231 (July 26, 1972). Under the previous rules, notice of hearing on construction permits was published only shortly before the date set for hearing and at a time when the staff and ACRS reviews were substantially completed; notice of proposed issuance of an operating license was published at about the time the staff and ACRS reviews were completed. Thus, intervention was permitted only very shortly before the hearing took place, with the result that the time available to intervenors to pursue discovery and to prepare for the hearing was severely limited. In August 1972, the AEC adopted a new policy of permitting intervention as soon as practicable after an application has been accepted by the AEC, thus providing intervenors substantially more time for discovery and preparation. See 10 C.F.R. pt. 2, Appendix A, at § I (1973). For the rules with respect to discovery and access to official information held by the AEC, see 10 C.F.R. §§ 2.740-2.744, 2.790 (1973).

\textsuperscript{46} Id. § 2.714.

\textsuperscript{47} Id.; id. § 2.740(b) (1).

\textsuperscript{48} The Commission has conducted rulemaking proceedings, for example, on the adequacy of its Interim Acceptance Criteria for Emergency Core Cooling Systems and the numerical guides for determining when radioactive discharges from nuclear power plants are "as low as practicable."

\textsuperscript{49} Ramey, \textit{supra} note 44, at 10.
Accordingly, it is argued, there should be hearings but they should be structured to preclude opportunity for "nuclear blackmail," that is, the causing of undue delay in the construction and operation of plants.\footnote{Id.}

A bill recently introduced in Congress by the leadership of the Joint Committee attempts to implement this approach.\footnote{H.R. 11957, 93d Cong., 1st Sess. (1973).} Under this proposal an adversary-type hearing would be held on the suitability of a proposed site from the environmental standpoint. This hearing would take place at a sufficiently early point in time so that, even if intervenors succeeded in forcing a very protracted hearing, it would not interfere with construction schedules. At the construction permit stage, there would be no opportunity for a hearing unless an intervenor makes a prima facie showing of a significant, unresolved health or safety issue, while at the operating license stage there would be a hearing only upon a prima facie showing by an intervenor of unresolved safety issues or changes in technology. At both the construction permit and operating license stages, any hearings would be "legislative-type" rather than "adversary-type." As a result, intervenors would have sharply limited rights to discovery, subpoena, and cross-examination, their participation in effect being limited to making statements on questions of concern to them. Provision for only legislative-type hearings seems to be nothing more than a political cosmetic, a sop thrown to opponents of nuclear power. Such hearings obviously can provide no more than opportunity to "let off steam" and certainly could not alter the steam-rolling course of events following upon approval of a license by the regulatory staff and the ACRS. In actuality, they would only contribute to the frustrations and concerns of opponents of nuclear power.

In this era of participatory democracy in which so much emphasis is placed on resort to litigation to remedy society's ills, it is tantamount to heresy to advocate that the availability of public hearings as a forum for public participation be curtailed rather than expanded. Nevertheless, the time has come for basic changes in the structure of the nuclear power licensing process to eliminate unnecessary, costly, and delusive features of public participation and to replace them with a more economic and efficient system that will in fact enhance the effectiveness of public participation.

There are numerous other areas of technology, such as new drugs, chemical food additives, and airworthiness of aircraft, in which par-
ticular products or activities are licensed on the basis of health and safety determinations. The licensing process in such areas is usually a bilateral affair between the person subject to licensing and the licensing agency. Administrative hearings may be part of the process, but they generally arise, if at all, because the applicant is dissatisfied with the agency's action and not at the instance of members of the public who may be injured by a licensed product or activity. Although there may be rare instances in which a public group is dissatisfied with the agency's action and seeks a hearing, such procedures are extraordinary and not a part of the established licensing process. The public is usually willing to trust these agencies because their role is unequivocally that of the watchdog defender of health or safety and not, as in the case of the AEC, a benevolent big brother to industry.\footnote{Under the Atomic Energy Act, the Commission is responsible for promoting, as well as regulating, the development of nuclear power. The existence of these "conflicting responsibilities" has been a major irritant to opponents of nuclear power. Pleas have been made that the regulatory functions be completely separated from the promotional functions by placing them in a new regulatory agency. It is questionable whether such a separation would contribute substantially to resolving the lack of public confidence, which appears to stem primarily from the reluctance of segments of society to permit elite groups of experts to saddle society with enormous risks by reason of the judgment of such experts that nuclear power is more beneficial than dangerous. See Green, supra note 19.}

Shortly after James R. Schlesinger became chairman of the AEC in 1971, he observed that while the Commission had previously "fostered and protected the nuclear industry," henceforth it would not "fight the industry's political, social, and commercial battles"; rather, it would "perform as a referee serving the public interest."\footnote{Address by James R. Schlesinger, Expectations and Responsibilities of the Nuclear Industry, All-Conference Banquet of the Atomic Industrial Forum—American Nuclear Society Annual Meeting, Oct. 20, 1971 (AEC Press Release No. S-21-71).} Although Schlesinger's approach has been implemented in numerous concrete measures, opponents of nuclear power still regard the AEC as industry's benevolent "big brother."

It is probably true that environmentalist groups would strenuously, and perhaps successfully, oppose total elimination of hearings in the nuclear power licensing process. If, however, it is recognized that the real problem is a lack of public confidence in the AEC and its credibility, the obvious solution is for the Commission to do what is necessary to create credibility and confidence in itself so that opposition to nuclear power would diminish and be directed to a political challenge before Congress. A new policy of full candor is necessary, with au-
uthoritative exposure of the benefits and risks of nuclear power plants squarely and unequivocally before the public. More than any other factor, it is the belief that something is being concealed or sugar-coated in the licensing process that triggers interventions. Given a new policy of full and candid disclosure and discussion of benefits and risks of nuclear power, opponents of nuclear power likely would be quite willing to surrender the amorphous, dubious, and ineffective rights they now have to contest nuclear power plant licenses.

Upon implementation of a policy of full disclosure, public hearings concerning the mechanics of nuclear power plant operation should be abandoned. The determination whether a plant has been designed and constructed, and will be operated, to provide adequate protection to the health and safety of the public should be made by the AEC's staff of experts, and the staff should be held strictly accountable for its decisions.

If there is to be a public hearing, it should take place solely at the construction permit stage. The existing two-step licensing process with its two separate proceedings, first for issuance of a construction permit and then for issuance of an operating license, is anomalous and should be abandoned. It simply is not credible that the AEC will refuse to issue an operating license to a utility which has expended more than $100 million in construction of a nuclear power plant, the output of which is required to meet energy needs. The plant should be permitted to operate without legalistic fanfare and formal administrative proceedings once the AEC's experts are satisfied that it has been constructed in accordance with the construction permit and that its operation will be safe.

An adversary-type hearing early in the construction permit stage, with a right provided interested members of the public to participate, may be justifiable if limited to the issue of whether the particular proposed site is suitable, from the standpoint of health, safety, and environmental considerations, for the type of nuclear power plant that is proposed. Insofar as health and safety aspects are concerned, the hearing should not involve consideration of the mechanics of plant operation and construction but only the radiation to which the area surrounding the plant may be subjected during normal operation and as a consequence of accidents. In this respect, intervenors should not be constrained by the assumption that operation in accordance with AEC regulations means per se that the risks are acceptable.
An essential element of such a hearing is a full and candid disclosure by the applicant and the AEC of the potential consequences of operation of a plant. The public should be candidly informed, in ordinary English free of scientific and technical jargon, of the maximum quantities of radiation that will be discharged into the environment in normal operation and the potential consequences to health and life of exposure to such radiation. There should be explicit statements concerning the extent of present scientific knowledge regarding these effects, the areas of present uncertainty, and the manner and time scale in which these uncertainties may be resolved. With respect to the accident potential, there should be a candid explanation of the potential consequences if everything goes wrong and all the fission products are released into the environment, as well as a simple explanation of possible circumstances or events that could produce such a result and the steps to be taken to negate such a possibility. This latter explanation should include a candid description of the state of the technology, that is, the extent to which the technology upon which safety depends has been verified either experimentally or through experience; any significant or unique elements of risk posed by the plant; and factors, such as human failure, sabotage, acts of God, or miscalculation, which might defeat the safety regime. Moreover, since the acceptability of risk turns intrinsically on the importance of correlative benefits of a proposed nuclear plant, in itself and in comparison with the benefits and risks of alternatives to nuclear power, such benefits also should be candidly articulated.

Such a procedure would provide a clear opportunity for opponents of nuclear power to raise and seek to have resolved the precise safety issues which are of paramount concern to them. Since such a hearing would not involve the specific technical details of plant operation, the hearing could be held at a stage sufficiently early to permit the utility, if necessary, to find another site or to change its plans in favor of an alternative to a nuclear power plant. If the decision is to issue a construction permit, issuance might be conditioned upon the plant's meeting prescribed "environmental specifications." It would then be the function of the AEC to ensure that the specific mechanics of plant operation are appropriate and adequate and that the prescribed environmental specifications are met. The AEC should be relied upon and trusted to ensure adequate safety in precisely the same manner as is presently the case with the Federal Aviation Administration and the Food and Drug Administration in their areas of responsibility.
The cornerstone of this proposal, and indeed of any reform of the licensing process, is a policy of full and candid disclosure of the benefits and risks of nuclear power, including risks incident to uncertainty, in a form readily comprehensible to the public. Such disclosure might be accomplished, for example, through requiring an applicant to include in its application a separate statement of risks and benefits, the adequacy of the statement being measured by standards patterned after those in the Securities Act of 1933.54 Alternatively, or in addition, the AEC regulatory staff might be required to issue such a statement.

In 1971, this author drafted possible amendments to the Atomic Energy Act designed to implement a policy of full and candid disclosure. The text of this draft, which was intended only as a starting point for discussion, provides as follows:

In order to facilitate public understanding and acceptance, each applicant for a permit to construct and license to operate a facility for industrial or commercial purposes shall submit as an attachment to its application an assessment of the anticipated benefits and potential risks of the facility. In describing the anticipated benefits, the assessment shall take into consideration the manner in which the facility, when operated, will contribute to meeting needs for electric power and to improving the environment. In describing potential risks, the assessment shall take into consideration the risks associated with operation of the facility, the measures which the applicant has taken or intends to take to eliminate or minimize such risks, and the degree of risk, if any, to the health and safety of the public and to the environment which remains, including risks which may result in the event of unexpected malfunction of the applicant's equipment and procedures. The assessment shall be written in such a manner as will make it comprehensible to the ordinary educated member of the public.

The Commission shall, prior to issuing notice of hearing on, or proposed issuance of a license to operate, any facility for industrial or commercial purposes, cause to be prepared by its staff and included in the record of the proceeding an assessment of the anticipated benefits and potential risks of the facility. The assessment shall be written in such a manner as will make it comprehensible to the ordinary educated member of the public and shall

include a full and candid evaluation of the assessment prepared by the applicant pursuant to Section 182(e).

It is difficult to discern, aside from any other considerations, how there could be objection to a policy of full and candid articulation of the risks and benefits of nuclear power. It might, however, be contended that it is simply not possible, given the tremendous technical complexity of nuclear power technology, to reduce a discussion of risks and benefits to simple language comprehensible to the ordinary educated person. Implicit in this objection is the notion that only experts (in whom, incidentally, the opponents of nuclear power have little confidence) are capable of defining and assessing risks and benefits and reaching a valid conclusion whether the public will be willing to assume such risks in order to have the benefits that the experts think the public ought to enjoy. The fact remains, however, that no authoritative source, including the industry, the AEC, and the JCAE, has ever attempted to draft a full and candid statement of the risks and benefits of nuclear power, a statement which it is believed, incidentally, could be produced for any nuclear power plant in 10 double-spaced typewritten pages. It is appropriate to throw an obstacle in the path of an obviously desirable policy such as that of full and candid disclosure only when impossibility has been demonstrated.

VI. Conclusion

The proposal herein outlined provides a simple and effective means of lifting the nuclear power licensing program from the existing wasteful and counterproductive morass. It has, moreover, other salutary aspects. Since there never has been an authoritative articulation in the arena of public discussion of the actual risks of nuclear power plants, public debate presently proceeds from two extreme positions. The

55. Consider, for example, the statement of Mr. Arvin E. Upton, a highly knowledgeable and experienced attorney who frequently has represented utilities in nuclear power plant licensing cases: "I consider myself an average educated layman, and I have been struggling with this process and the engineers and scientists involved in it for several years, struggling trying to have testimony reduced to a form where it is comprehensible to me, because I feel if it's comprehensible to me, it can be comprehensible to the average educated person. I despair frankly of really ever being able to put these problems in terms which the average educated individual can understand." *Hearings before the Subcommittee on Legislation of the Joint Committee on Atomic Energy on AEC Licensing Procedure and Related Legislation*, 92d Cong., 1st Sess., pt. 1, at 354-55 (1971).
atomic energy establishment urges that nuclear power is safe because the establishment's experts are virtually unanimous in proclaiming that the risks are minimal and acceptable. The opponents of nuclear power, on the other hand, argue from a foundation of extreme exaggeration and popular misconception. Their credibility, consequently, is easily challenged. Each side attacks the other, usually *ad hominem*, while the very nature of the controversy precludes the emergence of the actual facts concerning the risks. A policy of full and candid disclosure of risks and benefits would place all the cards, face-up, on the table. Opponents of nuclear power would not have to resort to interventions in licensing cases to try, usually futilely, to drag out the truth. In addition, the Commission's credibility would be enhanced. Perhaps most importantly, a policy of full and candid disclosure in licensing cases would provide, for the first time, an authoritative body of data on the risks of nuclear power for use in the political arena, which is, after all, where the nuclear power controversy belongs.