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State Responsibility in the Regulation of Atomic Reactors

By David F. Cavers*

In the statutory scheme for dividing regulatory responsibilities with respect to atomic energy between the federal government and qualified states, control over atomic reactors has been retained by the federal government.¹ Probably its power to license reactors is exclusive. In my judgment, this represents a wise allocation of authority, and I shall present in this article the principal reasons for that opinion. I shall also examine the role that a state in which a reactor is proposed to be built can play in the licensing process, as well as the state’s position once the reactor is in operation. Finally, I shall consider how far the allocation to the federal government of regulatory power over reactors with respect to health and safety may deprive states of control of reactors that they wish to exercise for other purposes.

The Statutory Scheme

The Atomic Energy Act of 1954, which first made the private ownership of atomic reactors legally possible, was singularly silent as to the Act’s effect on state authority with respect to the facilities and materials over which it gave the federal government far-reaching regulatory power to be exercised chiefly through the medium of licensing. If one granted the constitutionality of this

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² The statutory basis of federal authority is the Atomic Energy Act of 1954, 68 Stat. 919 (1954), 42 U.S.C. §§ 2011-2281 (1958 Supp. II, 1960) [hereinafter cited as Act]. After providing for the discontinuance of federal authority pursuant to agreements with the states, § 274 preserves federal authority over “production and utilization facilities.” Act, § 274, ch. 1, 78 Stat. 689 (1959), 42 U.S.C. § 2021(c)(1) (Supp. II, 1960). Reactors (including “critical facilities”) comprise as yet the only type of facility to be regulated as such. Fuel element fabrication plants are not yet subject to licensing, and there is still no non-government plant for the chemical reprocessing of spent elements. Waste disposal poses an important regulatory problem, but it involves the licensing of materials rather than facilities. In both legal and practical terms, the problem considered in this article is most consequential with respect to power and test, as distinguished from research reactors, but to avoid the repetitious specification of these types, I shall usually refer in this article simply to reactors.
sweeping assertion of federal power, including monopolization of the ownership of all special nuclear materials,\(^2\) it followed, on familiar constitutional principles, that any state regulation conflicting with a federal regulation was invalid. However, less assurance was possible concerning the Act’s effect on a state regulation which was compatible with (perhaps identical to) a federal regulation. Should the 1954 Act be deemed to have preempted the field of control so fully as to have left no room for any exercise of state power, despite the fact that the area effected—public health and safety—is one with which the states and their political subdivisions have traditionally been concerned?

The question had received no definitive answer in the courts\(^3\) when in 1959, Congress, by adding section 274 to the Atomic Energy Act, undertook “to clarify the respective responsibilities under this Act of the States and the Commission.”\(^4\) The scheme is one with which readers of this symposium will have been made familiar by other articles; my special concern is with subsection c of section 274, which provides:

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\text{c. No agreement entered into pursuant to subsection b. shall provide for discontinuance of any authority and the Commission shall retain authority and responsibility with respect to regulation of—}
\]

\[
\text{(1) the construction and operation of any production or utilization facility; ...}\]

If the original 1954 Act, properly construed, had left to the states concurrent authority to impose, say, regulations identical

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1. See KENTUCKY LAW JOURNAL.
3. In Boswell v. City of Long Beach, 1 CCH Atom. Energy L. Rep. \$ 4056, the Los Angeles, California Superior Court held that the city lacked power to forbid the operation of an AEC-licensed waste disposal plant within its borders. In the Matter of Industrial Waste Disposal Corp., Docket No. 27-9, 2 CCH Atom. Energy L. Rep. \$ 11,462, the AEC refused to pass on the validity of a Houston, Texas, ordinance forbidding activities for which an AEC license was being sought, observing that if an attempt were made to enforce the ordinance, “the issue would then be before the courts.” In Stone v. Pennsylvania Public Util. Comm’n, 2 CCH Atom. Energy L. Rep. \$ 8528 (Pa. Super Ct., June 15, 1960), the court upheld an order of the Public Utility Commission authorizing eminent domain for a nuclear reactor’s transmission line, refusing to consider a contention that the reactor (Peach Bottom) was “not a proven safe unit” and noting that the AEC was charged with overseeing the safety of reactors.
to federal regulations with respect to atomic facilities, this amendment by its terms did not deprive the states of that authority. On its face all that subsection c appears to do is to preserve certain areas of authority for the federal government which might otherwise have been discontinued by the agreements with the states authorized by subsection b. However, though the statutory draftsmen were careful to avoid any explicit—and possibly impolitic—assertion of exclusive federal power in the statutory language, the report of the Joint Committee on Atomic Energy (JCAE) to accompany the bill made plain JCAE's supposition that the federal government alone had enjoyed regulatory power under the 1954 Act. Whether the draftsmen would have been proved correct if that supposition could have been tested in the courts before their amendment was adopted, the amendment itself, given its legislative history, leaves little ground on which opponents of exclusive federal authority can stand.

I was among those who, before section 274, saw a place for state regulation with respect to radioactive materials while believing that, under the existing law, federal authority should be recognized as exclusive with respect to the licensing of facilities. However, in my judgment, section 274, in subsection c, must be viewed as asserting the retention of an existing exclusive federal power over reactors and other "production and utilization facilities."

Even by one who agrees with that judgment, the question it answers need not be viewed as foreclosed for all time. In adopting section 274, the Congress has opened the door part way to compatible state regulation; perhaps it should go further. The state

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6 The validity of this construction is certainly open to challenge. The case going furthest in its support is California v. Zook, 336 U.S. 725 (1949).


Licensing and regulation of more dangerous activities—such as nuclear reactors—will remain the exclusive responsibility of the Commission. It is not intended to leave room for the exercise of dual or concurrent jurisdiction by States to control radiation hazards by regulating by-product, source, or special nuclear materials. The intent is to have the material regulated and licensed by the Commission, or by the State and local governments, but not by both.

Commenting on subsection k, the report states at p. 12:

"The Commission has exclusive authority to regulate for protection against radiation hazards until such time as the State enters into an agreement with the Commission to assume such responsibility."

of Minnesota has already asserted its right to pass on reactor facilities to be built or operated within its bounds and to disapprove those which the Minnesota Board of Health regards as endangering the public health. If a number of other states were to adopt a similar attitude, the issue would almost certainly reach the Congress before it reached the courts.

**SHOULD STATES BE AUTHORIZED TO LICENSE REACTORS?**

The question before the Congress could be answered in the light of a growing body of experience in the licensing of atomic facilities, particularly power and test reactors as to which the Congress in 1957 imposed certain procedural safeguards. The operation of the AEC's regulatory authority has recently been the subject of three studies—one by the AEC itself, another by the JCAE staff and a third by the University of Michigan Law School's Atomic Energy Research Project. On the basis of these studies, there were hearings before the JCAE in June of this year. The information provided through these channels, though directed to another issue, reinforces the view that the licensing of reactors should remain an exclusive federal responsibility.

Certainly it would be hard to defend the discontinuance of federal jurisdiction to license the construction and operation of reactors. The federal government has both special interests and special qualifications for that task. It has invested billions of

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0 Minn. State Bd. of Health, Reg. on Ionizing Radiation, Reg. 1158 ("Nuclear reactors and facilities"), 3 CCH Atom. Energy L. Rep. § 17,895h, reprinted in Staff of JCAE, 86th Cong., 1st Sess., Selected Materials on Federal-State Cooperation in the Atomic Energy Field 188-90 (Jt. Comm. Print. March 1959). The statutory base for these regulations is a slender one. A grant to the board to control listed matters by requiring licenses or permits (Minn. Stat. 1953, § 144.12) was enlarged by Minn. Laws 1957, ch. 361, which added to the list "(15) sources of ionizing radiation and the handling, storage, transportation, use and disposal of radioactive isotopes and fissionable materials."


12 I served as consultant to the JCAE staff. The opinions expressed in this article are my personal views and not necessarily the staff's.


dollars in the development of atomic energy, and, in the long run, its hope for any substantial return on that investment (military uses excepted) must rest on the achievement of economic methods of utilizing nuclear fuels for atomic power. Progress toward that goal could be set back by regulatory authorities in either of two ways: by the careless or inexpert scrutiny of reactor designs and operating procedures, followed by a reactor "incident" seriously damaging an exposed community; or by the imposition of unnecessary and costly precautionary requirements rendering economic power an impossibility. The federal government can properly claim special standing to protect against both of these risks. Moreover, since most large-scale reactors are a source of special nuclear materials from which bombs could, after reprocessing, be manufactured, the federal government has reason for concern as to the integrity and efficiency of both the reactors and their operators.

However, to say that the federal government ought to retain authority to license reactors does not automatically rule out the aspirations of Minnesota if it is prepared to impose no stricter standards than the federal government. The critical question is whether concurrent jurisdiction should be permitted. The objection to its rests on three points:

(1) It would be impossible to determine in advance whether Minnesota's standards were more or less strict than the AEC's. The complexity of atomic facilities is such that standardization, even of the principal elements in their design, is a long way off. Decisions to license or not to license must be made on a case-by-case basis. Therefore, unless Minnesota were prepared to rubber-stamp the AEC's decisions, its exercise of concurrent licensing power might actually result in the imposition of stricter controls than those imposed by the Federal agency.

(2) The process of securing federal licensing approval is so burdensome now that measures to simplify it are being earnestly sought. To require that a (more or less) parallel process be conducted before a state agency would add to the already serious

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15 Cf. Testimony of Dr. C. K. Beck, Ass't. Director of the AEC Division of Licensing and Regulation, Hearings on Radiation Safety and Regulation, supra note 14 (1961); AEC, Report on the Regulatory Program of the Atomic Energy Commission in 2 ICAE Staff Study 395, 418. For a more optimistic view, see Kennedy & Heimann, The AEC Regulatory Process, in 2 ICAE Staff Study 558, 559.
costs of the licensing process in terms of the applicant's time and man-power and might readily lead to expensive delays in getting the reactor built and into operation.

(3) The design of a power or test reactor to operate both safely and economically is one of the most challenging tasks confronting modern science and technology. The number of people who command the theoretical and applied sciences which must be drawn on in designing and in appraising the safety features of such a facility is very small. Needless to say, the services of men with these qualifications are much in demand. One of the most difficult problems confronting the AEC and its critics has been to assure that the licensing process will attract a sufficient number of first-rate people to make safety analyses, evaluations, and decisions. If the AEC is encountering difficulties in overcoming that problem, how could the states hope to surmount it? It will be years before any one state can hope to have enough licensing cases to justify the employment of a full-time staff of experts, even if it could interest able people in the service.

These points have often been asserted, but they may have the ring of the Bureaucrat's selfserving declarations in defense of his jurisdiction. To carry conviction, it may be necessary to turn to an actual licensing case. For this purpose the AEC's study of its own licensing procedures provides a convenient source of material. That study combined a helpful survey of the AEC's regulatory procedures with "chronologies of the regulatory histories of power and test reactors for which license applications have been submitted."

Each chronology reports the sequence of "regulatory events" which took place from the first contacts of the applicant with the AEC staff to the issuance of the final operating license. The general pattern, as the AEC has described it, is a five-phase operation: (1) application submittal phase; (2) AEC staff review and safety evaluation phase; (3) Advisory Committee for Reactor

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17 AEC, The Regulatory Program of the Atomic Energy Commission, 2 JCAE Staff Study 170.

18 Id. at 151 (chart).
Safety (ACRS) safety evaluation phase; (4) hearing phase; and (5) final action phase. However, the number of regulatory events within any phase may be numerous. Consider for example, the chronology of the licensing of the Yankee Atomic Electric reactor, constructed by a group of New England electric power companies at Rowe, Massachusetts, and currently in full-scale operation.\(^\text{19}\)

In June 1956, Yankee Atomic entered into a contract with the AEC for substantial research aid and a 5-year waiver of the AEC's 4\% use charge for nuclear fuel. This contract was entered into under the Power Demonstration Reactor Program which the AEC had initiated over a year earlier; agreement was reached only after Yankee had modified its reactor concept materially in order to satisfy the Program's objectives.\(^\text{20}\)

In July 1956, Yankee filed its application for a construction permit and two months later its representatives met with members of the AEC licensing staff and an ACRS representative to discuss the application. In October, Yankee submitted additional information on the fuel elements it proposed to use. In December the AEC staff requested more information on fuel requirements. In January and February 1957, Yankee filed Amendments Nos. 1 and 2 to its application. In April it filed Amendment No. 3 and its Preliminary Hazards Summary Report (a document of about 400 typed pages).\(^\text{21}\) During this period of nearly a year, work was going forward on the preliminary design of the reactor. This was completed in June 1957; a month earlier, detailed design work had begun.

In June 1957, the AEC staff again met with the applicant and again requested additional information. In July, a meeting was held with ACRS consultants to consider the Hazards Summary Report. The ACRS report having been obtained, staff members again met with the applicant. Finally, in September 1957, notice of hearing was issued. After a further meeting that month, the

\(^{19}\) For the Yankee chronology, see id. at 218-25. Yankee has a 184,000 ekw pressurized light water Westinghouse reactor.


\(^{21}\) The volume is not consecutively paged, and the original has since been considerably enlarged by amendments. The estimate given is from company sources. The supporting studies summarized in the Report are said to "fill a bookshelf."
ACRS reported to the AEC that the preliminary design of the reactor was suitable. A public hearing before a hearing examiner was held during October, and early in November, a provisional construction permit was issued, 16 months after the date of the application. Construction was begun November 15, 1957.

The foregoing covers 20 "regulatory events," the term used by the AEC chroniclers to identify the individual steps comprising their chronologies. It would be tedious to continue the enumeration. Suffice it to note that the licensing process narrated to this point represented only a good beginning. The chronicle came to an end (though the licensing process did not) in August 1960, a total of 49 months after the date of application. Subsequent to the issuance of the construction permit, there had been 47 more regulatory events, for a total of 67.

To aid the reader of the Yankee chronology, the AEC report includes a table of the amendments filed to both the Application and the Construction Permit.22 There were 23 amendments to the former, 4 to the latter. In addition 1 amendment to the Operating License is listed. During the four years covered by the chronology, Yankee matters were considered by the ACRS at 9 meetings, 2 of them being subcommittee meetings.

The Yankee chronology is neither the longest, the most complex, nor the most contentious in the collection. If current proposals for simplifying the AEC's licensing process for power and test reactors are enacted by the Congress,23 the route of another application raising problems comparable to Yankee's would probably not be marked by as many formal proceedings or as many references to the ACRS. However, there would doubtless be as many references to the AEC staff and the same painstaking inquiries and repeated requests for additional data. Each reactor presents many new problems and the doctrine of precedent has little place in hazards evaluation.24

Now suppose the Commonwealth of Massachusetts had been conducting an independent study of the Yankee reactor in order

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22 JCAE Staff Study 226-31.
23 The AEC, JCAE staff, and Berman-Hydeman studies all agree that not more than one public hearing should be mandatory and that reference to the ACRS should be on a selective basis. See AEC, Report on the Regulatory Program of the Atomic Energy Commission, in 2 JCAE Staff Study 410; 1 JCAE Staff Study 49, 72; Berman & Hydeman, op. cit. supra note 13, at 326.
24 See Testimony of Dr. C. K. Beck, supra note 15.
to determine whether to issue a license for its construction and operation. Suppose the Massachusetts licensing body had adopted the AEC’s practice of issuing a provisional construction permit before all the reactor’s design and safety problems had been ironed out, provided it had received “information sufficient to provide reasonable assurance that a facility of the general type proposed can be constructed and operated at the proposed location without undue risk to the health and safety of the public” (the standard employed by the AEC). Despite this parallel, is it not obvious that the state and federal inquiries would diverge at many points over the four years and that, even though the applicant succeeded ultimately in satisfying the different requirements of the two bodies, it would have been subjected to greatly increased hearing expense, the absorption of much scientific and engineering staff time in meeting the dual demands, and the risk of serious delay in its construction program? The added uncertainties as to the end result would have complicated its financing problem. Whatever the result, the reaction of the reactor’s sponsors at the end of the road would probably be: “Never again!”

If the United States wants private enterprise to take part in the development of an atomic power industry, surely the responsibility for resolving the safety question should be entrusted to a single government.

**STATE PARTICIPATION IN FEDERAL REACTOR LICENSING**

The view that reactor licensing should be the exclusive responsibility of the federal government does not mean that a state is helpless to influence the AEC’s decision whether to permit or forbid the construction and operation of a given reactor within its territory. The interested state may take part in the decision-making process, but it must do so as a participant in the licensing proceeding. In view of the cost and difficulty of intervention in reactor licensing cases, in all probability it is only the state—or a major subdivision—that is likely to have the necessary combination of interest and resources to take such action.

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26 For convenience, this article is written wholly in terms of the role of state governments. However, a city or county might take a more active part than the (Footnote continued on next page)
Section 274, while excluding states from reactor licensing, invites them to participate in the federal process. Subsection 1 requires the Commission, in matters as to which its authority is preserved by subsection c, to "give prompt notice to the State or States in which the activity shall be conducted of the filing of the license application." Moreover, subsection 1 further requires the Commission to "afford reasonable opportunity for State representatives to offer evidence, interrogate witnesses, and advise the Commission as to the application without requiring such representatives to take a position for or against the granting of the application."

This invitation raises a preliminary procedural question. Does a state by accepting the invitation become a party to the proceeding and, in effect if not in name, an intervenor? Certainly such a provision cannot be deemed to diminish the rights that a state would have as an intervenor. The provision would seem to relieve a state of the need to petition to intervene, but, since little appears to turn on the point, I shall for convenience in the discussion that follows refer to the state as an intervenor.

Despite the evident cordiality of the Congress toward state intervention, one still may inquire whether intervention, even by an intervenor state, is an empty or impracticable privilege in reactor licensing cases. To answer that question, it may be helpful to pose three other questions. (1) Is the procedure calculated to give the state in which it is proposed that a reactor be built adequate notice? (2) Are the technical issues in a licensing case so abstruse as to prevent a state from taking an effective part in the proceedings? (3) Does the decision-making process provide an adequate opportunity for an intervenor to influence the views of the Commission?

Solid answers to these three questions cannot be predicated on experience. To date there have been only two interventions by a state in a reactor licensing case, and the state (Michigan in

(Footnote continued from preceding page)

the Power Reactor Dev. Co. (PRDC)\textsuperscript{28} and the Consumer Power Co. case)\textsuperscript{29} held, in effect, only a watching brief. Moreover, as yet there has been active intervention only in one case, PRDC (the intervenors being labor unions, chiefly the UAW), so that little opportunity has been provided to develop a body of practice with respect to intervention. At the risk of having to rely on speculation for answers, I shall consider the three questions in turn.

(1) Subsection 1 of section 274 may seem to solve the problem of notice.\textsuperscript{30} The statutory requirement will probably soon be implemented, after a lag of nearly two years, by an amendment to AEC's Rules of Practice to require the applicant to serve a copy of its application on the chief executive of the municipality or county in which the reactor is to be located.\textsuperscript{31} The AEC will also undertake to send a copy to "the Governor or other appropriate official of the State in which the facility is to be located." However, since the real problem is to enable the potentially interested state to reach a judgment whether it would be justified in taking an active role in the proceeding, the application alone may not provide the necessary information.

Much progress toward a solution of this problem has been made since 1956 when notice in the PRDC case was first given by an AEC announcement that it was issuing a conditional construction permit to PRDC to build the Fermi fast-breeder. The ACRS report, which raised searching questions as to the reactor's safety, was made public only by a familiar Washington technique: it was leaked.\textsuperscript{32}

\textsuperscript{29} Docket No. 50-155. On March 25, 1961, the state of Michigan petitioned to intervene for the purpose of observing the proceedings. On March 28, the petition was granted and the Michigan Water Resources Commission was permitted to enter a limited appearance. AEC, The Regulatory Program of the Atomic Energy Commission, in 2 JCAE Staff Study 255.
\textsuperscript{32} Comm'r T. E. Murray, who had dissented from the order issuing the construction permit, unilaterally introduced a part of the ACRS report in an
In response to the criticism aroused by that case and to 1957 amendments to the Act requiring hearings and public dissemination of the ACRS report, the AEC adopted the practice of making public the staff hazards analysis at the time the 30-day notice of hearing was issued. This would enable an interested public or private body to engage experts to decide whether further investigation was called for. However, the preparation of the staff analysis was time-consuming. Rather than risk having to defer the hearing, the AEC began making the analysis available only after the notice had issued, gradually reducing the already short time for decision by a possible intervenor. Spurred by JCAE inquiries, the Commission last winter was reported by the JCAE staff “to be giving careful study to the problem of the adequacy of public notice of hearings and expects in the near future to make substantial improvements in the notice procedures, particularly with respect to local governments and officials.” If the notice provisions quoted above are to be the only fruits of this study, they scarcely seem sufficient.

To enable interested states and other public bodies to determine the course they should take with respect to an application, it would be advantageous for them to have ready access to the applicant’s preliminary hazards summary report and to the analysis the staff prepares for consideration by the ACRS. A comparison of the latter document with the ACRS report would sometimes throw much more light on the problems that have concerned both bodies than does the ACRS report itself, a brief and often enigmatic document.

The reality of the difficulty confronting the state which seeks to play a responsible part in the licensing process is illustrated by the action of the Secretary of Health in Pennsylvania, Dr. C. L. Wilbar, who wrote the Philadelphia Electric Company for additional data concerning the reactor the company is building at

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(Footnote continued from preceding page)

Appropriations hearing. As knowledge of the ACRS position spread, the JCAE demanded the release of the report. The AEC withheld this pressure for three months and then released the report, confessing that it had made a mistake. The JCAE-AEC correspondence is set forth in A Study of AEC Procedures and Organization in Licensing of Reactor Facilities in Staff of JCAE, 85th Cong., 1st Sess., 117-22 (Jt. Comm. Report 1957).

33 Supra note 11.
34 1 JCAE Staff Study 54 n. For the staff criticism, see id. at 53.
Peach Bottom, Pennsylvania. Dr. Wilbar declared that the Health Department would have to intervene if more data on the points he specified were not forthcoming.\textsuperscript{35}

Notice provided by technical documents would, of course, do little to alert the general public as to the nature of the safety problems under consideration. Therefore, it has been suggested that a public conference "somewhat in the nature of a press conference" be held by the AEC near the site of a reactor it had been asked to license.\textsuperscript{36} At this conference, AEC representatives would seek to explain the nature of the reactor and presumably the reasons why it regarded the reactor as safe. Apart from the question whether such a conference could be an effective medium for communicating meaningfully to the public, the question that had concerned the experts,\textsuperscript{37} the procedure puts the AEC in the role of defending before the public a reactor the safety of which it has yet to determine. Such a proceeding would therefore add to whatever bias in favor of the reactor the AEC's prior dealings with the applicant might have created. If such a public meeting is to be held, I believe the presentation of the case for the reactor should be left to the applicant. I therefore view with some misgivings a public meeting the AEC has experimentally scheduled in Pleasanton, California, near the site of the Vallecitos reactor, to test this medium of communication in connection with the licensing of a nuclear superheater there.\textsuperscript{38}

(2) In arguing that states should not be allowed to establish their own licensing systems for reactors, I emphasized how difficult were the technical problems posed and how hard a state would find the development of a staff capable of reaching an independent judgment as to the safety of a proposed reactor. In so

\textsuperscript{35} BNA, Atomic Ind. Rep., News and Analysis, 6:336.

\textsuperscript{36} Reply from Prof. Kenneth Culp Davis, University of Minnesota Law School, dated April 19, 1961 in Staff of JCAE, \textit{op. cit. supra} note 16, at 25.

\textsuperscript{37} Dr. T. J. Thompson, Chairman, Advisory Committee on Reactor Safeguards, in Panel Discussion, \textit{Hearings on Radiation Safety and Regulation}, supra note 14, June 15, 1961: I seriously doubt that it is possible to read into the record testimony which is complete enough to be technically valid on safety features of such a highly technical piece of hardware as a nuclear power reactor while still making it simple enough so that the man on the street can really understand what is happening.

\textsuperscript{38} Plans for such a conference were announced in Testimony of Comm'r L. K. Olson and questioned by the author in Panel Discussion, \textit{Hearings on Radiation Safety and Regulation}, supra note 14, June 15, 1961.
doing, have I simultaneously established the impracticability of a state's active participation in a licensing proceeding as an intervenor? I do not think so.

There are important differences between the roles of the intervenor and the decision-maker. The most obvious is the fact that the intervenor does not have to make the decision. A person or a public body may be unable to command sufficient expertise to justify entrusting it with decision-making powers and yet be capable of posing and pressing some very tough questions for the decision-maker to resolve. Another significant difference is that the decision-maker must be capable of evaluating all the facets of a proposed reactor's safety and so must employ experts in a correspondingly wide range of disciplines. The intervenor can, in contrast, give the applicant and the decision-maker the benefit of the doubt with respect to 95% of the questions raised by a reactor and concentrate on the 5% which, in the eyes of the intervenor's experts, pose the greatest threat to safety. With the target thus narrowed, the intervenor can direct its experts' probing to problems of manageable dimensions.

It is with respect to the suitability of a reactor's proposed site that an intervenor state is likely to be most effective. Siting problems are usually tackled at a very early stage in a reactor's history, well before the completion of even the preliminary design. At this point, a state could present both technical argument and policy considerations for or against the proposed site without getting deeply into specific questions of reactor design.39 There are some sites, for example, that are not desirable even for as safe a power reactor as we are currently able to design.40

Many states have in the faculties of universities within their bounds nuclear physicists and engineers with sufficient knowledge

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39 Dr. T. J. Thompson in Panel Discussion, id.
40 See Letter From ACRS to the AEC, June 30, 1960, on the Small Size Pressurized Water Reactor, proposed to be built by the AEC at a site near Jamestown, N. Y.: The Committee can find no serious technical fault with the reactor, the containment, and the safety features proposed, insofar as the partial information supplied to date has presented the case. The Committee emphasizes, however, that power reactors are relatively new and untried, and that there exists a considerable degree of uncertainty in our knowledge of their long-term safe behavior. Accordingly, the Committee doubts that the new and relatively untried technical features for improved safety proposed by the applicant, since our last report, are a satisfactory substitute for the inherent safety implied by a greater distance from population centers.
to make a preliminary assessment of a reactor application and (hopefully) the applicant's hazards summary report, and, on this basis, advise whether more searching scrutiny of the proposal is indicated. An affirmative answer might, of course, lead to the enlistment of other, possibly out-of-state, experts.

(3) Given an illuminating notice and the state's ability to employ qualified personnel to study such problems as the notice may have revealed, the question still must be faced: is intervention that goes beyond being placed on the AEC's mailing list likely to be worth while?

Almost certainly, in most cases of reactor licensing, the state and its experts will be satisfied that there is no reason for active intervention. But the single case in which the contrary proved true might justify at least a preliminary look at the problems in all the other cases. To be sure, the AEC has built up a capable staff in its Hazards Evaluation Branch, and the ACRS is a body of unusual ability. In addition, the reactor's designers will have devoted careful study to the safety aspects of all features of their design. But the quality of a staff is never constant, and the ACRS may not long continue its case-by-case scrutiny of reactor applications. The safety evaluation that seems so excellent now may be much less impressive a year or two or three hence.

Moreover, as the licensing process is now set up, absent intervention, there is no effective review of the merits of the safety issue beyond that point in the process where the AEC licensing staff and the applicant agree (with the approval of the ACRS) that the application is ready to go to hearing. At that point, the applicant and the staff will prepare testimony and proposed findings which that testimony will support. The hearing examiner, a lawyer, will take note that the evidence does support the proposed findings, and ordinarily he will adopt them in substance. Though

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41 The problem to which this article is addressed relates almost wholly to power and test reactors. Very seldom does a research reactor require reference to the ACRS, and so far they have all been licensed by the AEC Division of Licensing and Regulation without a hearing. As of Nov. 30, 1960, nineteen construction permits and forty-five operating licenses had been issued for research reactors as against eight construction permits and five operating licenses for power and test reactors. 1960 AEC Ann. Rep. 405.

42 For a list of its fifteen members (appointed by the Commission for a term of four years) and the position held by each member, see id. at 309-10.

43 See supra note 23. See also Letter dated December 13, 1960 from Chairman, ACRS, to Chairman, AEC, in 2 ICAE Staff Study 590, 591.
his job description may require it,\textsuperscript{44} he will lack the scientific qualifications needed to make an independent evaluation of the testimony and findings relating to the reactor's safety.\textsuperscript{45} Unless the case happens to pose a procedural problem or a new question as to the nature of the order to be issued, the examiner's intermediate opinion directing the issuance of, say, a provisional construction permit will evoke no exceptions from the applicant, and, within 20 days, his order will become final.\textsuperscript{46} The Commission may persist in its present practice of reviewing the record in each proceeding, contested or not, but, on the safety issue in an uncontested case, this will be directed to the question whether the findings are supported by evidence of record, and, of course, they always will be.\textsuperscript{47}

It should be noted that, in this description of the licensing process, I have assumed agreement among the staff, the ACRS, and the applicant. This may be predicted with assurance.\textsuperscript{48} If the staff and ACRS oppose the applicant on a safety issue, the applicant is not going to press for a hearing, especially at the construction permit stage; if it does, the hearing examiner will

\textsuperscript{44} The functions of the hearing examiner should not be limited to receiving the evidence. He has a further function of testing and evaluating the evidence, and independently determining whether such evidence supports the necessary findings consistent with the law and with regulations and policies of the Commission.

Letter by Comm'r L. K. Olson to Mr. T. Ramey, Executive Director, JCAE, dated Nov. 30, 1960, in 2 JCAE Staff Study 578, 585.

\textsuperscript{45} For comment on the examiner's difficult role, see Berman & Hydeman, op. cit. supra note 13, at 128-29, 278; Kennedy & Heimaan, The AEC Regulatory Process, in 2 JCAE Staff Study 562-63.

\textsuperscript{46} Since April 15, 1961, review of examiner's decisions has been granted by the commission only upon petition. AEC, Rules of Practice, 10 C.F.R. § 2.752 (1959).

\textsuperscript{47} Testimony of Comm'r T. S. Graham, Hearings on Radiation Safety and Regulation Before the JCAE, supra note 14, Tune 15, 1961:

In effect we adopted a quasi-judicial procedure [with] a hearing to provide for the public record by direct and cross examination or otherwise sufficient evidence to sustain a finding and conclusion as to reasonable assurance of the safety of the public.

If the record were insufficient in the opinion of the Commissioners, then we remanded the proceeding.

\textsuperscript{48} The applicant realizing the decisive influence of the Licensing Division's opinion and that of the ACRS on a hearing examiner, who is not equipped to delve into the highly technical safety matters, prior to the hearing will have resolved all technical questions with the staff and the ACRS either by convincing [them] of the safety of his project or by making modifications in his design. In the uncontested case the public hearing has not been a forum for resolution of safety questions.

scarcely be able to resolve the question against the staff's and ACRS's views. Moreover, the Commission's method of review offers little prospect that the examiner's decision, with ample support in the record, will be reversed. It is not surprising, therefore, that, in all cases to date, the staff and the applicant have been in agreement by the time the hearing was reached, whatever the number of disagreements that may have had to be ironed out en route.

In this situation, a qualified intervenor can put the staff and the applicant on their mettle. Although the AEC's Rules of Practice are not explicit, the likelihood is considerable that an intervenor state which had retained qualified experts could take part in the informal discussions with the staff before the hearing was sought. If the intervenor state was not satisfied at this stage, it could spread its views on the record at the hearing. The intervenor might have little hope to persuade the hearing examiner, but, if the case reached the Commission, the scientific ability of certain Commissioners is such that any substantial scientific objections to the staff's position could get thoughtful, informed attention, and probably this would be given even though there was sufficient evidence of record to sustain the staff's position. The effect of this scrutiny on the Commission's other duties, if interventions became frequent, would be catastrophic, but that is a concern which would not inhibit any one intervenor.

Of greater concern to the intervenor state would be the risk of unconscious bias on the part of the Commissioners as a result of the dual role they are required to play: promoters and developers on the one hand; regulators, on the other. This dual responsibility has been the subject of controversy. The AEC report defends the combination of responsibilities, and

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40 AEC, Rules of Practice, 10 C.F.R. § 2.101 (1959), dealing with administrative examination of applications, provides: "The applicant . . . may be requested to confer informally regarding the application."

50 At present, with contested cases a rarity, commissioners estimate that they devote from one-sixth to one-third of their time to regulatory matters. Letter from AEC Comm'r J. S. Graham to J. T. Ramey, Exec. Director, JCAE, Oct. 28, 1960, in 2 JCAE Staff Study 514.

51 See AEC, Report on the Regulatory Program of the Atomic Energy Commission, in 2 JCAE Staff Study 413-20. The AEC's position has been vigorously seconded by a leading authority in Administrative Law. See Reply From Prof. Kenneth Culp Davis, in Staff of JCAE, op. cit. supra note 36, at 29-30.

52 1 JCAE Staff Study 47-48, 64, 67.
Messrs. Berman and Hydeman in the University of Michigan Law School study both attack it. The JCAE staff study recommends that a three-member board (two "technically qualified") be appointed within the AEC by the President to decide all licensing cases. The Berman-Hydeman study would place such a board at the head of a new agency to which all the AEC's regulatory duties and staff would be transferred.

If either of the proposed boards were created, the opportunity for effective intervention would be increased though the need for any intervention at all would be lessened. The board would sit on a power or test reactor licensing case itself; its technically qualified members could evaluate the technical testimony offered on behalf of the intervenor. If that testimony were sufficient to raise doubts but not to conclude them, the board would be capable of pushing the inquiry further.

A significant change which the creation of either board would introduce would be to give the applicant a greater chance to obtain a favorable ruling in cases where the staff did not agree with it. In this way protection could be afforded against the risk that the staff might become too safety-conscious and block needed innovation in reactor technology. In such a situation a state, by intervening on behalf of the proposed reactor, might considerably increase the chance that the license would issue.

Frequent interventions leading to protracted hearings and, on occasion, to review in the courts, could paralyze the present adjudicatory system by imposing burdens that the Commission, with its heavy operating and developmental responsibilities, simply could not carry. To be sure, if the Atomic Safety and Licensing Board proposed by the JCAE staff were created, it

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54 1 JCAE Staff Study 69-70.  
55 Berman & Hydeman, op. cit. supra note 13, at 319-30.  
55a Late in the session identical bills were introduced by Chairman Holifield of the JCAE and Senator Pastore, a high-ranking Democratic member of the JCAE, which authorized, but did not require, the Commission to create an Atomic Safety and Licensing Board to bear licensing cases. The Board would be composed as the JCAE staff study suggested, but it would be appointed by the Commission which could reserve the power of final review of its orders. The Board would be composed of three members, with each member having the same qualifications. The bills also provided for procedural changes, reducing the number of mandatory hearings to one and relieving the burden on the ACRS to some extent. S. 2419, H.H. 8708, 87th Cong., 1st Sess. (1961). No action was taken on those bills, but hearings on them are contemplated in the coming session.  
56 For a vigorous expression of this fear, see Reply From Prof. Kenneth Culp Davis, in Staff of JCAE, op. cit. supra note 36, at 29-30.
could handle a much heavier volume of adjudication, but the burden on the AEC staff and applicants would endanger the atomic power industry's prospects. Yet, the hazard of numerous contests should not be exaggerated. Even for a state, the burden of intervention in a facility licensing case is substantial enough to deter capricious indulgence in the privilege. The fact that a state government has staffed itself to make intelligent use of the privilege should exert a salutary influence on the AEC staff to conduct its evaluations with care and balance. If the state were permitted to share in prehearing evaluations, in appropriate cases, the likelihood of ill-considered opposition to AEC positions would be still further diminished.

A STATE RESPONSIBILITY AS REGARDS OPERATING REACTORS

Suppose a power reactor built by an electric company has been duly licensed by the AEC and is in operation as an integral part of the company's electric system. It is a radiation source, even while it is operating normally. A small quantity of radioactive gases will be escaping from the reactor stack; a small volume of radioactivity may be released as the reactor discharges water; occasionally in the course of their duties, employees of the reactor will be exposed to radiation. Standards governing all these releases of radioactivity will be found in the reactor license and, basically, in part 20 of the AEC's Regulations, "Standards for Protection Against Radiation." Is subsection c of section 274 to be interpreted as pre-empting a state from exercising any authority over the by-product materials that are the sources of this radiation?

Section 274 predicates the exercise of state power on the materials with respect to which it is exercised.\textsuperscript{57} It predicates the federal power it reserves on various bases: materials by implication in one instance (state power over special nuclear materials exists only as to "quantities not sufficient to form a critical mass"), on facilities ("the construction and operation of any production or utilization facility"), and on functions (export or import of materials, ocean or sea disposal of materials, disposal of materials when special hazards lead the Commission to impose a license).\textsuperscript{58}


The resulting overlap of state and federal authority in a scheme which was designed to prevent, in the words of the JCAE report, "dual or concurrent jurisdiction" calls for clarification.

Such clarification is not to be found in the AEC "Criteria for Guidance of States and the AEC in the Discontinuance of AEC Authority" or in the State Radiation Control Act which the Council of State Governments has drafted in cooperation with the AEC for enactment to implement section 274 agreements. The State Act is not unlike the typical state acts which have been adopted in recent years. They purport to confer regulatory power over radiation on state agencies without any express limitation to areas not pre-empted by the federal legislation. It is startling to realize that, if the exclusive federal jurisdiction theory expressed in the 1959 JCAE report accompanying section 274 is accepted, nearly all the state legislation and regulations designed to control radiation are invalid except insofar as they apply to radium, x-rays, and accelerators. Take, as an egregious example, the California statute which was passed in June of this year and becomes effective in September as chapter 7 of the Health and Safety Code, "Control of Radioactive Contamination of the Environment." One of its provisions declares: "No person shall operate a nuclear reactor . . . which could, as a result of routine operations, accident, or negligence, significantly contaminate the environment with radioactive material, without first instituting and maintaining an adequate program of radiological monitoring" approved by the State Board of Health. Even if the State Board of Health were willing to accept monitoring arrangements set up in the AEC license, it would have no legal standing to assert its interest.

The California statute in this respect comes close to a licensing requirement. Suppose that the Massachusetts Department of

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53 For a collection of state laws, see id. at 205.
54 See supra note 7.
55 These are excluded by the definitions of by-product, source, and special nuclear materials to which federal authority is confined. See Act, § 11.e., x., y., 68 Stat. 922, 42 U.S.C. § 2014(e), (x), (y) (Supp. II, 1960).
Public Health were simply to complain of the escape of radioactive gases from the stack of the Yankee reactor in quantities that were in excess of limits set in the AEC's regulation and accepted as proper in Massachusetts. Would the Department have any legal authority to back up its complaints or would it have to depend on the AEC for enforcement action? This would provide a chance to argue that the reservation of federal power over the operation of a reactor did not oust a state of power over by-product materials merely because they happen to have emanated from the reactor.

It is to be hoped that uncertainties such as these can be clarified in such agreements with states as the AEC executes under section 274. Subsection 1 permits the "Commission in carrying out its licensing and regulatory responsibilities . . . to enter into agreements with any State, or group of States, to perform inspections or other functions on a cooperative basis as the Commission deems appropriate." Happily, moreover, compliance and enforcement activities in this field ordinarily are carried out with maximum emphasis on voluntary compliance and minimum stress on legal remedies. Accordingly, tests of enforcement powers are not likely to be frequent. This phenomenon does much to explain the continued coexistence of state and federal regulations in a field that, in contemplation of law, appears to have been pre-empted by the Congress.

Other State Powers Over Reactors

The Act has two saving clauses with respect to state power. Section 271 provides: "Nothing in this Act shall be construed to affect the authority or regulations of any Federal, State, or local agency with respect to the generation, sale or transmission of electric power." Subsection k of section 274 has added the following: "Nothing in this section shall be construed to affect the authority of any State or local agency to regulate activities for purposes other than protection against radiation hazards."

Provisions of this sort open the door wide to speculation. I shall note only two questions with respect to reactors which have been the subject of some discussion.

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In some states, utility commissions have the power to pass on major construction by companies subject to their jurisdiction; more generally they have the power to pass on security issues to finance such construction. Suppose a state commission were convinced that it would be imprudent for an electric company operating within the state to build a power reactor. Or suppose it were to rule that, though a power reactor of a well-established type might be approved, the new concept which the company was advancing would not be. These judgments, though perhaps reflecting the commission's doubts as to the safety of the proposed reactor, would still seem to me a valid exertion of state authority "with respect to the generation . . . of electric power."

The Illinois Commerce Commission has approved the construction and operation of the Commonwealth Edison Company's large reactor at Dresden, Illinois.\(^7^0\) In the two proceedings the Commission made specific findings relating to the various safety features of the reactor, while taking note of the AEC's own licensing operations. It seems reasonably clear that the safety evaluation was, by AEC standards, a superficial one. There is no evidence in the opinions that the Commission was concerned lest it be trespassing on pre-empted territory. Of course, if a commission were to declare its intention to grant its approval of a reactor's construction only after an independent determination of the safety of the design, conflict with federal authority would be hard to avoid.

The most powerful lever for state control of reactor construction may be the authority to zone land, ordinarily exercised by municipalities but sometimes by larger units including, occasionally, the states. A general zoning ordinance prohibiting industrial uses within a zone would certainly bar a reactor even though it were licensed by the AEC for the site in question. This was my opinion even before the adoption of subsection k of section 274.\(^7^1\)

\(^{70}\) In the Matter of Commonwealth Edison Co., Ill. Commerce Comm'n, No. 49386, Sept. 24, 1956 (construction) 1 CCH Atom. Energy L. Rep. ¶ 8522; Mar. 27, 1958 (operation) id. ¶ 8524. In the latter proceeding, the Illinois Commission ordered the company to file monthly reports as to its inventory of fuel elements. This was superseded by a requirement that it file copies of its Material Status report to the AEC and of its reports on operations required by its AEC license. Id. ¶ 8532.

Suppose, however, an electric company obtained a license to build on unzoned land, and the state legislature passed a “zoning” law similar to the bill which is reported to have died in the Arizona legislature a few years ago. This bill would have prohibited the construction of any reactor or missile plant within 60 miles of a city of more than 100,000 population, or within 40 miles of a city of more than 10,000.\textsuperscript{72} It is said that such a bill would have “effectively outlawed” reactors and missile plants in 80 or more states.\textsuperscript{73}

Probably safety was a primary consideration among the factors that inspired the Arizona bill, although conceivably safety against providing attractive targets for enemy attacks may have been the dominant motivation. Suppose, however, that a legislature candidly declared that its policy, during the developmental period of atomic power, was to prevent the siting of reactors in sufficient proximity to its cities to subject their populations to anxiety, however safe, in objective terms, the reactors might be. This protection of the amenities of urban existence seems to me a purpose distinct from “protection against radiation hazards.” I should think the state law would be sheltered by subsection k against attack based on a theory of pre-emption. If subsection k were held not to protect it or if an amendment were to withdraw the protection, a nice case would be posed as to the extent of federal power. If the reactor were simply a part of an electric power system, ministering to no special federal objectives in its particular location, I should not be surprised if the authority of the state were held to prevail.

This review of the opportunities for—and limitations on—state participation in reactor licensing and regulation makes it evident that the state which, without surrendering its independence, establishes and maintains a close working relationship with AEC, will be able as a consequence to discharge its responsibilities more effectively than would otherwise be the case. The Commonwealth of Kentucky, as a pioneer in the implementation of section 274, should be able to achieve such a relationship—to the advantage of its own citizens and industries and of the national atomic program.


\textsuperscript{73} \textit{Ibid.}