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# ENHANCING PUBLIC ACCEPTANCE OF NUCLEAR DECISIONMAKING

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The promotion and development of nuclear-generated electrical power and the regulation necessary to assure safety and protect the environment pose unique problems not elsewhere encountered in government. This situation does not arise simply because the regulation of nuclear technology presupposes comprehension and decisionmaking involving abstruse scientific and technical matters. Nor is it due merely to the many critical issues posed by nuclear technology involving factual questions either at the leading edge of scientific inquiry or quite simply beyond empirical verification at the present state of knowledge. Unquestionably, with respect to some of the most critical issues, the best available data consist of scientific hypotheses and probabilities, and ultimate questions of safety are shrouded in a degree of uncertainty and obscurity.

These imponderables become acutely critical by virtue of the truly unique aspect of nuclear power—its lethal potentialities. Although there has as yet been no fatality resulting from use of nuclear power to generate electricity, it is impossible to deny that there exists a chance, however infinitesimally remote, that a major nuclear catastrophe could occur in or near one or more densely populated metropolitan areas. Inflicting immediate widespread loss of life and incalculable long term genetic damage, such a disaster could render significant areas of the nation uninhabitable for decades or even centuries.<sup>1</sup>

Although such entities as the Patent Office, the National Academy of Sciences, and other instrumentalities of government regularly deal with complex scientific issues, and although an agency such as the National Aeronautics and Space Administration has achieved signal successes in fostering leading-edge technologies involving complexities which rival those of nuclear physics, none of these agencies has had to cope with potential health and safety impacts of the magnitude posed

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1. Among the long-lived fission products resulting from nuclear power generation are strontium-90 and cesium-137, with half-lives of 30 years, and plutonium-239, which has a half-life of 24,400 years. See Gofman, *The Case Against Nuclear Power*, CATALYST, Number 3, 1972, at 18.

by nuclear power generation. To be sure, a number of agencies, including the Food and Drug Administration and the Federal Aviation Administration, deal with subject matter directly affecting the health and safety of significant numbers of citizens. Nevertheless, the impact of an incident involving ingestion of impure or adulterated food or toxic drugs, or even an airline accident, lethal as such events would be to the persons immediately involved, cannot be compared in magnitude of scale or social importance to the consequences of a major escape of nuclear debris in a densely populated metropolitan area.

It is thus the ultimate consequences at stake that have made nuclear regulation the focus of an intense public concern somewhat on the order of that about world peace. The nuclear regulator, whatever agency format it may use, clearly faces a problem of public acceptance far more critical than that facing most sister agencies regulating activities having lesser potential public impact.

From its beginning, the contradictory mix of Promethean possibilities and doomsday risks inherent in nuclear technology has inspired in the government's regulatory approach a sense of responsibility higher than that prevailing in the regulation of other activities affected by a public interest. However important it may be to protect shippers and travelers from discrimination and unduly preferential or prejudicial transport rates, or to protect investors from the sharp practices of stock manipulators, or to assure stability in banking practices and prevent unfair or monopolistic trade practices, or to provide orderly competitive conditions in numerous important industries through controlled entry to a wide variety of activities ranging from television to air transport services, or even to assure pure food and drugs and safe airplanes and working conditions, none of these activities decisively affects the ultimate survival of mankind on this planet in the same sense that nuclear technology does. Thus, in the years immediately following the first military use of that technology, strenuous efforts were made, and indeed continue, to structure safeguards in the form of international test bans and nonproliferation treaties to reduce the chance of large-scale nuclear war.<sup>2</sup> Idealists during this period emphasized the need to concentrate on peaceful uses of nuclear energy but failed to recognize that employment of nuclear technology even exclusively for peaceful uses would entail grave risks.

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2. See Bechhoefer, *Historical Evolution of International Safeguards*, in *INTERNATIONAL SAFEGUARDS AND NUCLEAR INDUSTRY* 21-44 (M. Willrich ed. 1973).

As Professor Green aptly observes,<sup>3</sup> the draftsmen of the Atomic Energy Act of 1954 never envisioned the use of nuclear reactor licensing hearings as a forum for the resolution of issues of public health and safety. Indeed, these architects of the regulatory structure devised to preside over peaceful uses of nuclear energy detected no inherent conflict of interest in combining in a single agency the responsibility for promoting and developing peaceful nuclear applications with the authority for regulating the nuclear industry to ensure compliance with statutory objectives and safeguards. It is probably not far off the mark to assert that even today, after the widespread onslaught upon nuclear regulation by antinuclear litigants, the Joint Committee on Atomic Energy, convinced of the adequacy of the regulatory system conducted under its surveillance, preserves a great part of its simplistic promotional zeal for expanding the peaceful uses of nuclear technology.

Significantly, each of the contributors to this Symposium assumes an expanded use of nuclear energy, especially in the generation of electrical power, for the remainder of this century and beyond. Three of the four commentators (Professor Green excepted) advocate improvements designed to expedite existing licensing and regulatory procedures, rather than the creation of a new and different decisionmaking apparatus. Despite the inherent hazards of nuclear energy, the existing licensing and regulatory procedures, with or without the improvements suggested in this Symposium, are quite similar to the procedures employed by many other "independent" agencies and descend from the same judicial ancestry. The decision to cast the regulatory process of the Atomic Energy Commission in the same mold as that of the other independent agencies was made at a time when Congress and the public did not fully appreciate the supreme irony that even peaceful uses of nuclear energy pose grave risks to society.

Reliance on the adjudicatory hearing, or its near equivalent, the hybrid adjudicatory rulemaking proceeding, assumes that the long established Anglo-American method of determining the truth through adversary litigation will adduce the kind of data necessary to make informed nuclear decisions that will assure public safety. Of perhaps equal importance is the assumption that decisions reached in such adjudicatory proceedings not only will prove sound in the real world of nuclear mechanics but also will gain the public's confidence by demonstrating the credibility of the nuclear decisionmaking process. In light of the critical

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3. Green, *Public Participation in Nuclear Power Plant Licensing: The Great Delusion*, 15 WM. & MARY L. REV. 503, 510-11 (1974).

need for attaining and maintaining this public confidence, an inquiry into the validity of these assumptions is warranted.

At the outset, it is important to define the "public" which is concerned with nuclear regulation and whose confidence is so crucial. There are in fact innumerable "publics" in the United States, which vary in composition and size depending upon the issue or subject matter involved. The public concerned with inflation or the cost of living is undoubtedly far more numerous than the public concerned about the impact of DDT on the world food chain or, a fortiori, the plight of the kestrel. The size of the public concerned with nuclear power or any other subject would expand greatly in the event of some public disaster. Thus, public concern varies with the immediacy and degree of impact any given subject has on the daily life and welfare of the populace.

It is probably fair to say that the public presently concerned with nuclear power consists of a highly educated sector of society possessing above average comprehension of scientific problems. Without doubt, this public includes scientists, business and professional people, students, and most environmentalists and conservationists. Other "ordinary" citizens, including blue collar workers and lower income groups, living near a nuclear reactor are also part of the interested public. While portions of the public concerned with nuclear regulation devote significant amounts of available time and resources to expression of their viewpoints, often in the form of litigation, others simply follow developments and occasionally support efforts they deem essential to a sound nuclear policy. A significant number of those concerned are either inalterably opposed to any nuclear establishment or advocate a degree of proof of safeguard effectiveness beyond the capacity of the current nuclear industry and the capability of present scientific knowledge.

Enhancement of public confidence in the nuclear decisionmaking process thus must proceed on two levels. As to that sector of the public that is not inalterably opposed to nuclear power, the objective should be to establish that the regulator is conducting a rational program and providing all safeguards available under the present state of scientific knowledge. As will be indicated, this presupposes an "open" regulatory system admitting full public participation at the earliest possible point in the nuclear facility licensing process. With respect to that sector of the public opposing any nuclear applications, although some converts may be won by granting open access to the regulatory process, the regulator must assure that the regulatory process is sound and will withstand legal attack and judicial review.

It is also essential to understand what the public perceives to be the risks of nuclear power generation. Some of these risks have been discussed by Professor Green in admirable detail and need only be enumerated here.<sup>4</sup> The first is the risk to health and safety posed by the "permissible" emission of low-level radiation resulting from normal operation of nuclear reactors.<sup>5</sup> The second is the possibility of a nuclear catastrophe releasing extensive quantities of toxic debris into the atmosphere. The third is the nonradiological degradation of the environment which may result from operation of nuclear power plants.<sup>6</sup>

Any risk inherent in low-level radiation emissions from normal reactor operation appears to have been handled in a comparatively satisfactory manner through a combined study and rulemaking initiative, rather than through adjudicatory proceedings. Studies by the National Council on Radiation Protection and Measurements and the National Academy of Sciences<sup>7</sup> have marshalled what is known about the somatic and genetic effects of radiation, and Part 20 of the AEC's regulations sets forth standards for protection against radiation hazards applicable to licensed activities. The distinctly lower key public reaction to the issue of radiation levels, compared to the reaction to the possibility of nuclear catastrophe, is perhaps explained by the essentially incomplete state of knowledge with respect to the risks of exposure to low-level radiation, the gradual and virtually imperceptible impact of whatever hazard may exist, and the extension of any effects into the remote future. Thus, social toleration of the risks of low-level emissions of radiation, even where the existence of a risk is assumed, is not unlike social acceptance of the long term deleterious effects resulting from use of tobacco or alcohol. Short term advantages appear to outweigh any long term disadvantages, which generally are difficult to perceive.

Public reaction to the risk of nuclear catastrophe is quite another matter. The consequences to the public would be immediately disastrous. As a result, a vocal and well-informed antinuclear movement has attempted to block further nuclear development, as well as continuation of existing operations. In stating the case against nuclear power, one commentator has asserted: "There is one way, and one way alone, to guarantee that nuclear disasters won't occur—simply do not produce this

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4. *Id.* at 503-06.

5. See AEC Standards for Protection Against Radiation, 10 C.F.R. Part 20 (1973).

6. The primary risk in this category is thermal pollution. The Environmental Protection Agency recently published a notice of proposed rulemaking which undertakes to cope with this problem. 39 Fed. Reg. 8293 (Mar. 4, 1974).

7. See Green, *supra* note 3, at 504 nn.4 & 5.

astronomical inventory of long-lived radioactivity.”<sup>8</sup> The antinuclear movement gained momentum in 1970 with the enactment of the National Environmental Policy Act,<sup>9</sup> which permits members of the public to challenge federal agency decisions substantially affecting any aspect of the environment. The consequent injection into the AEC decision-making process of numerous complex environmental and safety issues has increased significantly the time required for the licensing of nuclear power plants. More recently, counterforces were set in motion when the Arab oil boycott dramatized to the public the dependence of the nation on foreign supplies of fossil fuel and the necessity of developing other domestic power sources. In the words of Admiral Rickover: “We are faced with the fact that while it took 600 millennia to create the earth’s deposits of fossil fuels, we are using them up in a time span measured by decades. . . . The Fossil Fuel Age may well prove to have been one of the briefest major epochs in man’s long history on earth.”<sup>10</sup>

President Nixon also has recognized that nonrenewable fossil resources must be increasingly supplemented by nuclear power to meet the nation’s future energy requirements.<sup>11</sup> The Project Independence Report<sup>12</sup> makes abundantly clear that a heavy reliance on nuclear power will be necessary during what may be a long transitional period between the archaic fossil fuel system and the advent of an environmentally clean and inexhaustible energy source. As a result the hard core opponents of nuclear power are now faced with the dilemma of having either to withdraw total opposition to nuclear power or face the widespread social and economic consequences, including widespread unemployment and the possibility of a disastrous depression, if the nation is unable to meet its energy needs while efforts are directed toward development of nuclear fusion or some other ultimate power source. It is reasonably clear that a major shortfall in meeting national energy needs would impact a large segment of the general public and probably result in a formidable popular backlash against the antinuclear and environmentalist movements. For this reason, it is of the highest importance that the government alert its constituency to the need to develop an expanded non-fossil fuel system (which for all practical purposes means nuclear), demonstrate the realities of the risks to society that are in-

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8. Gofman, *supra* note 1, at 18.

9. 42 U.S.C. §§ 4321-47 (1970).

10. R. LAPP, *THE LOGARITHMIC CENTURY* 43 (1973).

11. See President’s Message to the Congress, 119 CONG. REC. S7692, 7694-97 (daily ed. Apr. 18, 1973).

12. AEC, *REPORT TO THE PRESIDENT ON THE NATION’S ENERGY FUTURE* vii (1973).

volved, formulate and enforce a system of safeguards which are both reliable and enjoy reasonably widespread public confidence, and, finally, ensure that the regulatory system is capable of functioning within an acceptable timeframe.

What then must be done to enhance public acceptance of nuclear decisionmaking? Until the current "energy crisis" the American public was largely unaware that our domestic fossil fuel supplies, at present consumption rates, would not satisfy current and forecast demands and that substantial dependence upon foreign fuel supplies had become a way of life. Even now there is less than full awareness that to maintain necessary levels of economic activity this dependence on foreign fuel supplies must increase and that, even if nuclear capability is substantially expanded, consumption of petroleum, primarily in the transportation sector, will still substantially exceed domestic production during the 1980's and 1990's.<sup>13</sup> Thus, a major public information program is imperative to inform the American public that even with extensive development of known fossil fuel sources, including such resources as oil shale and coal liquification and gasification, extensive nuclear development will be required to forestall unacceptable economic and social consequences.

Once this fact of life has been established in the collective mentality of the American public, the implications of widespread nuclear development must be made clear. One of the chief deficiencies in the prevailing nuclear regulatory system is its failure to disclose fully to the public the risks and benefits of nuclear power. This is especially true in the early stages of nuclear planning. Although the location of nuclear plants is of the highest concern to the public, under the existing system the public is denied participation in the site selection process. Legislation will be required to correct this deficiency.<sup>14</sup>

Of equal concern is the exclusion of the public from the threshold deliberations between experts retained by an applicant for a construction permit and the AEC regulatory staff. By the time the public normally begins to participate in the regulatory process, that is, at the formal hearing before the Atomic Safety and Licensing Board, site selection has been completed (subject to final Licensing Board ap-

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13. R. LAPP, *supra* note 10, at 38-39. See also DEPT. OF INTERIOR, UNITED STATES ENERGY THROUGH THE YEAR 2000 (1972), which forecasts the following shortfalls in domestic petroleum production in relation to national requirements: 1975, 36.9 percent; 1980, 43.7 percent; 1985, 53.4 percent; and 2000, 70.3 percent. *Id.* at 10.

14. See *Gage v. AEC*, 479 F.2d 1214 (D.C. Cir. 1973).

proval), and the regulatory staff and the applicant have arrived at an agreed position on most, if not all, of the substantive details of the proposed nuclear plant. Because these important agreements have been reached out of the public view and usually without any significant public input, except for possible comment on the draft environmental impact statement, it is not unnatural that public intervenors regard the issuance of a license as a *fait accompli* and their participation as a meaningless sop granted for cosmetic purposes. This reaction is intensified by the manner in which issues are defined and addressed in the conduct of the hearing before the Atomic Safety and Licensing Board, a matter validly criticized by Professor Green.<sup>15</sup> As a consequence, public intervenors feel justified in adopting "no win" dilatory tactics to obstruct the progress of what they regard as a bureaucratic juggernaut. Excessive delay and unnecessary cost result, and the "nuclear public" remains unsatisfied that its interests have been adequately considered and protected.

These difficulties are compounded by the additional problem that adjudicatory techniques such as cross-examination and rebuttal are not ideal methods for adducing publicly comprehensible answers to a host of important technical questions under consideration in a nuclear licensing proceeding. Historically, cross-examination has been used in two-party litigation to resolve a limited number of comparatively simple factual issues. The technique, however, is of limited utility in multi-party licensing cases, which involve an immense volume of complex data embracing various specialized technical disciplines, require subtle judgmental determinations by hearing officers, and frequently entail a significant degree of subjective valuation of probable risks and future conditions. Given the exclusion of the public from the early planning stages when most of the basic decisions are made concerning siting and the basic structure and design of a nuclear plant, as well as the failure of present procedures to provide at the hearing stage an opportunity for effective and meaningful public participation, it is not remarkable that the present licensing process does not command public credibility and support.

Essential to a credible regulatory process is public awareness that expanded use of nuclear power is necessary to support the technology upon which the nation's life style and economy depend. The American public must be provided a full disclosure of the costs and benefits of

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15. Green, *supra* note 3, at 514-17.

the vastly enlarged nuclear establishment that will be required to meet future energy needs. In particular, the risks created by nuclear technology must be forthrightly acknowledged. There is abundant proof that the public is prepared to assume risks and substantial actual harm if necessary to enjoy technological comforts and advantages. After all, operation of motor vehicles in the single year 1971 resulted in some 55,000 fatalities; the over 1.76 million Americans killed in traffic accidents during the past 50 years is more than twice all American battle deaths throughout the nation's history.<sup>16</sup> Moreover, it is widely recognized and accepted that operation of motor vehicles each year exposes the public to the toxic discharge of millions of tons of carbon monoxide, particulates, sulphur and nitrogen oxides, hydrocarbons, and other more exotic chemicals. In light of the public's willingness to accept these known social costs of motor vehicles in order to receive the concomitant benefits, it would appear that full disclosure of the costs and benefits of nuclear power could only tend to silence, rather than exacerbate, environmental protest.

Once there is public awareness of the imperative need for and the cost-benefit tradeoff inherent in nuclear power, the second necessary step to establishing public confidence in the nuclear decisionmaking process is widespread discussion of the extraordinary measures taken at every stage of the nuclear fuel cycle to ensure against accidents. Much public misgiving would be allayed simply as a result of increased awareness of the careful precautions that have been imposed on all phases of the nuclear process.

In terms of specific applications, to inspire public confidence as well as to provide a regulatory process with real-world effectiveness, it is essential that the licensing process commence at the site selection stage. This point in nuclear planning is critical not only for determining questions of paramount public concern, such as who and how many people will be exposed to adjacent nuclear activity, but also for resolving questions concerning general environmental effects, a task that cannot be approached in a meaningful manner except in the context of a specific proposed site. The public has a legitimate claim to early participation in the regulatory process before planning decisions have been cut in stone and options forfeited. The courts have recognized the need to assess at the earliest possible moment the environmental impacts of specific construction projects and even entire new technology pro-

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16. R. LAPP, *supra* note 10, at 31.

grams.<sup>17</sup> This salutary policy must be adopted in nuclear power licensing and regulation as well.

Implementation of a threshold proceeding for evaluating and resolving siting issues would provide the public with early access to and participation in the decisionmaking process. This participation could be achieved through intervention in the siting proceeding, by comment on the environmental impact statement, or both. Early participation would obviate the widely prevalent feeling that current licensing procedures provide only for perfunctory, after the fact public consultation and would greatly reduce, if not eliminate, the need for extensive use of cross-examination as a means of attempting to discredit already formulated private decisions.

Forthright public education through full disclosure and widespread dissemination of the real-world cost-benefit tradeoffs involved in nuclear power, in combination with a threshold participation at site selection in really meaningful decisionmaking, would contribute greatly to the credibility and acceptability of nuclear power licensing decisions. Moreover, such a procedure would supersede the need for the construction permit hearing if the plant used a previously approved standard reactor; an operating license proceeding would be necessary only if an intervenor established a *prima facie* case for a hearing because of new developments, and even then the hearing would be confined to the issues so raised. As a result, the present long lead-times in nuclear licensing could be substantially reduced.

Public confidence in such procedures would no doubt be enhanced by the separation of the AEC's promotion and development mission from its regulatory licensing and oversight functions. Although vesting of regulatory power in an independent Nuclear Energy Commission would not, by itself, assure public confidence, a full public disclosure program, in conjunction with threshold siting hearings conducted by an independent regulatory agency staffed by talent recognized as qualified, independent, and objective, would provide the best means available in our form of government to achieve sound scientific decisions and inspire necessary public confidence and acceptance.

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17. *Scientists' Institute for Public Information v. AEC*, 481 F.2d 1079 (D.C. Cir. 1973); *see Hanly v. Mitchell*, 460 F.2d 640 (2d Cir. 1972); CEQ Guidelines, Preparation of Environmental Impact Statements §§ 1500.2, -6(d), -6(e), 38 Fed. Reg. 20550-52 (Aug. 1, 1973).