

The Nuclear Regulatory Commission
and Rulemaking

by


David Kennedy

Department of Political Science

Submitted in Partial Fulfillment of the Requirements of
the University Undergraduate Fellows Program

1985-86

Approved by:


William F. West

August 1986

ABSTRACT

This paper examines various factors affecting rulemaking within the Nuclear Regulatory Commission. Specifically, the dynamics of the agency, its policy area, and policy environment are analyzed through an overview of NRC history and development of a specific pair of rules pertaining to regulation of high-level radioactive waste storage facilities. Also, the preliminary stages of rule development, their ties to the dynamic changes occurring within the agency, and their importance on rule development are looked at.

Table of Contents

Introduction	Page 1
The Evolution of the NRC	Page 2
The Development of HLW Regulation	Page 10
Analysis	Page 23
Conclusion	Page 27

*The format of this paper follows that of the Public Administration Review.

I. Introduction

In 1946, the foundation for modern rulemaking procedure within federal government agencies was laid down in the Administrative Procedures Act (APA). The contents of this act broadly outlined certain processes through which agencies would develop rules and regulations. Using the APA as a broad guideline, government agencies through the years have developed their own unique sets of formal rules and procedures which they follow during rule development. The APA and formal regulatory procedure, however, represent only the tip of the iceberg in the complex processes through which rules are formulated. Many factors, including the dynamic nature of the agency, which encompasses changes in organizational structure, changes in policy environments (the actors involved in the rulemaking process), and changes in policy area (the issues dealt with in agency regulation) often exert significant influence on policy outcomes. In addition to these characteristics, the early stages of rule development play an important role in the development of new rules. Combined, these factors have received less attention within analyses of agencies and their policy outcomes than their importance warrants and thus comprise the basic focal points of this analysis.

In order to show the importance of the dynamic nature of an agency, its subsequent effects on policy environment and policy area, and the importance of those processes which occur early within rule development, we will use a particular government agency, the Nuclear Regulatory Commission (NRC), as a case study. This paper will be presented in two major parts. First, we shall examine the changes in

policy environment, policy area, and organizational structure that have occurred within the NRC over the years and how these factors have affected agency policy. Second, we will look at the development of a particular set of rules dealing with high-level radioactive waste (HLW) disposal within geologic repositories to see how organizational changes, the expansion in policy area, and the addition of new actors into the policy process (the expansion in policy environment), along with certain phases within the rulemaking process all influenced rulemaking within the NRC. Finally, we shall look at how these factors came together in their effects on the agency and its policy outcomes.

II. The Evolution of the NRC

To begin our analysis, we shall look briefly at the history of the NRC and through it see the dynamic nature of the agency's policy environment and policy area along with their subsequent effects on the NRC. The modern Nuclear Regulatory Commission began as the Atomic Energy Commission (AEC), which was created by the Atomic Energy Act of 1946. The agency's main function leading into the early 1950's was to provide civilian control over what existed at that time a strictly military atomic energy program. During the AEC's first few years, a commercial nuclear power program was as yet undeveloped and the agency's functions related solely to defense and national security issues. In 1954, the scope of policy area was enlarged with the

adoption of the Atomic Energy Act, which assigned the agency with the development and promotion of a viable commercial nuclear power industry. This newly assigned task made the AEC unique among government agencies in that, through legislative mandate, it became responsible for the creation and development of a totally new industry in which it would then regulate. This unique factor would soon lead to a close-knit relationship that would last for many years between the AEC and the nuclear industry.

In conjunction with the creation of the AEC, in 1946 Congress had created a single, powerful Joint Committee on Atomic Energy (JCAE) to guide and oversee the Atomic Energy Commission. The early years of this relationship between the JCAE and the AEC were marked by conflict and dissent, culminating over the issue as to the best way to go about promoting a commercial nuclear power industry. While substantial pressure was being exerted on the AEC by democratic members of the JCAE to increase governmental involvement in the commercialization of nuclear power, the agency had remained adamant in its insistence that private industry, with government taking a back seat and providing a solely supportive role, should assume the major initiative. The initial struggle over how the agency would go about implementing policy directives was crucial in determining the future relationship between the AEC and the soon-to-arrive nuclear power industry. Mazuzan and Walker, members of the NRC history staff, noted its significance stating, "The AEC's determination to push nuclear

development through a partnership in which private industry played a vital role had major impact on the agency's regulatory policy. The AEC's fundamental objective in drafting regulations was to ensure that public health and safety were protected without imposing overly burdensome requirements that would impede industrial growth"(Mazuzan and Walker, 1985, p. 6). The AEC thus insisted on allowing industry the initiative with the agency providing incentive, guidance, and oversight. Passage of the Price-Anderson Act in 1957, which partially withdrew financial liability in the event of a nuclear accident from potential contractors, provided such incentive as was needed and the commercial nuclear power industry was soon afterwards firmly established.

During the 1950's, relations between the AEC and the JCAE had gradually improved. With the establishment of a nuclear power industry in the late 1950's prompted by Price-Anderson, a tight policy subsystem was slowly developed consisting of the JCAE, AEC, and the industry. From early 1958 through the mid 1960's, this policy subsystem existed relatively unchallenged and the nuclear power industry continued to grow. Agency responsibilities during this time involved mainly the development and enforcement of safety requirements, the issuance of licensing and construction permits for commercial reactors, and site approval upon completion of these facilities. As the agency approached the late 1960's, however, it began to face an increasingly complex policy area and often hostile

policy environment.

Entering the late 1960's, an ever increasing waiting list of licensing applications and construction approval applications began to take their toll on the AEC, which found it more and more difficult to maintain an adequate expansion rate in relation to that of the nuclear industry. Applications began to pile up while approvals slowed due to frequent revisions in licensing requirements in the face of continually advancing technology. The nuclear power industry was becoming increasingly alarmed by these developments as construction costs, due to licensing delays by the AEC, began to exceed cost estimates. (In a period of four years, from 1966 to 1970, the average time from licensing application for new power plants to commercial status had risen from 86 to 122 months) (Weingast, 1980, p. 241).

In addition to declining industry relations, new interest groups began to emerge, threatening to further disrupt the structure of the nuclear power subsystem. In particular within this area, environmentalists and public health groups had begun to more vigorously protest AEC policy as concern over environmental and public exposure to radiation, inadequate nuclear power plant safety requirements, and more stringent construction licensing procedures mounted. Their rising concern and determination to influence Agency policy outcomes became more evident through their effective usage of public comment, adjudicatory procedures (although attempts to succeed in obtaining legal assistance in such procedures

were never achieved), and ultimately through their success in contesting AEC policy in court. An early example of success in this latter area was the NEPA issue.

NEPA (the National Environmental Policy Act) had been passed by Congress in 1969 and enacted into law in 1970. Under this act the regulatory authority of the AEC had been expanded to include regulations dealing with new off-site radiological issues and furthermore, non-radiological issues as they pertained to the environment. Facing this broad expansion in policy area, the AEC initially refused to fully implement its newfound regulatory powers. Frustrated by the Commission's lack of enthusiasm, initiative, and subsequent lack of action, environmentalists took their case to court, resulting in the landmark Calvin Cliffs decision. In this decision, the court scolded the AEC for its narrow interpretation of the Act and consequently ordered the agency to revise its policy rulemaking in order to conform to the legislative intent of NEPA, which it did soon thereafter.

Confronted with a changing policy environment in which it was becoming difficult to adequately carry out its objectives and legislative mandates, the Atomic Energy Commission was reorganized in 1974 under the Energy Reorganization Act. The purpose of this Act was to separate the functions of promotion and control through reorganization. The effect of ERA was to divide the AEC into two agencies. The first of these two agencies, the Nuclear Regulatory

Commission, was designated with all licensing (control) functions. Authorized with carrying on the major functions of the AEC which we have focused on thus far, ERA specified many organizational changes within the new agency. While retaining the five member Commission with a presidentially appointed Chairman (as had existed under the AEC) new organizational structures were introduced to assist execution of the agency's policy directives. An Executive Director for Operations (EDO) was established immediately below the Commission, as well as three new program offices to be placed under the control of EDO. These included the Offices of Nuclear Reactor Regulation, Nuclear Material Safety and Safeguards, and Nuclear Regulatory Research. Within the next year, two more offices, Standards Development and Inspection and Enforcement, were added. The second new agency, the Energy Research and Development Agency (ERDA), combined all previous operating and R & D functions, along with other research programs involving alternative fuel source development. (ERDA was later incorporated into the Department of Energy.)

The nuclear power subsystem, having been weakened through the decline in the nuclear industry and the addition of new interest groups becoming more and more involved in NRC policy making, was finally altered in respect to its third leg, the JCAE. In 1977, Congress, having grown leery of the excessive powers and secular nature of the JCAE, abolished the joint committee by stripping it of its legislative powers and distributing these in turn among nine

committees within both the House and the Senate. While most responsibility over Congressional control of NRC in fact shifted to a single one of these nine, the Interior Committee, congressional power within the subsystem was in effect diluted, resulting in an ever broadening environment to be faced by the new Nuclear Regulatory Commission.

One last notable event, affecting the NRC during the 1970's, was the accident occurring in the spring of 1979 at Three Mile Island (TMI). Resulting in the most serious nuclear accident in the history of nuclear power up to this time, TMI can be seen as having affected the NRC in two specific areas. The first area of importance was the intense organizational scrutiny which the NRC underwent through a series of investigative commissions in the aftermath of TMI. These investigations, after in depth analysis of NRC organization structure, revealed serious deficiencies in agency communications, both inter and intra agency, as well as inadequacies in delegations of authority. These findings were presented in reports from various groups, including the Kemeny Commission, which found "a void in management control at the top" and noted that "The strained communications system with the NRC...combined with the lack of clearly defined management responsibilities, results in a commission that is insulated from the day to day operations of its staff..." (Temple, 1982, p. 356).

The results stemming from these findings were mixed. While many suggestions aimed at correcting NRC deficiencies in these areas went

unheeded, the agency did undergo a series of organizational changes, some of which were aimed at promoting more adequate preliminary research in establishing NRC policy. These included the establishment of a Division of Human Factors Safety within the Office of Nuclear Reactor Regulation and a Reliability and Risk Assessment Branch. Others, including an Operating Experience Evaluation Branch and a Systems Interaction Branch, were created in response to the need for more adequate safety standards in reference to the former and improved organizational interaction in terms of the latter.

The second area of importance stemming from TMI involved the attention that was forced on the NRC. In 1979, the agency had been thrust into both the public and political limelight. With its policy towards power plant regulation being put to the test, the results had been less than exemplary. The NRC, along with the nuclear power industry, experienced a serious blow in credibility. Public concern and interest groups' determination to more effectively influence U. S. nuclear policy resulted in rising anti-nuclear activism, affecting the agency both in its procedures to approve and license new reactors and in their issuance of licensing regulations in general. Congress, also as a result of TMI, was becoming more cautious in its dealings with the NRC. In response to all of this, within the Commission there evolved a higher sense of responsibility and emphasis placed on providing greater opportunity for outside involvement in the rulemaking processes, both issues which will be touched upon later in

the paper.

III. The Development of HLW Regulation

Having briefly reviewed the evolution of the NRC, we have seen how certain dynamic events have characterized agency development. These events have changed not only the purpose and scope of the agency in terms of policy area, but also the organizational structure and processes which the NRC undergoes in producing policy outputs. Furthermore, we have seen that these processes may be affected, either directly or indirectly, by the growing complexity within the nuclear policy environment; evolving from a relatively tight policy subsystem between the nuclear industry, the AEC, and the JCAE, into a diverse subsystem including many interests and a series of Congressional sub-committees. Having established the dynamic nature of an agency, its policy environment and area, and how these factors may affect the scope of agency policy, we shall now shift focus to procedures and events through which the NRC developed a specific set of policy outputs. The NRC during the late 1970's and early 1980's began issuing a series of proposed rules which eventually led to two regulatory acts dealing with the disposal of high-level radioactive wastes in geologic repositories. The first rule dealt with licensing requirements, the second rule with technical criteria.

What initiated development of these two rules, how were they developed, and what factors influenced development? Formally, both

rules were initiated and developed under the guidelines presented in the APA, along with the agency's own set of highly structured and complex procedures laid down in the NRC Regulations Handbook. Within this handbook there exists an elaborate set of procedures covering initiation and rule development (See Insert #1). Looking at this, we see that regulations may arise from one of three events; namely (1) Congressional promulgation of a new statute, (2) Commission or staff initiative, or (3) Receipt of a petition for rulemaking. Thus the question of initiative may be narrowed down as to having been the results of one of these three events. During interviews with NRC staff involved in the development of these rules, consensus appeared that "staff initiative" had been responsible for the initial undertaking of HLW disposal regulation. If we look still further into the history of waste disposal, however, a more inclusive answer becomes evident.

Originally, the issue of permanent waste disposal arose soon after the initial creation of the AEC. Realizing that along with the development of a commercial nuclear power industry the problem of what to do with the resultant high-level waste would soon have to be faced, scientists as early as the 1950's had discussed the potential usage of salt domes as storage sites. During the 1960's the AEC had developed a process for solidifying high level wastes for temporary storage in holding tanks. During these early years, though, the technology associated with the development of permanent nuclear waste

repositories had not kept pace with reactor development. In the late 1960's, facing rapidly increasing quantities of spent fuels, the AEC's Waste Management Division selected a series of salt beds under Lyons, Kansas as the site for demonstration of an experimental waste disposal project. Much criticism was soon raised on the lack of empirical data on geologic waste storage. Also, the fact that the waste would be irretrievable once buried disturbed many scientists. Further testing by the agency revealed water in the salt beds, and the project was finally cancelled in late 1971.

From this we can see that, up to 1971, the issue of geologic waste disposal had been addressed by the AEC under its own initiative in response to a growing need and that this response had been, for the most part, unsuccessful. However, the Commission had only addressed the issue of actual disposal, and not that of regulation. The reason for this was that, up to this point, the agency had assumed itself responsible for the development and construction of storage facilities, and thus had seen no need for self-regulation. This situation, though, changed in 1975 when Congress authorized the newly formed ERDA with development of containment facilities of HLW and subsequently the NRC with regulatory responsibility over ERDA in the area of HLW storage. Soon after this, the agency began to work on development of HLW repository storage regulation. Thus we see that the initiative for regulation over HLW storage facilities, in effect, resulted from legislative mandate, with the NRC displaying initiative

only in regards to initial development of HLW storage facilities. Furthermore, this legislative mandate occurred in light of organizational changes within the old AEC. Therefore, initiative in the final analysis can be seen as having stemmed, in part, from the evolution of the agency itself, while more directly being the result of Congressional authorization.

Having derived the initiative for development of HLW regulation, we now turn to the evolution of these two rules and the processes which influenced their development. NRC regulatory procedure indicates that after initiative for rule development has been proposed, the next two steps involved are, (1) action on the regulation is assigned to a member of the technical or legal staff and (2) staff prepares a regulatory analysis. For our two rules, these two steps alone lasted from 1975 through 1979 and involved key phases in development of regulation for HLW disposal. Thus it is important to take a look at these two activities and the effects they had on the rulemaking process.

The first of these two processes involves the assignment of work on a regulation to members of the technical or legal staff for HLW regulation, this involved the creation in June of 1975 of an organizational unit within the NRC to begin work on the regulations. The second process, staff preparation of a regulatory analysis, began immediately afterwards. A month after the unit had been organized, however, the issuance of two court decisions presented the unit with

an additional task. Pertaining to the adequacy of documentation within NRC rules dealing with the environmental impact of waste management and fuel reprocessing, the decisions brought on an immediate review by the staff of health, safety, and environmental aspects of waste management. After completing the review in September, the staff presented to the Commission, for the first time, advice on the issue of waste disposal being evaluated under the new program, and by early 1976 the program had become well established.

Realizing the scope of this policy issue, the agency early on in its policy development process began expanding the number of participants involved in regulatory analysis. It started off by hiring an outside contractor to conduct geologic testing in order to provide information on potential geologic disposal sites and established within its own ranks an Earth Science Task Force. These two groups would in turn work from time to time with the United States Geological Survey (USGS). Other agencies actively involved in regulation development would be ERDA (soon to become part of DOE), which would be held responsible for actual construction of the site, and EPA, which would assume responsibility for establishing the radiation standards and limits with which the NRC would be required to comply in establishing its regulations.

Realizing that due to the nature of this regulation, its demand for vast technical analysis, and its potential impact on a widespread group of interests, solicitation of outside views might prove

valuable, the agency decided to further broaden its policy environment. (Congressional enactment had furthered and possibly prompted this realization through calling for improved efforts on behalf of the NRC in soliciting state participation in licensing procedures directly affecting states.) The results were a series of independent reviews, set up by the agency, focusing on the ongoing effort to develop site suitability criteria. Three reviews were held; one involving peer experts outside the NRC, a second including the National Academy of Sciences, and a third review involving state officials. The formally stated objectives of these reviews were to assure that (1) no relevant factors had been missed in the analysis, (2) the analysis was sound, and (3) the criteria developed would be both understandable and capable of application (NUREG-0326, p. 1). Another function, less formal in nature yet equally important, dealt more with the political aspects of HLW regulation development. As one NRC official commented, "The reviews attempted to do two additional things: (1) to identify political landmines, and (2) to build a public consensus" (Interviews, January, 1986).

By early 1977, initial technical analysis and research had been conducted and a game plan established. Under pressure from the Chief Executive to quickly and adequately develop regulation allowing for the completion of an operational repository by 1985, the NRC constructed a working timetable. In February of 1977, the Commission adopted a "final" program plan, which had been developed and proposed

the previous month by the waste management staff. Within this final plan, the staff recommended that since research and development of technical criteria appeared far from completion, the issues of licensing procedures and technical criteria should be dealt with separately (Interviews, January 6-7, 1986). As a result, the Commission made the decision to deal first with licensing procedure regulation, then later as a separate regulation, with the issue of technical criteria.

After partial completion of research for licensing requirements, the NRC on November 17, 1978, published a Proposed Statement of General Policy entitled "Licensing Procedures for Geologic Repositors for High-Level Radioactive Wastes". Still uncertain in reference to certain key aspects of the licensing rule, this proposed general statement served as a policy feeler and allowed, through resulting public comment, a reevaluation of certain key elements within the rule. A good example of this could be found over the issue of site characterization.

It must be remembered that HLW disposal had presented the NRC with a new licensing area. The agency had therefore originally planned on using standard licensing procedures such as those used to approve new power plant construction. Under these established guidelines, standard procedure called for a licensing review, often conducted under a limited work authorization, upon completion of which a full construction permit was then granted. Since under this system initial

on-site work was allowed prior to issuance of a final construction permit, problems had arisen from time to time over construction errors. These problems, though, had usually been overshadowed by construction time saved and thus increases in cost benefits. Therefore, following existing policy guidelines, the procedural process outlined in the proposed statement in reference to repository construction had suggested that initial construction, such as the drilling of repository shafts, could be undertaken during licensing review and prior to site characterization (site characterization being defined as "the program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters of a particular site relevant to the procedures laid down in 10CFR Part 60"). (10CFR Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70, Licensing Procedures, p. 70408). Following this process, however, presented three major problems which were soon brought to the attention of the NRC through public comment. These three problems dealt with the crucial importance of site characterization and the inherent dangers of assigning temporary work authorizations prior to completion of characterization. They included the facts that (1) site characterization was considered vital to the integrity of the repository, (2) if construction errors occurred in the sinking of the repository shaft, the whole containment facility might become impossible to adequately seal, and (3) the initial cost and time

investment associated with sinking a repository shaft would limit, if not eliminate, other potential repository sites. The result of this issue over repository site characterization, brought about through the release of a proposed general statement of policy and subsequent public comment, was a modification in licensing procedures in order to more adequately deal with the specific area of HLW repositories. This was accomplished through requiring site characterization prior to completion of licensing review and authorization of a construction permit, and consequently the elimination of limited work authorization in the early phases of repository construction.

We have so far taken a brief look at many of the factors and events which occurred quite early in rule development. Two phases in the formal rule process, assignment of action on a rule and staff preparation of regulating analysis, had taken over four years, and had involved a widespread combination of actors, both inside and outside the agency. These two phases would continue to a limited degree through 1980, as additional work on technical criteria progressed. After issuance of the general statement of policy on licensing requirements, the fourth phase towards development of licensing procedures soon was underway.

Having developed a large body of information through preliminary research, workshops, and public comment in response to the proposed statement, the agency as it entered 1979 began the fourth phase of its formal rulemaking process; preparation of a draft regulation. In

order to accomplish this task, three individuals, each within separate offices of the NRC, the Office of Nuclear Regulatory Research, the Division of Waste Management, and the NRC legal department, were assigned with working on various aspects of the draft. Their task had been made somewhat easier by the issuance of the proposed general statement of policy, which served as a guideline, and subsequent public comment, which had pointed out various areas in need of revision. In fact, by this time the major body of the regulation for licensing criteria had been developed over the gradual four year process described earlier. (In addition, much initial research had been accomplished for the rule on technical criteria.) The main function of these three individuals was to take the contents of the rule, developed over time, iron out the details, satisfy various formal agency requirements in construction of the draft, and give it a formalized structure. These three individuals worked on aspects of the draft with which they were most familiar. Periodically, they would circulate their work through the other two offices for criticism and comments. After completion of their separate draft components, the three got together and attempted to resolve final differences. Once these differences had been worked out, they combined their works to form an "informal package" which included within it a draft of the proposed rule. From this point onward, the final development of the proposed rule followed in a relatively rapid sequence, involving a multitude of formal approvals and authorizations which may be seen

through subsequent rulemaking phases within the formal rulemaking chart provided. A similar process was later followed in development of the proposed rule for technical criteria.

Upon completion of the proposed rule, a major influence of the NRC in HLW regulation was completed as well. This point is highly significant and warrants explanation. The substance of the rules on licensing requirements and technical criteria had, to a great extent, been formulated prior to drafting of the regulation. The drafting process had wrapped up loose ends and produced in result the proposed rule. From the proposed rule to the final rule, agency influence would be restricted to the evaluation of public comment stemming from the proposed rule and incorporation of important components of the comments into the final regulation. In other words, any changes between the proposed and final rules required justification on the basis of public comment. The proposed rule for licensing requirements was published in December of 1979. For technical criteria, the proposed rule would be issued one and a half years later, in July of 1981. The impact of public comment on the final rules varied significantly between the two rules. In respect to licensing requirements, thirty-four comments were received from both individuals and groups. The results were an additional two pages within the final rule, which was published in February of 1981. In regards to technical criteria, the results were more dramatic.

The rule on technical criteria had varied in certain respects from

the licensing rule. Due to the increased technicality of this rule, development of the proposed rule had required a greater amount of time than development of the proposed rule on licensing (the proposed rule on technical criteria being published six months after publication of the final rule on licensing requirements), and had resulted in both a proposed and final rule of greater size and complexity. Yet interestingly, the technical rule had taken up less time between issuance of the proposed and final rule than had the licensing rule. While licensing procedures had required a little over two years between issuance of the proposed and final rule and had resulted in a sixteen page rule, the technical rule was proposed and finalized in less time and had resulted in a thirty-six page final rule. This unique size versus time differential would not have been that significant if it were not for the large difference in technical analysis and public comment within the technical rule. Between issuance of the proposed and final rule on technical criteria, the NRC received over 93 comments, a vast majority highly technical in content, that resulted in a NUREG publication of comments and responses consisting of more than 900 pages, as well as an addition to the final versus proposed rule of nineteen pages in comment related changes!

Looking into this discrepancy in rule development between licensing and technical criteria we begin to see certain factors which promoted more rapid rule development as the regulatory process on HLW

disposal progressed. First, the increased amount of time provided to the staff by the Commission, through dividing the rulemaking process into two phases no doubt contributed to the decreased development time. The staff was provided the opportunity to conduct more research in order to prepare a "better case", so to speak. Furthermore, earlier development of licensing criteria had afforded the staff with the opportunity to feel out their political environment before submitting what was sure to be the more highly controversial of the two rules. One NRC official pointed out, in reference to the technical rule, that "We wanted a workable rule that wasn't impossibly severe or loose. The trick was to try and avoid a regulation that any one political regiment would find unacceptable" (Interviews, January 6-7, 1986). By gaining a better feel for this new area of regulation, through their work on the licensing rule, the agency was able to avoid some conflict which it otherwise may not have been aware of, or considered significant. A second significant factor dealt with the expansion in agency resources. As noted earlier, the NRC had established a timetable for completion of HLW regulation. As time had progressed and the deadline began to draw nearer, staff size had been increased and, as we have seen earlier, other actors had become involved. With this expansion in resources, agency work on HLW regulation was accelerated and development time decreased.

The final rules for licensing and technical criteria, published respectively in 1981 and 1983, represented the total culmination of

over eight years work on behalf of the NRC. Due to difficulties brought up later in regards to the technical criteria rule, this rule as of 1986 was still under a process of revision and reevaluation. While both rules were issued well before the time originally set forth for completion of an operational facility by DOE, many factors beyond the scope of this paper, yet including among them designation of a specific repository site and conflicts over technical requirements, have contributed in part to this delay. It has even been postulated by some that the reality of a permanent geologic waste repository may never be achieved, as political debate over the siting issue has intensified almost to a point of stalemate. Yet in spite of these developments, dealing more with DOE than the NRC, the Commission in final analysis may be seen as having successfully carried out its legislative mandate.

IV. Analysis

Turning last to an analysis of the events covered within this paper, we shall look at some of the effects these events have had and their impacts on the rulemaking process. Through a brief study of NRC history it has been shown that the agency is dynamic in nature, changing over time. These changes, in turn, have affected important areas of the agency, such as its policy environment and policy area. In respect to the NRC's policy environment, the tight policy subsystem

which existed for a time between the agency, the JCAE, and the nuclear industry was slowly dissolved through increased outside interest participation, reorganization within the Commission such as was witnessed under the ERA, and the dilution of Congressional authority. Also, when faced with a specific policy issue, in this case HLW regulation, this environment was expanded still further to encompass a host of participants both within and outside the government. Key participants in this respect included DOE, EPA, the NRC Earth Science Task Force, as well as the series of reviews involving outside experts, the National Academy of Sciences, and state officials. In the case of the reviews, NRC officials used both technical and political input thus derived in the development of HLW regulations.

The agency's policy area has also expanded over time. Originally established to oversee military nuclear development, the agency in 1954 encountered a radical shift in policy area; in effect creating a new area of policy. This, in turn, led to a unique relationship between the industry and the agency, with the agency taking a back seat to regulation over the industry for many years. Much later, in 1975 as the result of legislative mandate, the agency encountered still another new area of regulations, this one dealing with the issue of HLW storage. Expansion in this area resulted in the restructuring of licensing procedures as was seen through the issue of site characterization, in order to respond more adequately to the agency's new policy area.

Looking at the formal process of rulemaking within the agency it is important to note the particular importance found in the early stages of the rulemaking process. In regards to regulation initiative it can be seen that several factors, not just one, may be involved. In this particular case three factors, including agency history, the organizational restructuring of the AEC and Congressional authorization all played significant parts in the formation of regulation initiative. Of all the phases within the agency's long list of procedures, the first three phases involved a majority of agency time, resources, and effort. In fact, within the early stages of rule development, the conceptual as well as technical bulk of both rules were processed. This point cannot be overemphasized, and future research in these early stages of development, the processes that are undertaken, as well as the informal interaction which occurs, may yield further insight into the rulemaking process.

Finally, many characteristics of the NRC itself warrant attention as to their efforts on the rulemaking process. To begin with, the agency is quite large in both its organizational structure and number of employees. Many of these people within the agency are specialists in various fields, a large number being engineers, stemming from the highly technical nature of their NRC's policy area. Due to the complexity of many NRC regulations, often there is a large number of people working on various aspects of any one rule. People involved in any one aspect of a particular rule may be relatively unaware or

uninformed of work being conducted in reference to other areas of the same rule. This can and often does lead to a situation in which no single individual or group of individuals has an overall grasp on rule development. This characteristic was brought out in the aftermath of the TMI accident, which revealed serious flaws in centralized control and communication throughout the system. In reference to HLW regulations, much the same situation could be found. Added to this is the fact that individuals come and go with apparent frequency within the agency, moving to other agencies, shifting to different departments to work on new regulations, or entering the private sector, further adding to policy incohesiveness. How then does rule development take place?

Rule development in such an environment must be seen as an evolutionary series of events, both structured in that they follow prescribed formal rulemaking procedures, and unstructured, as occurs during expansions in policy area and changes in organizational structuring. Last of all, rule development may be seen as often being unstructured through the political decisions involved in producing policy outcomes. One NRC official, discussing this dimension of rulemaking, explained that in a broad sense the issue of HLW regulation had to be looked at by the staff at NRC in terms of costs versus benefits and safety versus economy. Stating the situation in a very analytical fashion, he explained that the agency was faced with deriving a point along the spectrum of costs versus benefits in which

further increases in cost would only yield marginal benefits. After deriving this point of diminishing returns, the agency had to balance the issues of safety versus economy, always remaining within predetermined areas of safety, yet struggling to achieve the most optimal point that would be politically acceptable as well (Interviews, January 6-7, 1986). This political dimension, is not intended to detract from the professionalism and sense of responsibility with which many at NRC approach their work, but simply to point out that even within an agency as highly technical in nature as the NRC, the political dimension comes to play a necessary and significant role in the rulemaking process.

V. Conclusion

In conclusion, we have taken a look at the significance of an agency's dynamics and the early phases in rule development in policy outcomes. While the scope of this paper has been both broad and by no means all-inclusive in its coverage of factors which affect policy rulemaking, it is hoped that through this some may find the incentive to conduct further research into these characteristics, particularly the early phases of rule development and their impact on the finished rule. The policy environment is a complex one, with many actors. While this paper focused attention on the agency itself, it should be acknowledge that other actors may have a large impact on policy environment. Organizational structure, as well, can be seen to play

an important role in rule development. Yet while there exists a large number of factors, all influencing the policy process, the dynamics of an agency, its policy area and environment, and the early phases of rulemaking all hold the promise, upon further study, of providing new insight into agency rulemaking.

GUIDE TO NRC RULEMAKING

Need for NRC Regulation

1. Congressional promulgation of a new statute
2. Commission or staff initiative
3. Receipt of petition for rulemaking

Action on Regulation Assigned to Members of Technical or Legal Staff

Staff Preparation of Regulatory Analysis

- Prepared in accordance to regulatory analysis guidelines

Draft Regulation Prepared

- Based on evaluation of most appropriate method of accomplishing desired regulatory objectives in view of safety needs, impacts, costs, and benefits of alternative approaches considered

Form Commission Paper

Consists of:

- Draft Regulation
- Regulatory Analysis
- Any other relevant material

Division Director Level

- For review and comment

Technical Regulation

- Review problem and develop a range of alternatives to solve it

Discussion with Other Parties

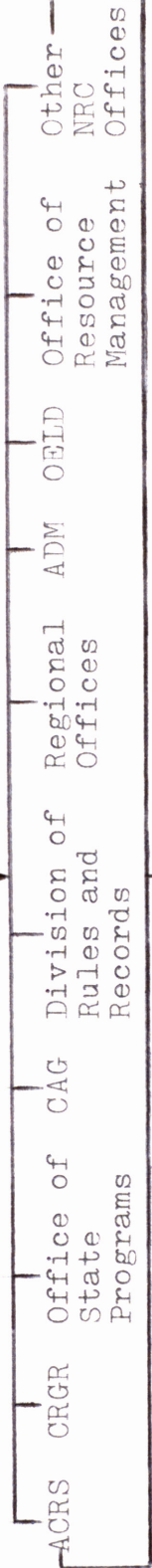
- Staff of other offices and ACRS to obtain additional information and refine list of alternatives

If There Is Impact on Agreement State Licensees

- Staff solicits views of Agreement States at early stage in development

Environmental Impact Statement

- Prepared if regulation likely to have significant impact on quality of human environment



Comments Received Incorporated Into the Regulation

Revised Package Developed

• Consists of: Commission Papers proposed regulation, regulation analysis, appropriate congressional letters, the public announcement and other relevant material

Sent to Offices for Final Concurrence

Division of Rules and Records

EDO

ADM

Meet with Staff of Other Offices

• To resolve any problems of differences

Meet with EDO

• If differences cannot be resolved

Scheduling for Commission Consideration

A

Supporting Statement Prepared

• If EDO agrees, final package is sent for signature and transmittal to the Commission

• For regulations, not involving significant questions of policy or amending 10 CFR Parts 0,2,7,8,9 Subpart C, and 110, EDO has been delegated authority to issue regulations

• Prepared only if a regulation contains a reporting, application, or record keeping requirement affecting 10 or more people

• Directed to request approval of the new or amended information collection requirement

• Sends copy to the Division of Technical Information and Document Control, ADM and OMB for clearance under the Paperwork Reduction Act



Appropriate Congressional Committees

SECY

OFR

• Office of Public Affairs coordinates the issuance of the announcement with the publication of the regulation in the Federal Register

Office of Administration

• Sends copies of the published document to all affected licensees as well as any interested person that has requested placement on the mailing list for NRC documents

"After the close of the comment period on the proposed regulation, the responsible staff person analyzes the comments received and makes any change to the regulation that may be appropriate. This rulemaking process is essentially repeated for the final rule."

REFERENCES

- George T. Mazuzan and J. Samuel Walker, "A Short History of Nuclear Regulation, 1946-1985," TS, History Staff Office of the Secretary Nuclear Regulatory Commission, July 1985.
- John R. Temples, "The Nuclear Regulatory Commission and the Politics of Regulatory Reform: Since Three Mile Island," Public Administration Review, Vol. 42, No. 4 (July-August 1982).
- U. S. Nuclear Regulatory Commission, Federal Registry, Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedures (Washington, D. C.: NRC, 1979).
- U. S. Nuclear Regulatory Commission, Office of Nuclear Material Safeguards and Safety, Workshop Material for State Review of USNRC site Suitability Criteria for High-Level Radioactive Waste Repositories, Vol. 1 & 2 (Washington, D. C.: NRC, 1977).
- Barry R. Weingast, "Congress, Regulation, and the Decline of Nuclear Power," Public Policy, Vol. 28, No. 2 (1980).

BIBLIOGRAPHY

- Allardice, Corkin and Edward R. Trapnell. The Atomic Energy Commission. New York: Praeger Publishers, 1974.
- Bellone, Carl I., ed. Organization Theory and the new Public Administration. Boston: Allyn and Bacon, Inc., 1980.
- Burnham, David. "Nuclear Officials Believe Accident Will Bring Many New Regulations." New York Times. 13 April. 1979, p. A-1.
- Congressional Quarterly Weekly Report. "New Department Given Wide Energy Powers." 30 July 1977, pp. 1581-84.
- Green, Harold P. and Alan Rosenthal. Government of the Atom: The Integration of Powers. New York: Atherton Press, 1963.
- Hamm, Keith E. "Patterns of Influence Among Committees, Agencies, and Interest Groups." Legislative Studies Quarterly. Vol. 3, No. 3 (1983).
- Mazuzan, George T. and J. Samuel Walker. "A Short History of Nuclear Regulation 1946-1985," TS. History Staff Office of the Secretary Nuclear Regulatory Commission, July 1985.
- Morrow, William L. Public Administration: Politics and The Political System. New York: Random House, 1975.
- O'Donnell, Maurice E., ed. Reading in Public Administration. New York: Houghton Mifflin Co., 1966.
- Park, Myung Soo. Public Policy: Emerging Dimensions in Public Administration. Washington, D. C.: University Press of America, 1979.
- Temples, James R. "The Nuclear Regulatory Commission and the Politics of Regulatory Reform: Since Three Mile Island." Public Administration Review. Vol. 42, No. 4, (July-August 1982).
- U. S. Nuclear Regulatory Commission. Regulations Handbook. Washington, D. C.: NRC, 1982.

- U. S. Nuclear Regulatory Commission. Office of Nuclear Material Safeguards and Safety. Workshop Material for State Review of USNRC site Suitability Criteria for High-Level Radioactive Waste Repositories. Washington, D. C.: NRC, 1977.

- U. S. Nuclear Regulatory Commission. Potomac Research Incorporated. Workshops for State Review of Site Suitability Criteria for High-Level Radioactive Waste Repositories. Vol. 1 & 2, Washington, D.C.: NRC, 1978.