



DOCKETED
USNRC



DEPARTMENT OF ENERGY & TRANSPORTATION

Watkins Building, 510 George Street
Jackson, Mississippi 39202
601 / 961-4733

November 6, 1981

Mr. Ed O'Donnell
Division of Health, Siting
and Waste Management
Office of Nuclear Reactor Research
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

(65)
-60
(46 FR 35280)

Dear Mr. O'Donnell:

Enclosed are the comments which you have requested on proposed 10 CFR Part 60 technical rule. I have been in contact with the Mississippi State Board of Health concerning their comments. Due to the fact that they have been involved in a critiqued emergency response exercise for the past several weeks, they presented two oral comments which are as follows:

1. There is no mention in the rule of population and/or proximity to population. Since the life of a repository could well exceed the institutional lifetime of the nation, and as such the issue of population is critical and should be included in the technical rule.
2. Attention to the protection of fresh water is necessary, especially since water is perhaps Mississippi's most valuable natural resource.

We are hopeful these comments can be utilized in a manner that will assist the national effort toward achieving a comprehensive nuclear waste management plan and its regulation.

DSIO
S/11
Add: Frank Asenault
Paul Goldberg
J R Wolf
John B. Martin
Joe Donoghue
1/E Micheal Bell
Reys Boyle
Hubert Miller

Sincerely yours,

John W. Green, Jr., Manager
Nuclear Waste Program

11/16/81 emp

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PDR PR
60-46FR35280 PDR



Mississippi Research & Development Center

P.O. DRAWER 2470 JACKSON, MS 39205 (3825 RIDGEWOOD ROAD)

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USNRC

emp

October 27, 1981

Mr. John W. Green, Jr.
Nuclear Waste Program Manager
Department of Energy and Transportation
510 George Street
Jackson, Mississippi 39202

-60
(46 FR 35280)

Dear John:

I have reviewed the Nuclear Regulatory Commission Proposed Rule 10 CFR Part 60 and make the following comments:

1. There are no siting requirements relative to population density or proximity to population centers. The fact that nuclear waste is located at the site causes severe apprehension and anxiety on the population whether the risk is real or imagined. This type of damage is further accented with news information about catastrophic possibilities. Criteria should be established to avoid this type of people problem by limiting the site to areas of very low population density.
2. The requirement for 110 years of retrievability should not be shortened. Technology 110 years from now based on historical evidence will probably either utilize the waste material or at least provide better techniques for disposal. Monitoring of material can be more accurate if retrievability is maintained. Problems with the nuclear waste tanks at Hanford provide a good historical case.
3. Criteria for future water needs and uses should be given particular attention since fresh water is projected to be a scarce commodity in the future. Minimum distances and barriers between the waste package and fresh water aquifers should be included in the criteria.
4. A question which the proposed rule raised is will there be ground storage of nuclear material at the repository and if so what will be the criteria?
5. The criteria related to the effectiveness of various barriers should be stated in terms of probability of occurrence for the worst predictable case with the worst case being defined in the criteria.
6. Under Paragraph 60.10 Site Characterization, the requirement for active nuclear material to be tested at depth should be deleted. It is the general feeling that only major adverse conditions will cause the test facility not to become a permanent repository. The process for selecting a test location has been accelerated to the point that the evaluation is not adequate.

11/16/81 emp

Mr. John W. Green, Jr.

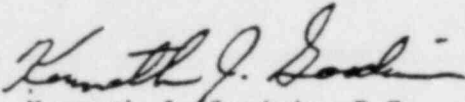
Page 2

October 27, 1981

7. The secure area, whether by land acquisition, land easement, or fencing, should be defined as part of the criteria. The protected land area should be large enough to provide people protection from handling accidents as well as interaction between nuclear materials and natural phenomena such as tornados.

It is hoped that these comments will be useful in providing effective repository regulation.

Sincerely,



Kenneth J. Goodwin, P.E.
Special Analysis and Development

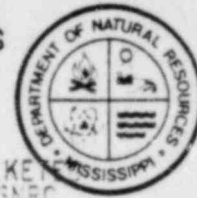
KJG:cl

cc: Dr. Jim W. Meredith



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Bureau of Geology
2525 North West Street
P. O. Box 5348
Jackson, Mississippi 39216
(601) 354-6228



DOCKET
USNRC

October 30, 1981

'81 NOV 10 P4:32

emp

OFFICE OF SECRETARY
REGULATORY & SERVICE
BRANCH

Mr. Ron Forsythe
Nuclear Waste Program
Department of Energy and Transportation
510 George Street, 300 Watkins Bldg.
Jackson, Mississippi

-60
(46 FR 35280)

Dear Ron:

The Bureau of Geology is pleased to deliver to you the accompanying report, "Comments on Proposed Rules of the Nuclear Regulatory Commission Regarding Disposal of High-Level Radioactive Wastes in Geologic Repositories, 10 CFR Part 60, Subparts E-H (as published in Federal Register July 8, 1981)." We sincerely hope that the NRC will view our comments as constructive criticism and utilize them in their revision of the proposed technical rule.

Sincerely,

Michael B. E. Bograd

Michael B. E. Bograd
Geologist

MBEB/ns

Enclosure

RECEIVED

OCT 30 '81

NWP

11/16/81 *emp*

COMMENTS ON PROPOSED RULES OF THE NUCLEAR REGULATORY
COMMISSION REGARDING DISPOSAL OF HIGH-LEVEL
RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

10 CFR Part 60, Subparts E-H
(as published in Federal Register July 8, 1981)

Mississippi Department of Natural Resources
Bureau of Geology

October 1981

Comments on NRC Proposed Technical Rule
10 CFR Part 60, Subparts E, F, G, and H

by

Mississippi Department of Natural Resources
Bureau of Geology

PREFACE

This report was prepared by staff geologists Michael B. E. Bograd, S. Mark Smith, and Curtis W. Stover; it represents the position, opinions, and concerns of the Mississippi Bureau of Geology.

Alvin R. Bicker, Jr.
Director, Bureau of Geology

INTRODUCTION

These comments are addressed to the Nuclear Regulatory Commission (NRC) and pertain to the proposed technical rule regarding Disposal of High-Level Radioactive Wastes in Geologic Repositories, 10 CFR Part 60, Subparts E, F, G, and H, as published in the Federal Register on July 8, 1981. Included are comments on revised Section 60.2, Definitions. In a letter from Robert J. Wright to Alvin R. Bicker, Jr., dated October 7, 1981, the NRC specifically invited comments on: (1) retrievability, (2) selection of regulatory approach - three alternatives, (3) consideration of population density or proximity, (4) construction design, and (5) performance requirements.

The Mississippi Bureau of Geology is vitally interested in all aspects of the federal program to develop a permanent repository for high-level radioactive waste for two reasons: (1) the method of permanent disposal most likely to be developed is a deep geologic repository(ies), and (2) Mississippi is a potential repository host state. We hope these comments will be helpful in making improvements to the rules proposed by the NRC on July 8, 1981.

GENERAL COMMENTS

In our reviews to date of work done by the U. S. Department of Energy (DOE) and Battelle's Office of Nuclear Waste Isolation (ONWI) in the National Waste Terminal Storage (NWTs) Program, the Bureau of Geology has been concerned constantly with the lack of specific guidelines and criteria for studies being done. Existing guidelines and criteria for the NWTs Program are so vague and generalized, and written using so many ambiguous or undefined terms, as to be almost worthless. Our experience with NWTs reports in Mississippi has been that widely differing interpretations of the significance of certain geologic findings can be made under existing criteria. These differing interpretations have been such that ONWI may find that a site satisfactorily meets a certain criterion as a suitable repository site, while the Bureau of Geology may have a different interpretation of the criterion and argue that the site is unsuitable based on the same data. Despite pleas for the promulgation of specific criteria, the NWTs Program continues with only vague and general rules available. We have found even that DOE's interpretation of the criteria, or at least the weight put on different criteria, changes with time.

The Bureau of Geology has looked to the NRC, as the repository licensing agency, for a definitive description of the geologic parameters of a suitable repository site, including a description of geologic features that would make a site unsuitable. We do not find such descriptions in the proposed rules for 10 CFR Part 60, Subparts E-H. Our primary complaint is with the lack of specificity. The rules are a good outline or list of goals to be achieved, but we need more definition of how these goals are to be achieved. We suspect that some of the goals cannot be met with present technology.

It is difficult to comment on these proposed rules for several reasons, but primarily because they are very general and in many cases not as specific as criteria outlined in ONWI-33(2). Difficulty also arises in differentiating the respective roles of DOE, NRC, and EPA. DOE is charged with the responsibility of siting, constructing, and operating a repository. EPA is responsible for developing performance standards with respect to radionuclide releases from a repository. NRC is responsible for developing rules by which they will receive and rule on license applications from DOE. If NRC rules become too rigid, they could in effect dictate exploration, design, and construction criteria for DOE. If the rules are too general, they become meaningless and would allow DOE to replace NRC licensing rules with their own criteria. The NRC rules are also dependent upon EPA standards which do not exist. It is possible that DOE and NRC could jointly dictate the EPA standards.

Although we find that the proposed rules are too generalized and non-specific, the Bureau of Geology has no complaints about the topics or subjects covered in the rules, except where mentioned below. We make no recommendations of sections to be deleted or additional topics to be added; we only request that the "skeleton" of the proposed rules be given some "flesh".

SPECIFIC COMMENTS

Page 35282, Column 3

Conservative practice requires that choices of options, specifically including retrieval, should be maintained as long as possible. However, NRC should be more specific on the objectives of maintaining the retrievability option. For example, there is no list of those possible conditions under which retrieval would be initiated.

Page 35283, Columns 1 and 2

We agree that site selection should be directed toward sites of little resource value or scientific interest and for which there is no attraction for future societies. If this criterion is to be followed, then this would tend to eliminate salt domes since they are potential sites for: solution mining of salt; storage of hydrocarbons, gases, or pumped air; sulfur extraction; oil and gas exploration; and geothermal energy activities. It would seem that bedded salt would better fit the requirement. Although we cannot offer any alternative approaches to the Human Intrusion question, we do not believe that the resource potential of the Mississippi salt domes has been adequately assessed in the NWTs Program to date. We have reason to believe that oil and gas resources may exist that have not been explored for yet.

Page 35283, Column 3

We agree with NRC's selection of alternative #2 regarding the detail of performance criteria. The design and construction should be based on existing knowledge and technology and should not depend on future breakthroughs.

Page 35284, Column 3

Population density and proximity to population centers should be given consideration since safe disposal should be the primary objective of the NWTs Program. Common sense should dictate that HLW be disposed of in a remote area with as low a population density as possible. Primary consideration should be given to the safety of the general population in the vicinity of the surface facility of the repository since that is where spent fuel and HLW will be processed for encapsulation into canisters and placed in the repository. Since the spent fuel and HLW will become progressively less hazardous with time, it would seem more logical to site the repository with more consideration given to present safety than to the safety of a repository at some future time.

Section 60.2

The definition of "accessible environment" needs to be refined and clarified. It is defined as "those portions of the environment directly in contact with or readily available for use by human beings." With present technology boreholes and shafts can and do penetrate to repository depth. The whole repository can be considered to be in the accessible environment. Previous publications have maintained that waste needs to be isolated from the biosphere, which is said to be the base of fresh water. There seems to be a conflict between the two criteria. The ambiguity of the present definition will cause problems in interpretation of several sections in Subpart E.

An ALARA principle should be applied to the performance requirements dealing with the containment and control of releases since post-closure data may not be available to confirm whether or not the requirements are being met. Setting given values for containment and releases would not be verifiable. Implementation of an ALARA principle based on state-of-the-art technologies and materials would be more appropriate, as long as the utmost care is taken.

Section 60.112

This section is good, but not specific. How are the stabilities required in paragraphs (a) and (b) defined? Perhaps in paragraph (c) the 1000-year groundwater travel times required at a site should be specified for both pre- and post-waste emplacement.

Section 60.122

This section is no more specific than Section 60.112, unfortunately. Again, in paragraph (f)(4) pre-waste emplacement should perhaps be changed to include post-waste emplacement conditions. What is the meaning or significance of paragraph (j)?

Section 60.123

Parts of this important section also need clarification, including but not limited to the following. In the case of a salt dome, the 2 km distance in paragraph (b), if sufficient, should be from the boundaries of the dome. In (b)(3), what would "representative areas" be at a salt dome site? In (b)(4), what is "extreme" erosion? Does (b)(5) apply to salt domes, all of which exhibit evidence of dissolution of soluble rocks? What is the definition of "complex engineering measures" in (b)(16)?

Section 60.132

This section is particularly vague and general. As one example, what is the meaning of "control of groundwater movement" in (a)(2)?

Section 60.133

Paragraph (b)(2) requires that "at the time of permanent closure sealed shafts and boreholes will inhibit transport of radionuclides to at least the same degree as the undisturbed units of rock through which the shafts or boreholes pass." Is this possible with existing technology? And if it is possible, can we expect the seals to remain effective for 1000 years or longer? The rule should specify what methods or materials would have to be used to meet this requirement.

Subpart F - Performance Confirmation

The contents of Subpart F do not specify what agency is to be responsible for performance confirmation. Some of the monitoring functions should be conducted by an agency independent of DOE, perhaps.

Sections 60.141(e) and 60.143(d)

The proposed technical rule makes no mention of post-closure monitoring of the geologic environment or the vicinity of the waste packages. Such monitoring may be desirable for years following closure of the repository; it could be accomplished if provided for prior to closure. In situ monitoring should continue as long as possible after closure to detect any significant rises in temperature, deformation of the underground facility, condition of shaft and borehole seals, or any release of radioactivity from individual waste packages or from certain areas of the repository. Monitoring devices could be emplaced prior to permanent closure and be monitored as long as they function. Monitoring would provide down-hole information on the conditions in the repository and the condition of the canisters, which would be useful if consideration were being given to re-entering the repository. Paragraph 60.143(d) should be revised, at least to delete the phrase "as long as possible."



B. JIM PORTER
ASSISTANT SECRETARY

DEPARTMENT OF NATURAL RESOURCES
OFFICE OF ENVIRONMENTAL AFFAIRS
NUCLEAR ENERGY DIVISION

WILLIAM H. SPELL
NUCLEAR PROGRAMS
ADMINISTRATOR

DOCKETED
11/10/81

November 5, 1981

'81 NOV 10 12:55

Secretary of the Nuclear Regulatory Commission
Washington, D.C. 20555

63

Attention: Docketing and Service Branch

Dear Sir:

Re: 10CFR, Part 60

-60
(46 FR 35280)

Enclosed please find comments on the referenced proposed rule submitted by a member of the Louisiana State Review Panel on Radioactive Waste Management. Any additional state comments received will be forwarded to your office as received.

Sincerely,

L. Hall Bohlinger

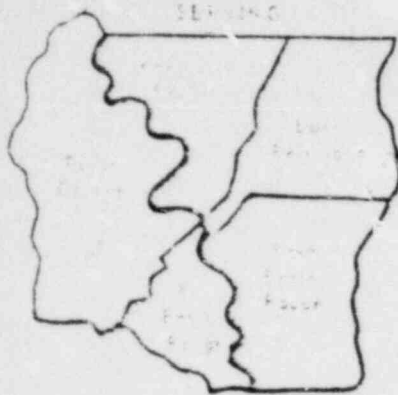
L. Hall Bohlinger, Sc.D.
Assistant Administrator
Nuclear Energy Division

LHB:mg

Enclosure

DSIO
5/1
Add: Frank Asenault
Paul Goldberg
J R Wolf
John B. Martin
Joe Donoghue
Michael Bell
Regis Boyle
Hubert Milner

emp... 11/16/81



Capital-Area Groundwater Conservation Commission

P. O. Box 64526
Baton Rouge, Louisiana 70896
Telephone (504) 924-7420

October 19, 1981

Dr. L. Hall Bohlinger
Dept. of Natural Resources
Nuclear Waste Dept.
Postoffice Box 14690
Baton Rouge, LA 70898

Ref: Proposed Technical
Rule 10CFR60-Federal
Register, July 8, 1981

Dear Dr. Bohlinger:

The proposed regulations have two major weaknesses, that were and are also prevalent in ongoing radwaste studies of salt domes.

GENERAL COMMENTS

1. The regulations for radwaste should require for each State an "oversight interdisciplinary group" that would serve as a State Review panel to the prime contractors, to State officials, and the involved Federal agencies. Its function would not include the review of contracts nor the control of activities. The creation of such a group would assure the data-collection and interpretive multidisciplinary studies are not fragmented, assure that the assigned task are accomplished with the State's needs in mind, provide input and information to the executive and legislative branches of the State government, and serve as a "route" for information to governmental agencies and to the concerned public.

2. The regulations and the ongoing studies are oriented primarily toward geology and do not place hydrology in the proper perspective. Geology includes structure, stratigraphy and lithology and provides knowledge of the framework BUT does not provide the needed hydrologic data required in major hydrologic decisions, such as that required in Section 60.112 (c)-- "the predicted travel time of groundwater." The rate and movement of ground water are the most important processes relative to the potential impact on the containment of waste and therefore hydrology should be considered a unique discipline that requires equal emphasis in the regulation and in the studies.

In conformance with the above considerations, following are specific comments and summary.

SPECIFIC COMMENTS

Section 60.2 Definitions. Should include definitions of hydrologic terms such as ground water, etc. Excellent sources of definitions are U. S. Geological Survey Water Supply Papers 1988 and 1541 A. U. S. Geological Circular 779 is an excellent "thinking document" when considering radwaste and earth science.

Section 60.10 (b) Site Characterization. I agree with the requirement for in situ parameters--a prime requirement for the collection of hydrologic data.

Section 60.10 (d). The suggestion to limit adverse effects by limiting the number of subsurface "penetrations," indicates the need for the forementioned "State oversight" group and the interdisciplinary planning of penetrations or test holes for multipurpose data activities--geologic, hydrologic, etc. Current studies have not always been planned with this in mind but have had a "lack of data" syndrome and the need for "more holes" attitude.

Section 60.21 (c) (I). Data needs should include absorptive and adsorptive properties and other clay properties. It should be recognized that clay is not impermeable.

Section 60.102 (c). Last sentence should read, ". . . particular attention must be given to the characteristics of host rock, material surrounding the host rock, regional hydrologic setting, and the past, present and predicted future effects of manmade and natural stresses on the hydrologic system." (Underlined material added)

Section 60.112 should be headed "Required characteristics of the geologic and hydrologic setting."

Section 60.112(c). The requirement of 1000 years for isolation of the "waste package" when considering ground-water travel time cannot be predicted without some uncertainty because of the inability of the scientist to guarantee future hydrologic conditions, the stability and integrity of host rock, and the effects of manmade stresses. Although models may not be capable of giving a single unquestionable answer for 1000 years and changes may occur with time, it should be realized that a model may be able to provide a spectrum of alternatives based on (1) the geology and hydrology (2) the historical stability and integrity of the host rock, (3) the regional and local hydrology of the materials surrounding the host rock, (4) the present and predicted long-term effects of manmade and natural stresses that have some degree of uncertainty, (5) the radwaste form, and (6) degree of accuracy of the in situ hydrologic parameters. In summary, it is satisfactory to assume, with all

the uncertainties candidly discussed, that 1000 years predictions for ground water movement can be made but with an ever increasing degree of uncertainty and concern. The inability to predict long-term ground water movement can be offset by the adoption of a philosophy to avoid the possibility of "ground water interaction" by locating sites so that the host rock is not surrounded and overlain by water-saturated material.

Section 60.111 (a) (2). This section (July 3, 1981 in Federal Register) gives the retrievability time of starting at any time up to 50 years after waste emplacement" not 110 years as mentioned in Dr. Heath's memorandum. As I recall a 50-year period is considered to be temporary storage time. Is this intended to be a "safety feature" for a permanent storage facility? Regardless if it is to be permanent radwaste facility, the emplacement should be designed for an infinite period of time.

Section 60.111 (b) (ii) A and B. In regards to a 1 to 10^5 part release rate, the fallibility of man and the unpredictability of nature and man's activities may consider this release rate to be unacceptable. However, if nuclear physicists can assure that the risk, if any, will be minimal and that the rate of release will not endanger the biosphere and geosphere, then the release should be satisfactory.

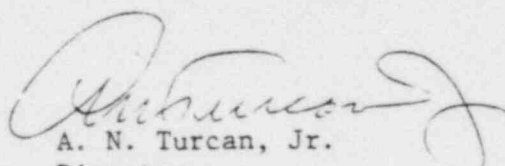
SUMMARY

Geology provides information on the "makeup of the container", whereas hydrology quantifies the hydrodynamics of the system. Thus, geologic studies alone do not provide information required to estimate the movement of fluids and answer questions pertaining to the rate of movement of radionuclides and water especially in areas where the host rock is surrounded by saturated materials. Local and regional hydrologic modeling should be prime prerequisite during the initial phase of a site study because it not only provides information on the effects of hydrologic stresses but indicates data needs and oftentimes indicates geologic unconformities. Unfortunately, the early stages of studies made in the Gulf Coast areas did not include enough emphasis on hydrologic studies. As a consequence, questions related to the interaction of hydrology to the shear zone, the sheath, the fissures in the caprock, the salt, and to the rate and direction of ground-water movement cannot be answered with a slight degree of confidence at this time and probably for some time into the future. Thus NRC proposed regulations should place equal importance on hydrologic studies to prevent omissions during the data-collection phase and provide for multidiscipline activities. Final determinations as to the suitability of a salt dome for radwaste storage will be unnecessarily delayed until the proper hydrologic data are collected and regional and local hydrologic models are started, calibrated, verified, and accepted.

Dr. L Hall Bohlinger
October 19, 1981
Page 4

Other subjects that need early consideration in the licensing processes are socioeconomics, archeological, and wildlife.

Very truly yours,



A. N. Turcan, Jr.
Director

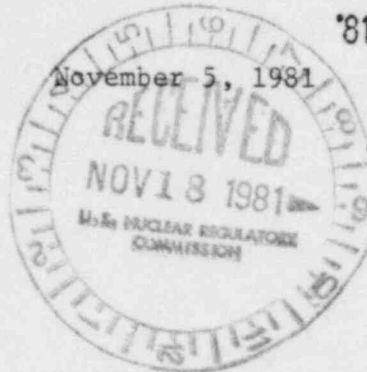
ANT/ebo
cc: Charles Groat
George H. Cramer
Kai Medboe

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

DOCKETED
UNBPC

'81 NOV 10 PM 2:56

W. N. THOMAS
VICE PRESIDENT
FUEL RESOURCES



SECRETARY
DOCKETING & SERVICE
BRANCH

Secretary
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Docketing and Service Branch

Re: Notice of Proposed Rulemaking; 10 CFR Part 60
Disposal of High-Level Radioactive Wastes in
Geologic Repositories (Technical Criteria)
46 Fed. Reg. 35,280

64
-60
(46 FR 35280)

Dear Sir:

The Utility Nuclear Waste Management Group (UNWMG), of which Vepco is a member, has prepared and submitted comments concerning the Nuclear Regulatory Commission's (NRC) proposed rule, 10 CFR Part 60 - Disposal of High Level Radioactive Wastes in Geologic Repositories. Vepco supports the position taken by the UNWMG and feels that incorporation of their comments into the rule will permit the design, construction and operation of a repository as effective as one under the current form of the proposed rule in a more timely and less costly manner.

The key points in the proposed rule that Vepco and the UNWMG take exception to are summarized below:

1. Systems Approach vs. Barrier Performance Objectives
(46 Fed. Reg. 35,283-84)

The major concern with the NRC's proposed rule is the use of specific barrier performance objectives for repository components rather than the use of overall system performance objectives. The selection of the current barrier performance standards, i.e., 1,000 year waste package life and 1,000 year water travel times to the accessible environment, appear to be an imposition of arbitrary standards without scientific or technical support. The use of individual performance standards is also at odds with an important factor of sound repository design and operation; the interaction of individual components to achieve, on a combined basis, the required level of repository system performance. Use of an overall system performance standard would focus attention on total repository performance while permitting appropriate design flexibility to take advantage of new developments and permit the use of specific characteristics for individual sites.

2. Retrievability (46 Fed. Reg. 35,282)

The requirement to maintain retrievability for a period of up to 110 years is excessive, without any adequate support, and could unnecessarily delay the final closure of the repository. A more reasonable approach might be to base design requirements for retrievability, if any, on the period of repository operation. Assuming that the first waste packages will have been in place for about 30 years before the repository becomes filled and allowing another 30 years (the same times as for original construction and emplacement)

11/16/81 emp

John B. Martin
Michael Bell
Regis Boyle
Hubert Miller
Add: Frank Azenault
Paul Goldberg
J.R. Wolf
Joe Donoghue
DS/D
S/D

for retrieval, would result in a design requirement of 60 years. This time period is reasonable because any problems involved with the storage will probably become apparent quickly.

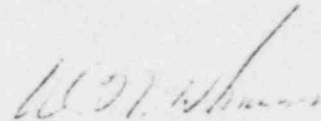
3. Design and Construction Criteria (46 Fed. Reg. 35,285)

The level of detail required for design and construction of the repository is excessive and should be reduced. This comment is based on the desirability to maintain flexibility with respect to design and construction wherever possible and minimize unnecessary cost.

By formulating a well defined and workable set of rules now, future problems will hopefully be avoided. Vepco believes that the proposed changes will result in a more effective rule and provide for the more timely and less costly design and construction of a repository. We understand similar recommendations supporting these changes have been submitted to the NRC by other groups including the American Nuclear Society and the United Kingdom's Department of the Environment.

Should you have any questions regarding our comments, we would be glad to discuss them with you.

Very truly yours,



W. N. Thomas

cc: Mr. T. Lough, Virginia State
Corporation Commission
Mr. R. E. L. Stanford,
Project Manager - UNWMG