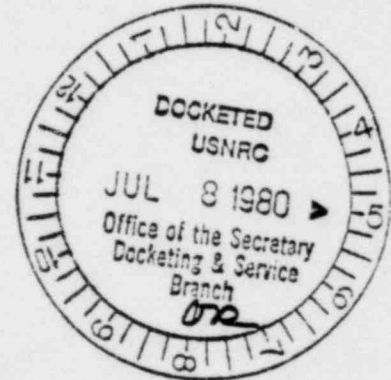


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
PROPOSED RULEMAKING ON) PR-50, 51 (44 FR 61372)
THE STORAGE AND DISPOSAL)
OF NUCLEAR WASTE)
(Waste Confidence Rulemaking))



STATEMENT OF POSITION OF
THE STATE OF DELAWARE

July 3, 1980

THIS DOCUMENT CONTAINS
POOR QUALITY PAGES

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Statement of Facts

The Nuclear Waste Conference Confidence Rulemaking procedure was initiated by the Commission in response to the decision of the United States Court of Appeals in State of Minnesota v. NRC and is an outgrowth of previous related proceedings conducted by the Commission. The United States Court of Appeals for the District of Columbia remanded two licensing actions on May 23, 1979 to the Commission to consider whether an off-site storage solution for nuclear wastes will be available by the expiration dates of the operating licenses of Prairie Island and Vermont Yankee nuclear power plants. Thus, the Commission issued its notice of generic rulemaking on October 25, 1979 that commenced this proceeding. Subsequent to this notice, the State of Delaware petitioned the NRC on November 26, 1979 for full participation status in the proceeding and was granted such status on February 1, 1980 as part of the First Prehearing Conference Order.

The Hearing Office has issued two rulings that establish the following boundaries--

1. The handling of high-level nuclear wastes, disposal and storage of spent nuclear fuel taking directly from commercial power reactors shall be considered to be a representative case for the proceeding.
2. This proceeding shall be concerned only with high level waste, and that issues of low level waste, uranium mill tailings and the safety of transportation of waste materials are not within its scope.

President Carter in a February 12, 1980 Message to Congress reiterated the role of the Department of Energy as the lead agency for the management and disposal of radioactive wastes. Furthermore, the Administration has proposed to Congress a bill that gives DOE the authority to enter into contracts with NRC licenses to accept commercial spent fuel for storage and disposal at federally operated facilities.

DOE submitted its statement to the Hearing Officer on April 15, 1980 which contained its position on waste management as stated below:

1. "Spent nuclear fuel from licensed facilities ultimately can be disposed of safely off-site.
2. Disposal facilities will be in operation between 1997 and 2000, and the initial increment of off-site storage facilities can be in operation by 1983.
3. Spent nuclear fuel from licensed facilities can be stored safely either on-site or off-site until disposed of ultimately."

In essence, this required that DOE and NRC must direct attention to the following categories of nuclear waste storage facilities, each of which are unique:

- o Temporary reactor on-site storage facilities which includes enlargement of existing storage pools and/or the possible installation of additional new on-site storage capacity.
- o Interim off-site or "away from reactor site" (AFR'S).
- o Permanent disposal of high level nuclear wastes.

Statement of Position

Delaware Policy Development

In recognition that this proceeding involves very fundamental issues in the nuclear power generating industry, deliberate steps were taken to elicit a broad range of Delawarean viewpoints on the subject. Specifically, the Governor designated the Department of Natural Resources and Environmental Control as the lead agency to catalyze the development of a Delaware Policy on Nuclear Waste that is responsive to the referenced proceeding. This resulted in the appointment of Dr. Harry W. Otto, Manager of Technical Services for the Division of Environmental Control, as coordinator to accomplish the task assigned the Department.

In order to facilitate points of contacts within various State agencies having long-term interests in the nuclear waste management arena, a Committee of Agency Representatives was organized to obtain input for the policy development.

The following agencies participated actively:

Environmental Control Division (Chairman)
Emergency Planning and Operations Division

Authority on Radiation Protection
Delaware Geological Survey
Public Health Division
Management, Budget and Planning Office

In addition, the Advisory Council on Environmental Control agreed to coordinate a series of two Town Meetings on the subject to obtain viewpoints from the public. The meeting dates were advertised in advance in several newspapers in the Legal Advertisement Sections, and some newspaper articles also appeared immediately prior to the meeting held in Dover on May 7, 1980 and subsequent to the meeting held in Wilmington on May 14, 1980. A significant volume of mail was received pertaining to an expression of feeling about the issues involved in the Nuclear Waste Confidence Rulemaking Proceeding.

And finally, the Delaware Energy Facilities Siting Committee, a group consisting of State agency representatives established by the Legislature reviewed the policy statements presented to the Governor for his consideration.

Delaware Policy Statements

The following represents a series of policies responding to the Hearing Officer with Delaware's position on June 9, 1980:

1. General Matters

- o Delaware is opposed to the siting of interim "Away From Reactor Site (AFR's)" storage facilities whether in Delaware or elsewhere.
- o Delaware is concerned about the licensing of new plants before permanent disposal is available.
- o Delaware supports the establishment of Federally sponsored programs to foster research and development efforts that will lead to reuse of nuclear waste materials.
- o Delaware supports the development on a priority basis of solutions to nuclear waste disposal problems involving waste already generated.

o Delaware supports the clarification of responsibility for high level nuclear waste storage when--

1. An on-site storage facility license expires and/or a reactor is permanently shut down.
2. Mergers, bankruptcy or other business cycle modifications preclude continuance of operation.

2. Reactor Site Storage

Most on-site high level nuclear waste is stored in pools. Originally most reactor-site storage pools were installed with a design capacity of about 7-8 years under the assumption that permanent disposal and/or recycle procedures for spent fuel rods would be available. Since nuclear power generation plants are licensed for 30 years and existing on-site storage capacity will soon be reached, plants are in the process of requesting NRC approval to increase pool storage capacities to about 17-20 years with the anticipation again that permanent solutions will be available.

- o Delaware has consistently been concerned regarding expanded storage facilities unless permanent disposal will be available at the time the expanded capacity is filled.
- o Delaware insists that adequate environmental safeguards be provided in connection with on-site storage facilities.
- o Delaware questions the adequacy of on-site pool storage structural materials to withstand storage periods that are double that of design and may involve even greater storage times if permanent disposal is not available by the year 2006.

3. Away From Reactor Site Storage (AFR's)

Since permanent disposal of high level wastes has not been resolved and existing nuclear power plants are facing shutdown due to lack of sufficient space for on-site storage of spent fuel, temporary storage facilities away from reactor sites have been considered. Four concepts are being envisioned:

- o Canyon-type storage which would put spent-fuel filled casks in caves.
- o Caisson-type fuel storage which involves near-surface lined holes in the ground.

- o Pool storage similar to that employed presently at reactor sites.
- o Concrete silo storage wherein fuel casks are stored above ground.

Several uncertainties arise in considering AFR's: The development of site selection criteria, definition of State involvement in the selection/decision making of sites, definition of cost/operational responsibility (DOE assumes AFR cost will be borne by the Federal government (1) while President Carter's administrative policy dictates that AFR cost will be assumed by the power industry (2), vulnerability of AFR's as targets (military, sabotage, civil disorders and disasters), and the undefined timetable of availability are but a few of the grey areas. Spent fuel transfers and an additional transportation steps between the reactor and AFR site are added negative considerations.

- o Delaware does not support the concept of AFR's because of the safety problems of transportation, additional handling and the likelihood that interim facilities would not be as well designed as permanent ones.

4. Permanent Disposal

The DOE proposes deep earth storage as the only available permanent disposal for high level nuclear waste. Timetable estimates by DOE and NRC indicate that such facilities might be available as soon as 1995 (3). DOE has prepared environmental impact statements (EIS) for nuclear waste management facilities at the Hanford, Savannah River and Idaho sites. In addition, DOE is being prepared for Oak Ridge.

- c. Federal policy with respect to geologic storage should recognize that--
 - a. All important geologic and hydrologic factors pertinent to the selection of a nuclear waste disposal site are discussed in the statements.
 - b. The fundamental criteria for a prospective nuclear waste disposal site should be that the geologic structure be sufficiently simple that it be capable of being thoroughly understood.

- c. Delaware does not consider the disposal of nuclear waste in geologic repositories to be a permanent solution to the problem, based on present technologic information contained in the DOE position.
- d. The process of the actual selection of a site should be established; for example, the method of selection of the scientists to evaluate geologic and hydrologic aspects of the proposed site.
- e. The role of the states in the site selection process should be defined.
- f. Criteria for disposal site should include location in areas having minimum population density, minimum ground-water and maximum geological stability.
- g. Available information on Delaware geology is as indicated in Attachment A.

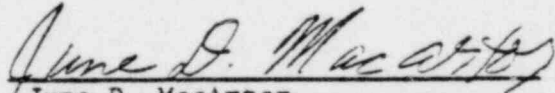
5. Site Availability

- o Delaware supports the concept that disposal sites must be Federally sponsored for surveillance in perpetuity.
- o A Federal health agency must monitor exposure effects on a long-term basis, including the genetic and somatic effects of radiation on several generations.
- o Licenses must require commercial operators to assume the cost of decommissioning and the storage of spent fuel elements even after the decommissioning to avoid the payment of costs by the public rather than the owners of the facility.
- o High level radioactive waste can be safely disposed of if continuous monitoring of such sites is maintained for at least 600 years; such monitoring and reassessment of monitoring requirements 600 years after disposal shall be the responsibility of the Federal government. Federal surveillance must include resources and a plan to prevent exposure of people if movement of radionuclides off-site is detected, and indeed prevent future human activities which would initiate waste releases from disposal sites.
- o On-site storage of spent fuel elements for no more than thirteen years will minimize the population affected and reduce the probabilities of accidental releases of waste radionuclides to the environment prior to disposal of spent fuel elements. Some transfers to available pools may be necessary.
- o At least one disposal site must become operative in the 1980's. Such a goal will require maximum Federal priority. Achievement will preclude the additional risks of Away From Reactor Storage sites and minimize the number of sites which require continuous care, minimize the transportation problems and risks of transfer from originating source to storage site (AFS) and again to a disposal site.

- o A system to move spent fuel elements stored at reactor sites directly into permanent storage has the following health protective advantages:
 - a. Opportunities for accidental releases of high level waste products is minimized.
 - b. Prevention of proliferation of away from reactor storage pools located along major transportation routes which, even in sparsely populated areas, would increase risk to people and increase probability of environmental defilement at multiple sites.
- o Federal surveillance of spent fuel reactor sites where licenses to operate have expired is mandatory. All future licenses should include financial responsibility for decommissioning, necessary on-site storage of spent fuel, and safe transport of spent fuel to a disposal site.
- o Delaware expresses the concern that generation of nuclear wastes is continuing without assurance of fulfillment of federal responsibility for designation of permanent storage.

Summary

Delaware feels keenly the imminent need for determination of a safe permanent disposal or recycling technique and location. Establishment of interim away from reactor sites should be avoided because of safety considerations in transport and handling and because of the danger of regarding that as a substitute for permanent facilities.


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Dated: July 3, 1980

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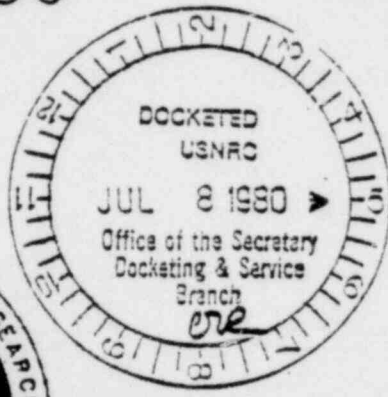
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Delaware Geological Survey List of Publications June 1980



STATE OF DELAWARE
UNIVERSITY OF DELAWARE
Robert R. Jordan
State Geologist

**About
the
DELAWARE GEOLOGICAL SURVEY**

The program of the Delaware Geological Survey, (DGS) includes research, exploration, and service in accordance with the statute founding the unit in 1951. The charges specified provide the framework for the activities of the DGS: systematic investigation of the geology of Delaware; exploration and research pertaining to the water, mineral, and other earth resources of the State; preparation of reports and maps presenting its findings; and provision of factual geologic information and advice to the officials and citizens of the State of Delaware.

The DGS is organized, by statute, as a unit of the University of Delaware receiving specific appropriations from the General Assembly to accomplish its charges. This partnership assures access to essential facilities, efficiency of operations, and responsiveness to the needs of the State.

The DGS represents Delaware to several counterpart federal agencies, including the U. S. Bureau of Mines. The State Geologist and other members of the DGS serve on many federal, regional, and State committees, boards, and commissions to ensure coordination and the availability of geologic information.

The titles of the publications listed in this catalogue will convey the variety of significant topics that have been addressed by the research efforts of the DGS during the past 30 years. The DGS also maintains master files of well records and geophysical logs, a Sample Library, and other data banks that may be consulted by contacting the staff.

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Publications of the Delaware Geological Survey may be obtained by writing:

Publications
Delaware Geological Survey
University of Delaware
Newark, DE 19711

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It is requested that any publication that is no longer useful to the recipient be returned to the Delaware Geological Survey.

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HOW TO ORDER TOPOGRAPHIC MAPS

Topographic maps of Delaware are prepared by the U.S. Geological Survey. Those interested in obtaining topographic maps may do so by requesting an Index to Topographic Maps of Delaware and a Map Order Form, which includes a list of maps and prices, by writing:

Eastern Region-Map Distribution
U.S. Geological Survey
1200 South Eads Street
Arlington, VA 22202

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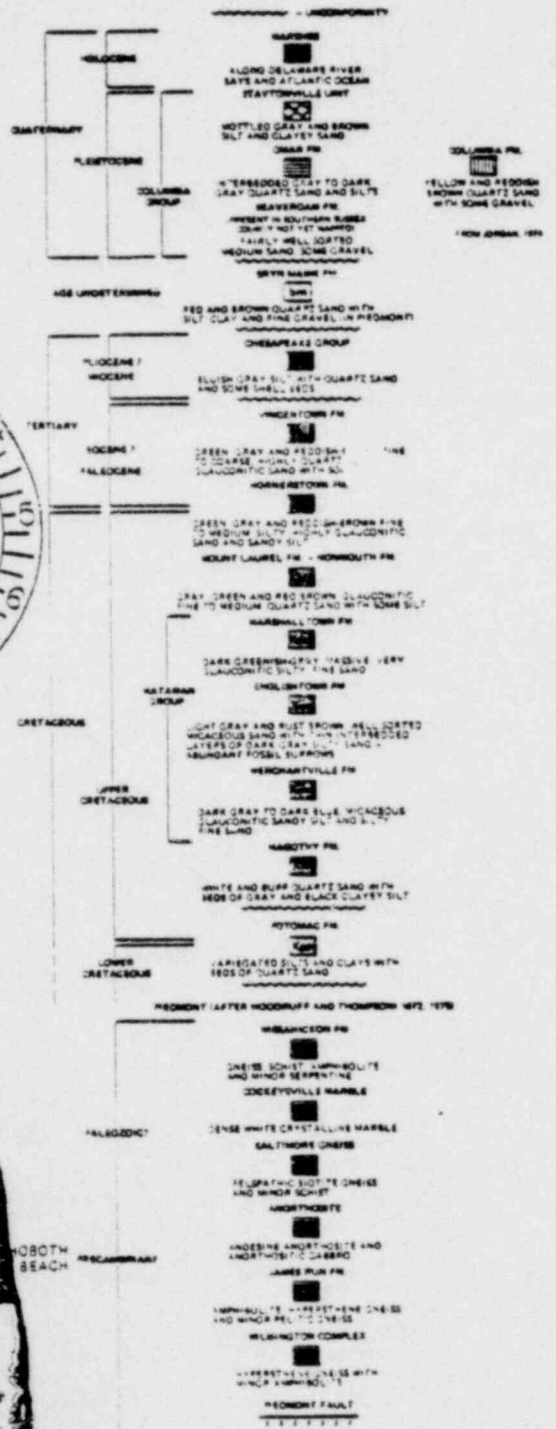
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GENERALIZED GEOLOGIC MAP OF DELAWARE

APRIL 1976



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PREPARED BY: DELAWARE GEOLOGICAL SURVEY,
UNIVERSITY OF DELAWARE, NEWARK, IN CO-
OPERATION WITH THE DELAWARE STATE PLAN-
NING OFFICE, DOVER.

REVISED BY THOMAS E. PICKETT, APRIL 1976
FROM NENAD SPOLJARIC AND ROBERT R. JORDAN
AUGUST 1966.

GEOLOGIC HISTORY OF DELAWARE

Severe metamorphism has obscured the exact age relationships of the rocks of the Piedmont. This regional metamorphism is a product of crustal upheavals which built the Appalachian Mountain System. The major events in the evolution of these rocks occurred between 500 and 200 million years ago.

A great period of time, of which there is no record in Delaware, passed before the deposition of the oldest sediments of the Coastal Plain, the Potomac Formation, during the latter part of Early Cretaceous time, about 120 million years ago. Streams transported clays with interbedded sands from the Appalachians which lay to the northwest. This process continued into Late Cretaceous time and built a wedge with a thickness of about 4,000 feet in southern Delaware. A small unconformity, or period of nondeposition, separates the Potomac from the overlying Magothy Formation. The white sands and lignitic black silts of the Magothy form a distinctive marker indicating the transition from the older sediments to the later marine deposits.

The sea now encroached deeply upon the land and remained over most of Delaware until at least Middle Eocene time; a sequence of varied marine sedimentary rocks was deposited essentially continuously during this interval. The oldest of these sediments form the Matawan Group, consisting of the Merchantville, Englishtown and Marshalltown Formations. None of these persist as distinct entities far into the subsurface, and so the Matawan is relegated to formational status at depth, as is shown on the cross-section. Above the Matawan is the Monmouth Formation, called Mt. Laurel at the surface. These Cretaceous formations are exposed in the Chesapeake and Delaware Canal and are fossiliferous.

In the northern half of the Delaware Coastal Plain the time boundary between the Cretaceous and Tertiary (ca. 63 million years) is located within the Hornerstown Formation. Farther south, in the subsurface, the upper part of the Monmouth Formation, the Cretaceous to Eocene Rancocas Group, and the Nanjemoy Formation (subsurface only), grade into a thick clay-silt mass called the Pamunkey Formation (Unit A). The interrelationships of these rocks in the subsurface may be seen on the cross-section. The subsurface Piney Point Formation, a quartz-glaucouanite sand, which is the youngest of the Eocene units is, in part, the time equivalent of the Pamunkey and Nanjemoy Formations, and is, in part, younger. All of these marine sediments are truncated by a major unconformity; no Oligocene deposits are present.

During the Miocene, the sea returned to cover the State, and deposition of sediment resumed. A sequence of three silts separated by two sand intervals forms most of the Chesapeake Group. Additional sands and silts are added toward the southeast where the Chesapeake attains its maximum thickness in Delaware of over 1,000 feet. Sands within the Chesapeake supply important amounts of water and are named from oldest to youngest, the Cheswold, Frederica, Manokin and Pocomoke aquifers. No sediments of proven Pliocene age are known from the Coastal Plain and the Chesapeake sediments are beveled by another major erosional unconformity.

During Pleistocene time, the advance and retreat of the continental glaciers brought about profound changes in sea level and in the streams which drained into Delaware. The Columbia Formation, consisting mostly of coarse sand with gravel, was deposited on the stream-channelled surface formed by the truncated edges of the Cretaceous and Tertiary beds and thus is a sheet of irregular thickness covering much of the Coastal Plain. During a later period of higher-than-present sea level, the sea reworked these continental deposits in the southern part of the State where they may be subdivided into the Staytonville unit, Omar and Beaverdam (and probably other) Formations (Jordan, 1974). Holocene (Recent) sea level rise has resulted in marsh filling adjacent to the coast. Total maximum thickness of all coastal plain units is about 8,000 feet (at Fenwick Island).

According to the U.S. Bureau of Mines Minerals Yearbook, Delaware produces over 3.5 million dollars worth of sand, gravel, and brick clay annually. Greensand (Hornerstown Fm.) has the potential for use in waste water treatment.

