STATE OF MAINE

ADVISORY COMMISSION ON RADIOACTIVE WASTE

February, 1996

Rep. Catharine Damren, Chair
Rep. June Meres, Vice-Chair

1995 ANNUAL REPORT

Table of Contents

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Senator Peter Mills
Jeff Barnum, public member
John T. Chen, MD., public member
Dr. Joseph Blinick, Maine Medical Center
G. Douglas Whittier, Maine Yankee
Edward Sullivan, Comm., Dept. of Env. Prot.

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ANNUAL REPORT

of the

ADVISORY COMMISSION ON RADIOACTIVE WASTE

for the calendar year 1995

Introduction

The Advisory Commission on Radioactive Waste Remains the only State entity charged by the legislature to collect, analyze and disseminate information on all aspects of radioactive waste management. The Legislature created the Advisory Commission in 1985 as a successor to the Low-Level Waste Siting Commission. The Advisory Commission's purpose is "to advise the Governor and the Legislature on matters relating to radioactive waste management...".

Historically, the Advisory Commission has taken leading roles in issues involving high and low level radioactive waste in Maine. Notably, the Commission took a leading role in fighting the siting of a high level radioactive waste repository in Maine. Later, the Commission was instrumental in establishing policy for dealing with low-level waste, leading to the creation of the Low-Level Radioactive Waste Authority. Ultimately, with Commission approval, Maine negotiated a compact with the State of Texas for disposal of low-level waste and the Authority was dissolved. Throughout, the Commission has been a key source of information and guidance to the Governor, Legislature, State Government and the public.

Most recently, the Commission has undergone an internal change, while maintaining its primary purpose. As part of a series of consolidations of the State's radiation related programs, Maine PL. 1995 C. 333 transferred administrative support for the Advisory Commission on Radioactive Waste from the Department of Environmental Protection to the Department of Human Services. The Radiation Control Program (RCP), Bureau of Health, Division of Health Engineering, assumed support of the Advisory Commission on July 1, 1995. All records, documents and library materials were moved to the RCP offices over the following two weeks. Historical materials including public documents, technical information etc., are currently being housed within the RCP offices. The Radiation Control Program is committed it continuing the same level of service to the Commission and the public as was provided by the Department of Environmental Protection.

The Commission held two meetings in 1995, January 17 and November 8. The January meeting was an 'educational' meeting, being devoted to general presentations and discussions of waste related subjects. The November 8 meeting was the first with DHS providing administrative support to the Commission. The Commission was without a Chair or Vice Chair, due to the retirement from the legislature of Representatives Jim Mitchell and Reed Coles. Representative Catharine Damren was elected Commission Chair and Representative June Mere elected as vice-Chair. The Commission also decided to schedule regular quarterly meetings to occur on the third Wednesday of each quarter. The Commission's newsletter will be sent out quarterly, two to three weeks before the meetings to remind readers of the meeting dates.

Commission Activities

The State of Maine has changed its approach to low-level radioactive waste management since Maine voters approved the Texas Compact in November, 1993. These changes were legislated through two laws, P.L. c. 664, 1993, " An Act to Consolidate and Streamline the Functions of Maine Government in Conformity with the Provisions of the Texas Low-Level Radioactive Waste Disposal Compact", and P.L. c. 333, 1995, "An Act to Correct Errors and Inconsistencies with Regard to the Restructuring of Maine Government to Conform with the Provisions of the Texas Compact".

P.L. c. 664, 1993, dissolved the Maine Low-Level Radioactive Waste Authority and transferred the non-siting duties of the Authority to the Department of Human Services(DHS), Radiation Control Program. This law also appropriated money through an annual service fee for low-level radioactive waste generation to support the Advisory Commission on Radioactive Waste and to create two new positions (an Assistant Engineer and a Clerk Typist III) to support the newly acquired duties at DHS. Annual Service Fee collections were not to exceed $260,000.

P.L. c. 333, 1995, reinstated Maine's Commissioner to the Texas Low-Level Radioactive Waste Disposal Compact Commission. Statutory provisions for this function were inadvertently struck by P.L. c. 664, 1993. P.L. c. 333, 1995, affected the Advisory Commission on Radioactive Waste by eliminating two staff members within the Department of Environmental Protection whose duties were solely dedicated to Advisory Commission activities, and transferred those duties to DHS. Also, the $260,000 annual assessment fee ceiling established under P.L. c. 644, 1993, was reduced to $135,000.

Commission meeting, January 25, 1995

An educational meeting of the Advisory Commission was held in Augusta on January 25, 1995. The meeting was held for the purpose of informing new Commission Members and the public on radioactive waste issues. New appointments to the Commission since the last commission meeting (during 1994) were Senators Charles Begley, and Peter Mills, Representatives Catharine Damren, Richard Carey and David Shiah, Messrs. Matthew Scott and Steven Keegan. Departing the Commission since the September, 1994 meeting were Senators Steven Hall and Mark Lawrence, Representatives Reed Coles, Willis Lord and James Mitchell. Topics discussed included a historical perspective on high level and low - level radioactive waste regulation at the federal and state levels, the hazards of radiation exposure, the Texas Compact and current State regulatory activities to comply with the Texas Compact. Also discussed were the Greenbush mixed waste site and high level waste storage within Maine at the Maine Yankee Atomic Power Company Plant in Wiscasset and temporary storage of spent naval nuclear fuel at the Portsmouth Naval Shipyard in Kittery.

Commission meeting, November 8, 1995

The second meeting held by the Advisory Commission during 1995 was on November 8, in Augusta. This was the first meeting with Radiation Control Program Staff. Meeting topics included the expectations of the RCP in its support role to the Commission, the legislative status of the Texas Compact, a summary of 1994 low-level radioactive waste generation, the status of Service Fee collections, Maine Yankee's steam generator repair project, and disposal options available to Maine radioactive waste generators.

The Commission elected Representative Catharine Damren as Chair and Representative June Meres as Vice-Chair. The Commission resolved to hold regular meetings on the third Wednesday of each quarter, and to produce a newsletter each quarter, rather than bimonthly. The Newsletter will be posted two to three weeks prior to that date, informing the public of the time and location of the meetings and of radioactive waste issues. The Newsletter as well as other information will also be available on the internet, through the Bureau of Health homepage.

High-level Waste

Maine currently has two high-level radioactive waste generators, the Maine Yankee Atomic Power Company plant in Wiscasset, and Portsmouth Naval Shipyard in Kittery. With no available disposal or off site interim storage options, Maine Yankee continues to store its high level waste on site. Portsmouth Naval Shipyard generates high level waste from submarine reactor refueling and decommissioning activities at the shipyard.

Maine Yankee stores all spent fuel and other highly radioactive items in a pool at the reactor site. Though originally intended as a temporary storage location, Maine Yankee is forced to maintain on-site storage due to delays in the siting and construction of a federal high level waste repository. By law, the federal government is committed to take all civilian spent nuclear fuel by 1998. However, delays in naming a site, and in scientific investigation of the named site: Yucca Mountain, has put this date off indefinitely. At this time, Maine Yankee is preparing to reconfigure the spent fuel pool to accommodate all spent fuel through 2008, the end of the plant's current operating license. Maine Yankee has re configured the spent fuel pool once in the past to accommodate a larger number of spent fuel assemblies. The planned reconfiguration will take advantage of advances in rack design, reducing the spacing between adjacent assemblies, while maintaining the required safety margins for heat removal and control of reactivity. This project was delayed in 1995, due to the extended outage for steam generator repair and is now scheduled for 1996.

In October 1995, the Navy, Department of Energy, and the State of Idaho came to an agreement allowing for renewed access to interim storage at Idaho National Engineering Laboratory (INEL) in Idaho Falls, ID. Portsmouth Naval Shipyard resumed shipping spent nuclear fuel off site in late 1995. The shipyard had been forced to store spent naval nuclear fuel on-site since 1993. Up to that time, all Naval fuel was transported to the INEL facility. The agreement is important to operations at the shipyard as the Navy has a chronic shortage of spent shipping casks. This shortage is being relieved through the renewed access to interim storage. If this option had not become available, it could have impeded or stopped the shipyard's ability to service nuclear submarines.

The federal government, Specifically the Department of Energy, is responsible for the management of high-level radioactive waste, which includes spent fuel rods from commercial nuclear power plants as well as waste generated by the Department of Defense and the Department of Energy. During 1995 neither the DOE nor anyone else made significant progress toward providing either a disposal or a storage facility in for high-level waste. The continuing delay will likely mean that the DOE will be unable to achieve its December 31, 1998 deadline to receive spent nuclear fuel from commercial nuclear power plants. This is unlikely to have a detrimental impact on operations at Maine Yankee. Maine Yankee is capable of safely storing all of the spent nuclear fuel that it generates through the end of its operating license in 2008. During a meeting of the Energy Committee, Department of Energy Secretary Hazel O' Leary stated that the high level radioactive waste repository will not be operational until 2015.

Federal legislative activities involving high level waste include a bill introduced to the Senate (S. 1271), which would direct the department of Energy to develop an interim storage facility to meet its 2008 deadline. Energy Secretary Hazel O' Leary opposes this stating that the permanent repository should be further researched and that prioritizing interim storage would derail the development of a repository.

Yucca Mountain Studies

Yucca Mountain in Nevada continues to be the focus of DOE's high level waste repository siting efforts and is currently under scientific investigation. Technical issues being considered include pockets of perched water that have been detected above the water table and below the proposed depth of the repository and the existence of erionite ore.

Erionite ore is being investigated because it is a known lung cancer carcinogen and may prove to be an industrial hygiene issue for any future repository. The erionite was first identified as a potential health hazard in the early 1970's in central Turkey where the local population, whose homes were carved from rock bearing large quantities of erionite, were dying in unusual numbers from mesothelioma. Subsequent study led to the World Health Organization 's International Agency for Research in Cancer to list erionite as a known cancer causing agent in humans. Erionite is similar to asbestos in that both form long, stringy, fibers. All of the erionite detected at Yucca Mountain has been at considerable depths. Air and dust samples taken regularly at the surface of the Yucca mountain facility have revealed no erionite signatures. Scientists do not expect erionite to pose a problem in the construction or operation of a high level nuclear waste repository because the erionite finds have been below the potential repository horizon. Any excavation of those areas would have to be done carefully and with appropriate safety precautions.

According to Yucca Mountain Project hydrogeologists, the perched water below Yucca Mountain exists because of the changing geological conditions between one layer of rock and another. Such areas sometimes contain pockets of suspended water because the layers have differing permeability. When water is seeping slowly through rock that is relatively permeable reaches a boundary with rock that isn't as permeable, that water may have limited places to go, and builds up. As the perched water is well below the depth of the proposed repository, it will not likely effect the construction of a facility. The significance of these water pockets to the operation of the repository will not be known until it is determined whether the water is moving fast enough to be important over a several thousand year time frame. Also of concern is whether the individual pockets of water are interconnected.

The Yucca Mountain Site Characterization Project (YMP) has completed 1,609.76 meters (one mile) of tunnel in the excavation of the Exploratory Studies Facility (ESF) at Yucca Mountain. The YMP is using a Tunnel Boring Machine (TBM) to excavate the ESF. The ESF serves as an underground laboratory for engineers and scientists to help determine if Yucca Mountain is suitable for the geologic disposal of commercial spent nuclear fuel and high-level radioactive waste. Tests to be conducted in the ESF include: geomechanical testing to measure rock's response to pressure; radial borehole tests to measure water and vapor movement through rock; thermal testing to measure the effect of heat on rock, and testing of the potential movement of radioactive particles through rock.

These underground tests in the ESF are just part of the testing being conducted for site characterization. Other tests are being conducted in boreholes to understand how water moves through the mountain, to gather rock quality and stratigraphic data. The boreholes are of varying depths, going as deep s 1,897.1 feet borehole (SD-7). Work also continues in shallow trenches and through monitoring of extensive instrument networks to understand seismic hazards.

During 1995 the Department of Energy explored the use of multi-purpose canisters for storage, transport and disposal of commercial spent nuclear fuel. Westinghouse Electronic Corporation has been awarded a contract to develop a multi purpose canister system.

Low-Level Radioactive Waste

The most important national low-level radioactive waste news during 1995 was the reopening of the Barnwell, SC disposal site. On July 1, 1995 access to the low-level radioactive waste disposal site at Barnwell, SC was reopened to Maine generators. Access to the Barnwell facility came after the South Carolina legislature voted to leave the Southeast Compact in the spring of 1995. Once departed from the Southeast Compact, South Carolina reopened access to Barnwell to all States and Compact regions, except North Carolina.

The other low-level radioactive waste disposal option is Envirocare of Utah. Envirocare is not licensed to accept as broad a range of low-level waste classifications as Barnwell is, but is generally more economical than Barnwell for the waste classifications that they can receive. Envirocare specializes in bulk shipments of low specific activity (LSA) waste. This classification of low-level radioactive waste is often encountered in the decommissioning of facilities that once used loose radioactive material for some industrial purpose. An example of this is the material excavated from the former Loring Air Force base in Limestone.

Thus far, most of Maine's low-level radioactive waste generators continue to store waste on site. This is the case throughout the nation. However, Maine Yankee nuclear power plant in Wiscasset (Maine's largest generator by volume and radioactivity) has disposed of most of its low-level radioactive waste inventory at Barnwell.

Low-Level Waste Facility Decommissioning

Cleanup of a low-level waste disposal site was completed at the former Loring AFB. The site, discovered during the base closure process, contained small quantities of weakly radioactive material associated with the maintenance of first generation nuclear weapons. The material was distributed diffusely in a small number of discrete trenches of compacted earth. The trenches were dug up in late 1994, generating 19.5 rail cars of waste. All material originating from the trenches was shipped to Envirocare and disposed of as radioactive waste. Underground storage tanks in near to the trenches were also removed. These were later determined to not be contaminated. During early 1995, the emptied trenches were confirmed clean of radioactive contamination and backfilled.

The other decommissioning activity within Maine during 1995 is at Philips Elmet in Lewiston. Philips Elemet is an operating lighting-filament manufacturing plant. The plant once had a process line which used natural thorium bearing materials. The floors of the process line are constructed of concrete which is now contaminated. The waste is generally Class A, LSA, and will likely be disposed with lowest cost at Envirocare of Utah. Philips Elmet has contracted with Scientific Ecology Group of Oak Ridge, TN, to remediate the process line. The total quantity of waste that will be generated from the clean-up is not yet known, but the work should be completed within the next year to two year time frame.

Texas Compact

Under the 1985 Low-Level Waste Policy and Amendments Act (the act), individual states were to take responsibility for the disposal of low-level radioactive waste generated within its borders. The act also gave states the option of entering into Compacts with other states to manage waste. The incentives for forming a with other states include removing a need for each individual state to produce a disposal site, and legal protections from accepting out of compact waste for disposal.

On November 2, 1993, State of Maine voters elected to join the Texas Low-Level Radioactive Waste Disposal Compact. This action has drastically changed the State's approach to low-level radioactive waste management, eliminating the need for an in-state siting effort. Accordingly, the Maine Low-Level Radioactive Waste Disposal Authority (the State agency charged with siting a disposal facility) was abolished in 1994. The Compact, which includes the states of Maine, Texas and Vermont has been

approved by all three State governments. The final and only remaining step in becoming an official Compact is Congressional approval.

Compact Status

Contrary to media reports, the Texas Compact was not *defeated* in the House of Representatives by the September 18 vote, instead, it was a vote on whether or not the compact consent legislation (H.R. 558) should be debated prior to a vote. More recently (December 19), a resolution (H. Res. 313) was passed by the House rules committee, setting aside one hour of debate prior to a vote.

The Compact will likely be placed high on the House agenda once budgetary issues are resolved. The Texas Compact (comprising the States of Maine, Texas and Vermont) has been approved by all three State Governments. Congress has also approved 9 similar low-level radioactive waste compacts since the 1985 Low-Level Radioactive waste policy amendments act introduced the concept.

Objections to the compact legislation have generally been site related. Concerns about the proximity to Mexico and alleged earthquake proness of the Hudspeth county site are being voiced by Compact opponents. Compact opponents have also addressed concerns over the possibility of accepting out-of-compact waste. A magnitude 5.6 earthquake struck in Alpine, Texas (about 100 miles southeast of the proposed site) during 1995. Prior to the recent seismic activity, the site specifications included earthquake resistance, the site is engineered to withstand a magnitude 6.0 earthquake with an epicenter at the waste site.

Texas Site Licensing Progress

Operating independently of the Compact's status, the State of Texas is making headway in licensing its' proposed low-level radioactive waste disposal facility in Hudspeth County. The 14th revision to the license application was submitted to the Texas Natural Resources Conservation on December 15, 1995. The license review is described as 89% complete. Construction could begin in 1996.

Low-Level Radioactive Waste Generation

The 1995 annual low-level waste survey collected data from some 130 radioactive materials licensees, of these 8 reported back that they had generated low-level radioactive waste that would eventually require permanent disposal during 1994. The total volume of low-level radioactive waste generated within Maine during 1994 requiring disposal was 7,950 cubic feet. The radioactivity of this waste was 5.06 Curies. 1994 was somewhat below recent annual averages.

Chart A Volume Distribution

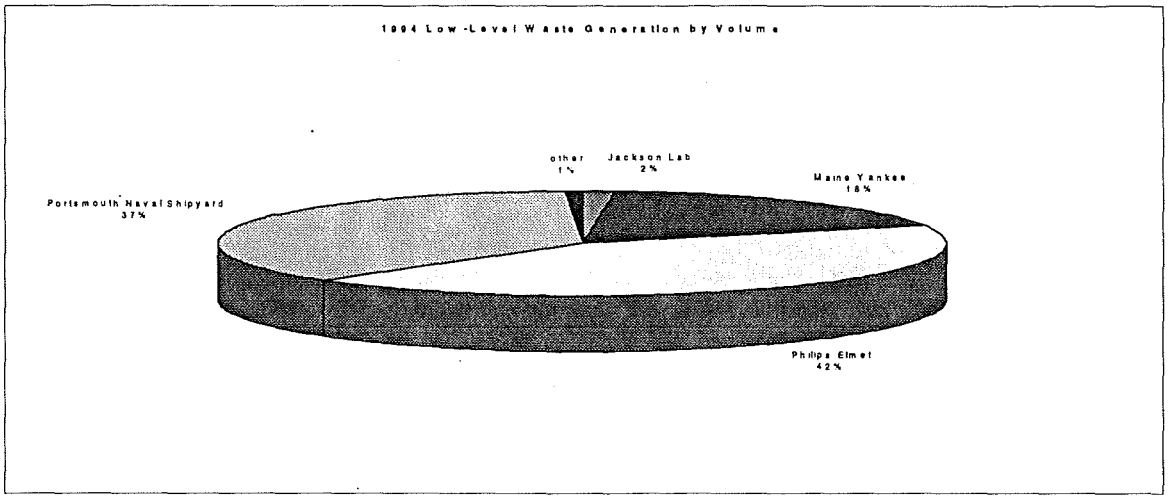
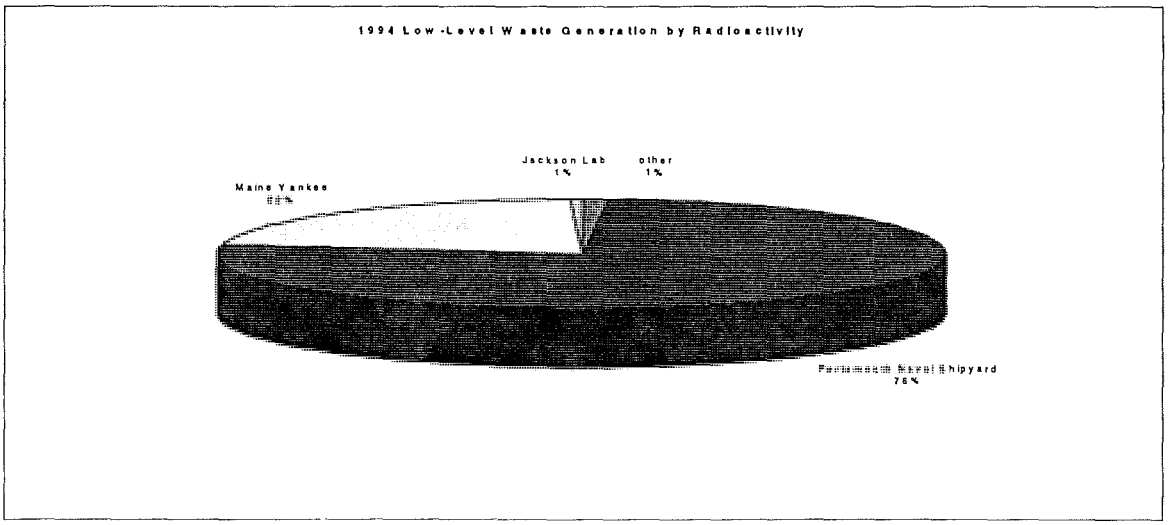


Chart B Radioactivity Distribution



F. Three Senators, appointed by the President of the Senate, 2 belonging to the political party holding the largest number of seats in the Senate and one belonging to the political party holding the second largest number of seats in the Senate;

G. Three members of the House of Representatives, appointed by the Speaker of the House of Representatives, 2 belonging to the political party holding the largest number of seats in the House of Representatives and one belonging to the political party holding the second largest number of seats in the House of Representatives; and

H. Four members of the general public with a knowledge of and interest in the management of radioactive materials and radioactive waste, 2 of whom are appointed by the Governor, one of whom is appointed by the President of the Senate and one of whom is appointed by the Speaker of the House or Representatives.

APPENDIX D

TEXAS LOW-LEVEL RADIOACTIVE WASTE DISPOSAL COMPACT