UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

July 27, 1981

Docket No. 50-29

TO: Attendees of the Public Meeting Held on May 20, 1981 Concerning Yankee-Rowe

SUBJECT: ANSWERS TO QUESTIONS ASKED DURING AND AFTER MEETING

On May 20, 1981, a public meeting was held in Shelburne Falls, Massachusetts to answer questions and accept comments from members of the public concerning the licensing and operation of the Yankee Nuclear Power Station (Yankee-Rowe). Several questions were asked which could not be answered by the NRC staff members who participated in the meeting and a large number of written questions were provided at the conclusion of the meeting.

The enclosure to this letter provides responses to these questions.

Copies of this letter are being sent to everyone who attended the meeting and indicated a desire to receive followup information. I want to thank you for attending the meeting and for the fair and responsible manner in which you all asked your questions and presented comments. I hope that both the meeting and this letter are responsive to your concerns.

Sincerely

Robert A. Purple, Deputy Director
Division of Licensing

Enclosure:
Questions asked at Public Meeting

cc w/enclosure:
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cc
Mr. James E. Tribble, President
Yankee Atomic Electric Company
25 Research Drive
Westborough, Massachusetts 01581

Greenfield Community College
1 College Drive
Greenfield, Massachusetts 01301

Chairman
Board of Selectmen
Town of Rowe
Rowe, Massachusetts 01367

Energy Facilities Siting Council
14th Floor
One Ashburton Place
Boston, Massachusetts 02108

U. S. Environmental Protection
Agency
Region I Office
ATTN: EIS COORDINATOR
JFK Federal Building
Boston, Massachusetts 02203

Resident Inspector
Yankee Rowe Nuclear Power Station
c/o U.S. NRC
Post Office Box 28
Monroe Bridge, Massachusetts 01350

Mr. James A. Kay
Senior Engineer-Licensing
Yankee Atomic Electric Company
1671 Worcester Road
Framingham, Massachusetts 01701

Doug Wilson
Box 273
Rowe, Massachusetts 01367

Prudence Berry
Kings Highway Road
Rowe, Massachusetts 01367

Sally Bahnsen
42 Crest Street
N. Adams, Massachusetts 01247

Michael Colton
P. O. Box 141
Charlemont, Massachusetts 01339

Diane Parsons
56 Highland Avenue
N. Adams, Massachusetts 01247

Sharon Tracy
37 Ferry Road
Turners Falls, Massachusetts 01376

County Dorsey
94 N. Levenett Road
Levenett, Massachusetts 01054

Charles H. Milles
Rowe Road
Heath, Massachusetts 01346

Rob Okun
RD #1, Box 219
Montague, Massachusetts 01351

New Roots Magazine
P. O. Box 548
Greenfield, Massachusetts 01302

Kathleen Becker
Wolcott Road
Southampton, Massachusetts 01104

Kate Schmitt
P. O. Box 401
Greenfield, Massachusetts 01302

Judith & James FitzGerald
54 Lindley Terrace
Williamston, Massachusetts 01267

Ben Hertzig
186 Oblong Road
Williamstown, Massachusetts 01267

Ann Conyngham
RFD #1 - Hawley Road
Charlemont, Massachusetts 01339

Val Bouchard
Basin Brim
Vernon, Vermont 05354

Ross Keller
32 S. Street
Williamston, Massachusetts 01267

Ronald Shippie
RFD #1 Box 530
Shelburne Falls, Massachusetts 01370

Tom Patti
Maple Street
Plainfield, Massachusetts 01070

Fred Homer
Leshure Road
Rowe, Massachusetts 01367

Randy Kehler
RFD #1 Box 162D
Colrain, Massachusetts 01340

Kenneth M. Kipen
Box 42
Ashfield, Massachusetts 01330

Harriet Brickman
Legate Hill Road
Charlemont, Massachusetts 01339

Melon Ottesen
65 Main Street
Haydenville, Massachusetts 01039

Rosalie Anders
90 Summer Street
Williamstown, Massachusetts 01267

Richard Parmett
Elm Street
Shelburne Falls, Massachusetts 01370

William A. Norris
LLD, 25 Main Street
Northampton, Massachusetts 01060

Thomas A. Wilson, D. D. S.
105 Main Street
Shelburne Falls, Massachusetts 01370

Paul Newlin
425 Main Street
Courthouse
Greenfield, Massachusetts 01303

Jack Conyngham
Box 42 South Road
Marlboro, Vermont 05344

Jack Conyngham
RFD #1, Hawley Road
Charlemont, Massachusetts 01339

John Lynn
R. N. 41 Clement Street
Shelburne Falls, Massachusetts 01370

Bruce Berlin
28 High Street
Greenfield, Massachusetts 01301

Eric C. Bennett
101 Upton Street
Grafton, Massachusetts 01519

Jim Ennis
Shepard Road
Charlemont, Massachusetts 01339

Marry S. Merselis
153 Hancock Road
Williamstown, Massachusetts 01267

F. Scarborough
149 Oblong Road
Williamstown, Massachusetts 01267

Conny Lewis
Kitchen Garden
Charlemont, Massachusetts 01339

Mary Scott
Box U
Charlemont, Massachusetts 01339

Ruth Black
Burns Hill Road
Shelburne, Massachusetts 01370

John Eusden
Forrest Road
Williamstown, Massachusetts 01267

Robert K. Buckwalter
56 Woterman Road
Williamstown, Massachusetts 01267

Sam Daghersky
Box 268
Conway, Massachusetts 01341

Carol Sartz
Burrington Road
Heath, Massachusetts 01346

Bill Flynn Singer
37 Edmund Street
Adams, Massachusetts 01220

Al Giordano
Box 275
Charlemont, Massachusetts 01339

Cyndi, Michael & Kylan Mandile
Hart Road
Conway, Massachusetts 01341

Sara Sioux
Box 63
Wendell, Massachusetts 01379

William Bichford
c/o Common Goods
24 Miles Street
Greenfield, Massachusetts 01301

Julia Burrough
266 Pelham Road
Amherst, Massachusetts 01002

Flo Newman
266 Pelham Road
Amherst, Massachusetts 01002

Sherry Malena Zitter
135 S. Silver Lane
Sunderland, Massachusetts 01375

Ernest Chatfield
Dungarvin Drive
Shelburne Falls, Massachusetts 01370

Richard Aron
Potters Road
Charlemont, Massachusetts 01339

Bert Hardwick
North Street
Plainfield, Massachusetts 01070

James O'Barr
Woolman Hill
Deerfield, Massachusetts 01342

Meryl Kastin
Plunkett Avenue
Hinsdale, Massachusetts 01235

Amy Dimassimo
Hawley Road
Charlemont, Massachusetts 01339

Ka Schmidt
Hawley Road
Charlemont, Massachusetts 01339

Pat Chandler
Box 207
Ashfield, Massachusetts 01330

Paul & Kathy Cohen
Box 352
Ashfield, Massachusetts 01330

Abbot Cutles
RFD 1, Box 528
Shelburne Falls, Massachusetts 01370

P. Nist
Stow Road
Harvard, Massachusetts 01451

Marcia Weld
Coombs Hill Road 1
Colrain, Massachusetts 01340

Ben Eaton
528 Leejden Road
Greenfield, Massachusetts 01301

Bob Shone
244 Harvard Road
Stow, Massachusetts 01775

Scalise
Charlemont Road
Charlemont, Massachusetts 01339

Ed May
Cross Road
Rowe, Massachusetts 01367

Alice & Michael Kane
Box 30
Charlemont, Massachusetts 01339

David Gould
Wilde Road
Shelburne Falls, Massachusetts 01370

Leo T. Baldwin
R. R. 1 Box 122A
Colrain, Massachusetts 01340

Bambi Miller
Box 273
Charlemont, Massachusetts 01339

William A. Norris
25 Main Street
Northampton, Massachusetts 01060

Chet Kubik
15 Fruit Street
Holliston, Massachusetts 01746

Loring Wells
Box 21
Shutesbury, Massachusetts 01072

James FitzGerald
322 Dewey Street
Bennington, Vermont 05201

Nancy M. Martin
93 Garden Street
West Newbury, Massachusetts 01985

Andy Ferguson
Box 614
Greenfield, Massachusetts 01302

Roger Caples
11 Meadow Street
Northfield, Massachusetts 01360

Luci Rollinson
Windy Hill Heath Stage
Shelburne Falls, Massachusetts 01370

Lochwood Reed
Rowe, Massachusetts 01367

Susan Leehey
48 Bellvue Road
Swampscott, Massachusetts 01907

Jeffrey Farrgu
RFD #1
Shelburne Falls, Massachusetts 01370

David Boles
36 Phyllis Lane
Greenfield, Massachusetts 01301

Malcolm Quint
260 River Drive
Hadley, Massachusetts 01035

Linda May Vaslet
c/o P. Cutling
Jacksonville Stage Road
Guilford, Vermont 05301

Bayard Austin
240 Warren Street
Brookline, Massachusetts 02146

Katie Hallben
Lithia Road
Ashfield, Massachusetts 01330

Barbara Levy
Patten Road
Shelburne, Massachusetts 01370

Sarah Purtle
Box 189
Whately, Massachusetts 01093

Betty Fradkin
124 Summer St.
Pittsfield, Massachusetts 01201

ENCLOSURE

QUESTIONS ASKED AT PUBLIC MEETING

ON MAY 20, 1981 CONCERNING YANKEE-ROWE

1. Was it not announced at the beginning of the plant's life that its life expectancy was twenty years?

No. The construction permit for Yankee-Rowe was issued on November 4, 1957. A provisional operating license was issued on July 14, 1960, and a full-term operating license was issued on June 23, 1961. The full-term license, which is still in effect, expires on November 4, 1997, forty years after the date of issue of the original construction permit. We know of no announcement or document which states that the design lifetime of the plant is twenty years.

2. Are the recent accidents at Yankee Atomic related to the age of the plant?

Yankee-Rowe experienced extensive damage to its turbine in February 1980. We do not consider that this is a sign that the plant as a whole is wearing out or that it is dangerous because of its age. As with any complex machine, over time individual components may fail unexpectedly. This is a normal process which is anticipated and considered in the design of the plant. At the start of the useful life of a complex machine or power plant, failures will be more numerous because the plant is bound to have "bugs" which are gradually worked out. Then follows a long period of relatively few failures, which could be considered to be the actual useful life of the plant. Near the end of life, the number of problems rises, first gradually, then more rapidly, until the cost of maintaining and repairing the facility exceeds its usefulness.

The NRC carefully reviews reports of equipment failures at nuclear power plants in an attempt to detect trends which could indicate plant-wide problems or generic problems among several plants of the same type. To date we have not seen such a trend at Yankee-Rowe. We think we have the capability to detect such a trend if it were to occur and if we do detect one over a short period of time we would certainly act promptly to continue to assure the public health and safety.

3. Can we be assured that there will not be more accidents when the plant attempts to reopen this fall?

4. Will the company guarantee that there will be no more accidents?

Neither the NRC, nor Yankee Atomic Electric Company, nor anyone can guarantee that no accidents or equipment failures will ever occur anywhere, including at Yankee-Rowe. The plant is designed with redundant systems and is maintained and operated in accordance with applicable regulations to minimize the risk to members of the public from both the normal operation and the effects of various accidents.

5. As the plant gets older, doesn't the physical structure become itself radioactive? Is it true that the plant is considered radioactive waste when decommissioned, and must be dealt with as such?

Over the life of a nuclear power plant, many components become radioactive. Some, in the vicinity of the reactor core itself, become activated by the neutron flux produced by the core. Other parts, mostly piping and other fluid system components, become contaminated on their surfaces with radioactive material. This radioactive contamination may originate from non-radioactive impurities dissolved in the reactor coolant system which are activated as they pass through the neutron flux in the core or they may originate as products of the fission process. When a facility is decommissioned, parts that have become activated are disposed of as radioactive waste. Components which are contaminated may be cleaned up (decontaminated) and handled as non-radioactive, provided the amounts of radioactive material contained in them after decontamination are within the acceptable levels set forth in the NRC regulations. Otherwise, the parts would be disposed of as radioactive waste.

6. Is is true that the combined stresses of intense heat and nuclear radiation cause deterioration of the reactor core, its immediate containment, and other physical systems, such as steam pipes; that this deterioration is also a function of the age of the plant; and that potentially dangerous effects of this deterioration can go undetected by even the most sophisticated monitoring equipment?

The effects of heat and radiation on the properties of the materials used in nuclear reactors are well known, and the materials which are used are chosen because they have favorable properties under the conditions which are expected to be encountered. Components in the reactor core itself, such as the fuel rods, do change over time. The steam piping and most other components at Yankee-Rowe are not affected by the relatively low radiation fields in which they are located.

However, the reactor pressure vessel, which holds the reactor core and its surrounding coolant, is subjected to cumulative neutron radiation which results in the metal becoming more brittle over time. This is a well-known phenomenon, which is considered in the design of the plant and in the establishment of operating limits for the reactor. Additionally, the reactor vessel and attached piping, along with other piping essential to safety, is regularly inspected for flaws in accordance with test procedures established by the American Society of Mechanical Engineers and approved by the NRC.

The operating limits on pressure and temperature which are established for the reactor take into account in a conservative fashion the size of the flaws which cannot be detected by this periodic testing. In this way, reasonable assurance is provided that important components will not experience gross failure during operation. Unacceptable flaws which are discovered as a result of periodic testing must be evaluated and repaired as appropriate prior to the plant returning to operation.

7. Should Yankee Atomic have a future, will there be time set aside for more frequent shutdowns, allowing for the increased maintenance and repair appropriate to a twenty year old nuclear plant?

The inspection frequencies required by the NRC are evaluated against the results of previous inspections. The normal inspection frequencies are established based on the collective experience of many engineers and many tests of operating equipment. When the data from a particular test indicate that wear or deterioration of a component is proceeding at a rate faster than expected, then the inspection frequency can be, and usually is, increased, until the cause of the unexpected wear can be determined and corrected.

8. How can the public be assured that Yankee-Rowe's claim of "twenty years of safe operation" is true when the first 12 years of the plant's reportable occurrence file are missing? Why was the plant shut down for lengthy periods during those years? Why are the files missing?

The local public document room (PDR) for Yankee-Rowe is located in the Greenfield Community College Library, in Greenfield, Massachusetts. This LPDR was established in 1975 and now contains paper hard-copies of all documents, with the exception of physical security information, back to 1975. It also has microfilm copies of all correspondence and publicly docketed material (except physical security information) back to 1955. The LPDR is open to the public Monday - Thursday, 8 a.m. to 10 p.m., Friday, 8 a.m. to 5 p.m. and Sunday, 2 to 10 p.m.

With regard to the abnormal occurrence file, the LPDR has copies of all abnormal occurrences back to 1965. Prior to that, the plant was required to report problems in its annual or semiannual operating reports, all of which are also available in the LPDR. We are aware of no missing files.

During the first few years of its life, Yankee shut down several times for normal refuelings. These outages lasted several months. Additionally, because this was the first commercial pressurized water reactor to be constructed, testing of components and systems was bound to show up problems which needed to be resolved. We do not consider these shutdowns to be of any significant adverse consequences, but rather they are typical in the startup of any new complex facility or technology.

9. Why will this 186 magawatt power plant only produce 155 megawatts, when and if it goes on line again? Will it even produce that much?

After the failure and repair of the turbine at Yankee-Rowe in 1980, the plant was limited to approximately 160 MWe, instead of its normal capacity of 185 MWe. This derating occurred because repairs to the turbine required removal of several stages from the low pressure turbine, resulting in a decrease in the turbine's ability to efficiently convert the energy in the steam to mechanical energy. The reactor continued to produce 600 MW of thermal energy. This reduction in turbine efficiency has no effect on the safe operation of the plant. We understand that Yankee has contracted to purchase a new turbine rotor. When this rotor arrives and is installed, the plant will again produce 185 MWe.

10. Why did it take ten months to repair a turbine flaw?

The turbine repairs took 10 months to complete because the repairs involved the removal and handling of large and complex pieces of the turbine, which are custom crafted and cannot be simply replaced with off-the-shelf spares. These repairs involved extensive precision machining, welding and balancing which, because of the size of the components, was a time-consuming effort.

11. Will all plans for decommissioning be made public immediately?

12. Will citizens be given a voice in the important decisions surrounding decommissioning?

13. What will be done with the pieces of the plant after it has been dismantled?

14. Is the N.R.C.'s environmental impact statement, mentioned in the company's letter, the only forum for public involvement in decommissioning Yankee Atomic? If not, what other forums exist? How do we get involved?

15. What is the usual method of decommissioning? Has it ever been practiced on a commercial plant?

All correspondence except physical security information between licensees, such as Yankee Atomic, and the NRC are available for public review in the public document room (PDR) in the NRC headquarters in Washington, and also in local public document rooms (LPDR), such as the one for Yankee-Rowe n the Greenfield Community College Library. When a utility decides to decommission a facility, it is required to submit its plans and schedules to the NRC for review and approval. These plans and all other associated correspondence would be available for public review in the PDR and LPDR during the 9 to 12 month period in which the application is being reviewed. If the application for decommissioning demonstrates that the dismantling of the facility and the disposal of the component parts will be performed in accordance with NRC regulations and will not be inimical to the health and safety of the public, then the Commission will issue an order to proceed, after notice has been given to interested persons. Individuals would have the opportunity to present their views on the proposed decommissioning and would have the opportunity to request a hearing.

The present NRC decommissioning regulations, originally promulgated by the Atomic Energy Commission, are contained in Sections 50.33(f) and 50.82 of 10 CFR Part 50. These regulations require applicants for power reactor operating licenses to furnish the Nuclear Regulatory Commission (NRC) with sufficient information to demonstrate that they can obtain the funds needed to meet both operating costs as well as the estimated costs of permanently shutting down the facility and maintaining it in a safe condition. The development of detailed, specific decommissioning plans for nuclear power plants is not currently required until the licensee seeks to terminate its operating license. Should license termination be desired, Section 50.82 of 10 CFR Part 50 requires that the licensee provide the Commission with information on the proposed procedures for disposal of the radioactive material, decontamination of the site and procedures to assure public safety. Present guidance, as contained in Regulatory Guide 1.86, considers four acceptable alternatives for retirement of nuclear reactors. These include protective storage or mothballing; entombment; removal and dismantli , and conversion to a new nuclear or fossil fuel system. Protective storage or mothballing involves removal of all fuel and source material, the disposal of all liquid and solid waste, and placing the facility under surveillance. Entombment requires similar treatment and, additionally, the radioactive materials and components are encased (usually in concrete) and isolated until they decay to unrestricted levels. Removal and dismantling require that all radioactive structures, components and systems be disposed of such that the site can be released for unrestricted use. Since 1960, five licensed nuclear power reactors, four demonstration reactors, six licensed test reactors, and about fifty research reactors have been shut down using one or another of the techniques listed above.

While the Commission's regulatory guides and regulations embody the NRC's current approa h to reactor decommissioning, initiatives are underway to improve the Comm sion's future decommissioning practices for all nuclear facilities. The NRC staff, recognizing that the current generation of large commerical reactors and supporting nuclear facilities would substantially increase future decommissioning needs, began an in-depth review and re-evaluation of NRC's regulatory approach to decommissioning in 1975. Major technical studies on decommissioning have been initiated at Battelle Northwest Laboratory in order to provide a firm information base on the engineering methodology, radiation risks, and estimated costs of decommissioning l ht water reactors and associated fuel cycle facilities.

The Nuclear Regulatory Commission is now considering development of a more explicit overall policy for nuclear facility decommissioning and amending its regulations to include more specific guidance on decommissioning criteria for production and utilization facility licensees and byproduct, source, and special nuclear material licensees. In March 1978, the NRC released its report, Plan for Reevaluation of NRC Policy on Decommissioning of Nuclear Facilities (NUREG-0436), which set forth in detail the NRC staff plan for the development of an overall agency policy for nuclear facility decommissioning. This plan was updated in December 1978 as NUREG-0436, Revision 1. The purpose of this plan is to assure that the NRC develops a general decommissioning policy; develops the attendant changes for regulations; develops the detailed information for use in licensing decisions for decommissioning; and establishes guidance for facilitation of decommissioning.

16. Employees who work at Yankee and are not pro-nuclear have been intimidated into keeping quiet or even supporting nuclear power for fear of losing their jobs. We do not necessarily accuse the company of this intimidation, but anyone living here knows it is a reality. What steps is Yankee taking to accept constructive criticism from employees?

Part 19 of the Commission's regulations establishes the requirements for notices, instructions and reports by licensees and individual workers in their employ. This part describes actions which can and should be taken by a worker when he discovers any past or present condition which he has reason to believe may have contributed to or caused any violation of the Atomic Energy Act of 1954 (as amended), the regulations of the Commission, or a condition of the license, or which may have caused any unnecessary exposure of an individual to radiation. Workers are required to report such conditions to the licensee for action and may request an inspection of the alleged condition by the NRC's Office of Inspection and Enforcement. The regulations further prohibit a licensee from discharging or in any way discriminating against such employees because [illegible] have filed a complaint or instituted or caused to be instituted any s[illegible] proceeding against the licensee.

Additionally, the Resident Inspectors at licensed power plants are available for private consultations with workers concerning safety matters. Licensees are required to instruct workers of these reporting requirements and must either post them or have them available for review by any worker.

We consider intimidation of workers by licensees to be a very serious offense, and would rigorously pursue any allegations of intimidation or coercion.

17. How much waste is stored at Rowe? How safe is it? For how long?

18. When must Yankee apply for relicensing to store spent fuel?

19. How mucn expansion must be done, and when?

20. Is it true that the present waste storage facilities at Rowe cannot be physically enlarged, and that expansion of waste storage capacity actually means packing spent fuel rods more densely?

21. Is it possible tha a loss of coolant in an over-crowded storage facility could result in a reassembly of fissionable materials capable of producing a nuclear explosion?

At the current time there are 225 spent fuel elements stored in the spent fuel pool at Yankee-Rowe. The spent fuel pool is a water-filled, reinforced concrete structure with walls approximately 4 to 6 feet thick. The water serves to remove decay heat from the spent fuel elements and also as shielding for workers in the area at the top of the pool. The water is pumped from the pool through filters and heat exchangers and back to the pool in a closed cycle. Heat is removed in the heat exchanger by water from an intermediate system which gives up its heat in another heat exchanger to water from Sherman Pond. The three water streams are physically separated and do not come into contact, and the water in the pool is not discharged to Sherman Pond. There is some slight evaporation of the water in the pool and makeup for this evaporation is from the plant's pure water system.

Fuel assemblies used to generate heat in the reactor have a finite life and must be replaced periodically due principally to depletion of fissile fuel material and accumulation of fission products. In the past, electric utilities planning to construct and operate light water nuclear power reactors contemplated that the used or spent fuel discharged from the reactors would be chemically reprocessed to recover the residual quantities of fissile and fertile materials (uranium and plutonium), to be recycled back into fresh reactor fuel. It was also contemplated that spent fuel would be discharged periodically from operating reactors, stored in onsite fuel storage pools for a period of time and periodically shipped offsite for reprocessing. Typically, space was provided in onsite storage pools for about 1-1/3 full nuclear reactor cores. Assuming a 3 to 4 year reactor fuel reload cycle, the onsite storage pools were planned to hold an average of one year's discharge with sufficient remaining capacity to hold a complete core should unloading of all of the fuel from the reactor be necessary or desirable for normal maintenance or because of operational difficulties. Under normal operating conditions, about 5 years' spent fuel discharge could be accommodated before the pools were filled.

The early expectation that the reprocessing phase of the fuel cycle would reach a state of successful commercial development never materialized. For a time one such facility actually operated, the Nuclear Fuel Services (NFS) plant at West Valley, New York. However, after a shutdown for extensive alterations and expansion in 1976, the conclusion was reached that these changes were commercially impractical and the facility was not reopened for reprocessing. A second facility, the General Electric Company's Midwest Fuel Recovery Plant at Morris, Illinois, has never operated as a reprocessing plant and is now licensed for spent fuel storage only. A third proposed plant, the Allied-General Nuclear Service (AGNS) plant in Barnwell, South Carolina, has been the subject of hearings before the Commission, but a license to operate has not been issued. A geologic repository is expected to be constructed by the Federal Government, and the Commission has supported the position that permanent disposal of spent fuel is a viable fuel cycle alternative.

In March 1978, the NRC released its draft Generic Environmental Impact Statement (GEIS) on Handling and Storage of Spent Light Water Power Reactor Fuel (NUREG-0404). This document projected the magnitude of spent fuel storage capacity through the year 2000 and assessed the environmental impacts associated with the various ways of storing spent fuel. Three bounding alternatives were considered: a reference case utilizing storage technologies to increase at-reactor (AR) and away-from-reactor (AFR) storage capacity; transshipment of spent fuel freely from facilities with full pools to pools with available storage capacity; and ceasing to generate spent fuel by allowing reactor shutdown as storage capacity decreases and using another energy source to generate replacement electrical power, i.e., coal.

The above study concluded that to date the lack of sufficient spent fuel storage capacity at nuclear power plants had been alleviated by redesigning fuel racks and making more efficient use of available pool floor space. This method could increase spent fuel storage capacity by a factor of approximately 2.5. It also concluded that the amount of spent fuel requiring AFR storage would not be great, assuming that the national objective of an operational geologic repository for high-level radioactive waste and possible disposal of spent fuel is not substantially delayed. Both of these alternatives, AR and AFR spent fuel storage methods, were found to be environmentally acceptable, as well as technically and economically feasible. The third alternative, curtailment of the generation of spent fuel by ceasing the operation of existing nuclear power plants when their spent fuel pools become filled, was found to be undesirable and the prohibition of construction of new nuclear plants unnecessary.

On December 29, 1976, Yankee-Rowe was authorized to replace the original spent fuel racks with a newer design which allowed more spent fuel to be stored in the existing pool. The authorized storage limit was raised from 172 to 391 spent fuel elements. On July 13, 1978 Yankee requested permission to again increase the capacity from 391 to 721 fuel elements, which would accommodate all fuel elements expected to be discharged for the remainder of plant life. This would be coupled with improvements to the pool itself, such as the addition of a stainless steel liner to the pool, upgrading the capacity of the cooling and filter system, and the addition of provisions for a temporary divider gate to facilitate future maintenance in the pool.

At this time the modifications to the pool itself have been approved and completed. However, Yankee has not completed its request to change the fuel racks themselves. When they submit this information, which is currently expected this summer, NRC staff will review the proposal to assure that the increase in capacity be done safely and that it will not produce any undue risk to the public health and safety.

The new storage racks increase the capacity of the pool by allowing the spent fuel elements to be placed closer together. The fuel elements are not disassembled into their component fuel rods (approximately 200 rods per fuel element). The design of the new fuel racks includes boron absorbers that ensure that all the fuel will remain sub-critical in any condition whether the pool is dry or filled with water. It is not physically possible for the spent fuel to explode like a nuclear weapon under any conditions.

22. Are employees routinely exposed to more radiation than the general public?

The NRC requires that operating power reactor licensees report data on annual worker doses and doses for all workers who terminate employment with licensees.

Data were received on the occupational doses in 1977 of approximately 100,000 workers in power reactors, industrial radiography, fuel processing and fabrication facilities, and manufacturing and distribution facilities. Of this total group, 85 percent received less than 2 rems; fewer than 1 percent exceeded 5 rems in any 1 year. The average annual dose of these workers who were monitored and had measurable exposures is about 0.65 rem. A study completed by the EPA, using 1975 exposure data for 1,260,000 workers, indicated that the average annual dose for all workers who received a measurable dose was 0.34 rem.

We are all exposed from the moment of conception to ionizing radiation from several sources. Our environment, and even the human body, contains naturally occurring radioactive materials that contribute some of the background radiation we receive. Cosmic radiation originating in space and in the sun contributes additional exposure. The use of X-rays and radioisotopes in medicine and dentistry adds considerably to our population exposure. The table below shows estimated average individual exposure in millirems from natural background and other sources.

U.S. GENERAL POPULATION EXPOSURE ESTIMATES (1978)*

Source	Average Individual Dose (mrem/yr)
Natural background	100
Release of radioactive material by mining, milling, etc.	5
Medical	90
Nuclear weapons development (primarily fallout)	5-8
Nuclear energy	0.28
Consumer products	0.03
Total	~ 200 mrem/yr

*Adapted from a report by the Interagency Task Force on the Health Effects of Ionizing Radiation published by the Department of Health, Education and Welfare.

Thus, the average individual in the general population receives about 0.2 rem of radiation exposure each year from sources that are a part of our natural and man-made environment.

It is therefore evident that power plant workers do generally absorb higher doses of radiation than members of the general public. However, with very few exceptions the doses that are received are well below the NRC limits of 5 rem per year, and the general consensus of radiation specialists as expressed in the recent BEIR III report, is that these limits are conservative and do not substantially increase the risk to the workers' health.

23. Is safety testing of valves still allowed to be made when plants are in operation though it is established that it is only safe to do them during

shutdown and that errors made during testing have led to accidents, including T-M-I?

Testing of certain valves, pumps, motors, and electrical and fluid systems is permitted during plant operation. When a power plant is licensed, Technical Specifications are issued which define the frequency and prerequisite conditions for testing of safety systems. Some systems may be safely tested while the plant is on-line, while other tests may only be safely performed when the plant is shut down. The requirements for each test are established by NRC staff after a careful review of the individual components or systems and their operation.

Testing while at operation does involve some risk of a mistake, but this risk is considered to be much smaller than the risk associated with delaying such testing until regularly scheduled shutdowns, or, alternatively, the risks associated with repeated, frequent shutdowns and startups in order to do the testing.

24. What could we do to convince you to close down Rowe Nuclear Power Plant?

Section 2.206 of the Commission's Rules of Practice provides a means by which individuals may petition for action concerning an unsafe condition which they believe may exist at a licensed facility. Copies of this Section are available at the LPDR in Greenfield. Such petitions should set forth the specific facts that constitute the basis for your request and the action you feel is appropriate.

25. Is $560 million enough to cover the value of businesses, farms and houses in our region?

Under the Price-Anderson Act (Public Law 85-256, as amended, 42 USC 2210) there is a system of private funds and government indemnity totaling up to $560 million to pay public liability claims for personal injury and property damage resulting from a nuclear incident. The Act, which was enacted in 1957, requires licensees of commercial nuclear power plants having a rated capacity of 100,000 electrical kilowatts or more to provide proof to the Nuclear Regulatory Commission that they have financial protection in the form of private nuclear liability insurance, or in some other form approved by the Commission, in an amount equal to the maximum amount of liability insurance available at reasonable cost and on reasonable terms from private sources. That financial protection, presently $520 million, is comprised of primary private nuclear liability insurance of $160 million available from two nuclear liability insurance pools, American Nuclear Insurers (ANI) and Mutual Atomic Energy Liability Underwriters (MAELU), and a secondary retrospective premium insurance layer up to $5 million per reactor per incident but not in excess of $10 million for a single reactor in any year. With 72 commercial reactors operating under this system, the secondary insurance layer totals $360 million.

The difference of $40 million between the financial protection layer of $520 million and the $560 million liability limit is the present government indemnity level. Under the present system, government indemnity will gradually be phased out as more commercial reactors are licensed and licensees participate in the retrospective premium system. At the time the primary and secondary financial protection layers by themselves provide liability coverage of $560 million, government indemnity will be eliminated. Then the liability limit would increase without any cap on the limit in increments of $5 million for each new commercial reactor licensed.

It is not possible to determine a total damage figure for real estate or business that could arise out of an accident at Yankee-Rowe. The type of accident at a reactor would be of significance in calculating these types of damage claims. For example, there were a large number of lawsuits and claims totaling hundreds of millions of dollars filed as a result of the Three Mile Island accident on March 28, 1979. These claims did not allege damage to property resulting from contamination, but were rather for expenses such as temporary living costs, business or other economic losses. The claims for temporary living expenses have already been paid by the nuclear insurance pools. For business and economic losses, an interim Settlement Agreement has been negotiated and agreed to by all parties in the Three Mile Island class action litigation. The U.S. District Court in Harrisburg will hold a public hearing on August 24, 1981 to determine whether the agreement is fair and reasonable.

26. Who is liable after the $560 million gets used up?

As indicated earlier, the Price-Anderson Act limits the liability of all persons to $560 million. Much of the criticism directed at the Act has focused on the limitation of liability provision and the uncertainty as to whether Congress would act to provide adequate compensation to claimants above that limit. Congress has since the inception of the Price-Anderson program stated its intention to assess the situation after a nuclear incident and provide appropriate financial assistance to members of the public above the liability limit. Public Law 94-197, enacted into law in December 1975 included a provision that expressed the assurance on the part of the Congress that it would take whatever further action needed to protect the public in the event of a nuclear incident causing losses greater than the liability limit.

27. Many of us are houseowners, landowners, and business people in the area. Why do all our insurance policies have "fine print" that states we are not covered in a nuclear emergency?

The question of the "nuclear exclusion" in an individual's homeowner's policy has been raised numerous times over the last few years. While the Price-Anderson Act does not prohibit private insurers from offering this type of insurance, the standard fire and property insurance policies have contained the nuclear exclusion since 1959. Our understanding of this exclusion is that the insurers consider that property damage caused by a nuclear accident would be covered by nuclear liability insurance and that coverage for the same property damage should be excluded from the conventional homeowner's policy to avoid duplication of insurance. Thus, if a property owner suffered damage to his property because of a nuclear accident, the compensation would come through nuclear liability insurance or government indemnity as provided under the Price-Anderson Act. The nuclear exclusion question has been studied by a committee of the National Association of Insurance Commissioners. Although hearings have been held to review the exclusion and to examine methods for possibly eliminating it, no recommendations have to our knowledge been made.

28. If a child develops acute leukemia due to a major accident, who will pay for the costs of medical care?

A claimant alleging that a leukemia resulted from a nuclear accident must demonstrate a causal relationship between the accident and the injury. This burden of proof would be the same for nuclear or non-nuclear accidents. In the event that such a causal relationship could be proven, claims could then be paid under the insurance and indemnity scheme established under Price-Anderson.

29. What about defects in parts made by other companies, that are used in the plant?

We assume that this question concerns the Quality Assurance of parts used in nuclear power plants.

Because of the need for protection of public health, safety and the environment, it is necessary to assure that disciplined engineering and responsible management practices are applied to the design, fabrication, construction and operation of nuclear power plants. This is the essence of a good quality assurance (QA) program.

The NRC's quality assurance requirements are contained in Appendix B to Part 50 of Title 10 of the Code of Federal Regulations, "Quality Assurance

Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." These criteria provide a basis upon which the NRC judges the acceptability of QA programs. The criteria of Appendix B apply to all activities affecting safety-related functions of nuclear power plant structures, systems, and components.

NRC has several specific QA responsibilities. First, it has a responsibility for developing the criteria and guides for judging the acceptability of nuclear power plant QA programs. Second, it has a responsibility for reviewing the descriptions of QA programs of the licensee and his principal contractors to assure that sufficient management and program controls are provided. Finally, NRC inspects selected activities to determine that the QA programs are being implemented effectively.

Each NRC licensee is responsible for assuring that his nuclear power plants are built and operated safely and in conformance with the NRC regulations. Licensees also are required to assure that their suppliers meet the applicable NRC criteria. In this respect, the licensee is responsible for functions such as product inspection and nondestructive testing of reactor components, structures, and systems even though he may, on occasion, delegate the actual performance of the activity to another organization.

Furthermore, Part 21 of the NRC regulations requires that suppliers of parts and components used in nuclear power plants must notify the NRC, and the affected licensees, whenever they discover, or have cause to reasonably believe that a defect exists in a component which they have supplied. The purpose of this requirement is to ensure that problems which are discovered in one plant or in one component are disseminated to all potentially affected licensees, so that they can determine if they have the same problem and can correct it.

30. Have any studies been done to compare worst case accidents at above ground plants like YR with those at other reactors that may be on or under ground?

    We know of no such studies.

31. Has there been any statistical survey on livestock in the 10-mile area of TMI to study miscarriages and other abnormalities in the birth cycle and reproductive cycle of animals? What about the reports of defoliation of trees in the path of the radiation? hat about reports of miscarriages and stillbirths for two years before a accident in rabbits and other small game?

    In 1980, the NRC commissioned an investigation into reported problems with plants and animals which may have been related to the operation of and accident at the Three Mile Island Nuclear Power Station. The study was done in coordination with the Pennsylvania Department of Agriculture and the results were reviewed by veterinarians and radiobiologists from Argonne National Laboratory and the U.S. Environmental Protection Agency. The reviewers independently interviewed farmers in the TMI region and prepared independent findings which were incorporated into the final report.

The report concluded that although in some instances not enough data were available for a detailed evaluation to be made, none of the reported problems could be linked to TMI and no general pattern of effects could be seen. A copy of the report, NUREG-0738 (EPA 600/4-80-049), "Investigations of Reported Plant and Animal Health Effects in the Three Mile Island Area," is being sent to the Yankee LPDR in Greenfield.

32. What percentage of the electricity used in Franklin County is generated by YR?

We contacted Yankee-Atomic and they could not provide us with an estimate of electrical usage in Franklin County alone. Electricity produced by Yankee-Rowe goes into the New England Power Pool distribution system and can be used anywhere in the New England area.

33. Are insurance premiums another hidden cost of nuclear power?

The cost of insurance for Yankee-Rowe, whether nuclear liability insurance, fire insurance, or any other type, is a normal cost of doing business. All utilities, in fact all businesses, carry various types of insurance to cover losses to property and liability claims. They are not hidden, but show up on the books of the company as a business expense.

34. How can we be sure that no "Titanic syndrome" occurs in an emergency, where those people connected with the company are informed in time to escape, and the rest of us are left behind?

Nuclear power plant operators are selected and trained in the normal and emergency operation of their facility. The standards used in the selection and training process are designed to provide assurance that the operating personnel (1) will be capable of safely and efficiently operating the facility; (2) will understand the complexities of the plant design; (3) will be capable of properly manipulating the plant controls; and (4) will maintain and repair the plant equipment in an acceptable manner.

Further, they must display and maintain a certain minimum level of maturity and responsibility which is commensurate with the importance of their positions. We are confident that such personnel are sufficiently dedicated so that they will remain at their posts and carry out their responsibilities in the event of an emergency.

These responsibilities include the notification of State and local officials, in accordance with the Emergency Plan, so as to ensure that evacuation or other protective actions can be directed in a timely fashion. Although there is no way we can assure that employees will not independently contact personal friends and relatives in time of an emergency, we are confident that they will carry out their duties to notify the public.

35. Does the company trust the NRC? Should we?

We assume that this question is rhetorical and that no reply is expected.

36. Is anything being done to monitor the health of area residents at present?

Extensive environmental monitoring of air, water, soil, vegetation, garden vegetables, milk and maple syrup has been, and is now being, carried out by Yankee Atomic Electric Company as part of its Operating Technical Specifications. The results of this monitoring is summarized annually in the Company's Annual Radiological Environmental Surveillance Report, copies of which are available in the NRC docket room in Washington, D.C., and in the LPDR in Greenfield, Massachusetts. Typical conclusions of these annual reports are: "In general, the major radionuclides measured in the environmental samples were naturally occurring radionuclides and fallout fission products. There was no significant increase in the offsite environmental radioactivity due to the plant operation."

In addition to these annual reports of environmental measurements, Yankee-Rowe compiles, semiannually, reports of all releases of radioactive effluents made during each half year. These effluent release reports are also available at the public document rooms listed above. From the data in these release reports, from Yankee-Rowe and all other operating nuclear power reactors, an annual summary has been prepared of the total radiation dose commitment to the population surrounding each plant. The most recently published of these summaries (Population Dose Commitments Due to Radioactive Releases from Nuclear Power Plant Sites in 1977; U.S. Nuclear Regulatory Commission Report NUREG/CR-1498, October 1980) shows the total dose commitment for the population surrounding the Yankee-Rowe plant to be 0.20 person-rem. This dose value would not cause any measurable impact on the surrounding population and, therefore, no epidemiologic study of health effects is warranted.

37. Even if comparisons of nuclear radiation to background radiation are accurate, can we justify adding even more radiation to our environment?

The dose received by the public as a result of operation of Yankee-Rowe is so small that it falls within the normal variation of natural background. An individual can vary his background radiation dose more (upward or downward) by changes in house location and types of building materials. It is the responsibility of the NRC and the licensee to assure that releases of radioactive material to the environment remain this low, so as to prevent any undue risk to the health and safety of the public. Congress, in authorizing the development of this technology through the Atomic Energy Act of 1954 (as amended) recognizes that these emissions will occur and that they do contribute a small additional risk to society, but the law does not require that this risk be reduced to zero.

38. Is there any proven rebuttal to the assertion that in 1977 and 1978 we were contaminated by Strontium 90 in our milk, which was released from the plant when it experienced faulty fuel problems? While the company insists that this was due to Chinese bomb fallout, research shows that there was not a bomb test within three months of the readings.

Measurements in 1977 and 1978 of Sr-90 in milk samples, as well as other fission products such as cesium-137, ruthenium-103, cerium-144, zirconium-95, in other types of samples, from the environs of Yankee-Rowe have been recorded and discussed in detail in the Annual Radiological Environmental Surveillance Reports described in 36 above. These reports present a detailed rationale for assigning the Sr-90 to fallout from Chinese explosions. EPA studies published in Science, Volume 200, pages 44-46, 1978, show extensive deposition of such weapons fallout throughout the United States. Radioactive fallout from nuclear explosions does not deposit all at once but will gradually deposit as it circles the earth time and again. Similarly, unlike the 8-day radioiodine that will decay away in several months, the long-lived Sr-90 will retain its original radioactivity and unless it is disturbed by chemical or physical means will remain for months.

With respect to the fuel problems in 1977 and 1978 at Yankee-Rowe, as best we can determine there were no off-site releases of radioactivity in excess of allowable limits. We are quite certain that the observed Sr-90 levels did not come from the defective fuel elements.

39. What are the effects of radiation on our health? What about the cumulative effects of radioactive material building up over time?

The effects of radiation on our health are discussed in detail in the recent BEIR III Report. The effects of radiation are cumulative with time -- indeed, health dose limits for radiation are often discussed in terms of a "life time" dose.

The effects of added radiation must be kept in perspective, however. For example, the EPA dosage studies on the Chinese weapons tests reported in

Science above state that the dosage effects from the Sr-90-milk-bone pathway is about 10 times smaller than the effects of the iodine-milk-thyroid pathway. Yet even for this "larger" iodine pathway EPA calculates that 4 excess thyroid cancers will occur during the next 45 years throughout the entire United States population of more than 220,000,000 persons as a result of the Chinese test, but these 4 cases will be masked by the 380,000 cases of thyroid cancer expected to occur in the United States population from all causes during this same interval. For the radiation given off by the effluents released by Yankee-Rowe in 1976 the dosage effects are many thousands of times smaller than those calculated for the iodine-milk-thyroid pathway above and the resulting potential thyroid cancers are similarly many thousands of times fewer.

Thus, though the effects of the several cycles of fallout fission products detected in the environs of Yankee-Rowe and of the radiation from effluents released by Yankee-Rowe are additive, the total of these effects is still very small.

40. Please explain precisely how future radioactive waste will be stored.

As long as there is no reprocessing of spent fuel from nuclear power plants, all commercial high-level waste will be contained in the spent fuel stored in reactor spent fuel storage facilities licensed under 10 CFR Part 50 or independent spent fuel storage installations licensed under 10 CFR Part 72 of Nuclear Regulatory Commission (NRC) regulations. Within the next 25 years, the Department of Energy (DOE) expects to have in operation a geologic repository for permanent disposal of commercial high-level radioactive wastes and/or spent fuel.

Low-level radioactive wastes (LLW) generated at commercial power plants will continue to be stored temporarily at reactor sites and transferred to licensed disposal sites.

41. Is it not true that reprocessing is currently illegal in the United States, one of the reasons being that a reprocessing plant, unlike a normal nuclear plant, can explode like an atomic bomb?

It is not true that reprocessing is currently illegal in the United States or that a reprocessing plant can explode like an atomic bomb. The Department of Energy has contractor-operated reprocessing facilities in South Carolina, Idaho and Washington (the Washington reprocessing plant is now shut down) which operated 25 years or more without serious incident, reprocessing fuels for the Department of Defense. During the Carter Administration, there was a national policy (not a law) deferring commercial reactor fuel reprocessing for an indefinite period. Under the Reagan Administration this policy has been changed, and President Reagan has requested the Secretary of Energy to "develop recommendations for my further review on how to create a more favorable climate for private reprocessing efforts." To date there have been no expressions of interest in obtaining a license for private reprocessing operations.

42. What is the difference between high-level and low-level waste? Is low-level waste necessarily less dangerous than high-level? Why?

High-level waste, or HLW, is defined in NRC regulations (10 CFR Part 60) as (1) irradiated reactor fuel, (2) liquid wastes resulting from the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted. These wastes characteristically have high concentrations of fission products resulting from the fissioning of fuel in a nuclear reactor. The wastes also emit very high levels of radiation and typically must be cooled to remove excess heat.

High-level waste also contains heavier-than-uranium, or "transuranic," elements, many of which require extremely long periods to decay to safe levels. Because transuranic waste, or TRU, can be produced separately from HLW, it is considered a separate category of waste, though NRC would require compliance with the same rules as high-level waste if TRU were disposed of in a geologic repository. TRU is defined in our 10 CFR Part 60 regulation as radioactive waste containing alpha-emitting transuranic elements with radioactive half-lives greater than one year in quantities greater than 10 nanocuries, or billionths of a curie, per gram.

Low-level waste, or LLW, has been considered as all other radioactive waste that is not high-level waste, transuranic waste, or the by-product material from uranium recovery operations. While low-level waste generated at a nuclear power plant would contain many of the same radionuclides as high-level waste, the concentrations are many times lower. The radiation associated with LLW is usually much lower, there typically is no problem with heat, and it contains extremely small concentrations of long-lived radionuclides -- less than ten billionths of a curie of TRU per gram, for example. As a result, the precautions necessary for handling LLW are tyipcally much less than for HLW or TRU. This is to say that, yes, low-level waste is necessarily less dangerous than high-level waste.

Because the difference between LLW and HLW is defined principally in terms of the process that produced it, it does not take account of differences within the category of low-level waste. Defining a low-level waste in this way therefore does not necessarily determine how it will be managed. Most of the waste from the decontamination of the damaged reactor at Three Mile Island, for example, would fit the definition of low-level waste, but NRC considers some of it to contain too much concentrated long-lived radioactivity to be disposed of by shallow-land burial, the typical method for LLW. This more hazardous low-level waste will have to be disposed of by more stringent means. NRC is currently developing low-level waste regulations to provide a system for determining the most appropriate disposal methods for different wastes according to their radiological characteristics.

43. How long will spent fuel remain in the pool at Rowe?

At its present reactor basin capacity, Yankee-Rowe will fill its basin in 1985. However, application has been made to rerack the basin in a double tier configuration. If this application is approved, then sufficient basin capacity will be available through the expiration date of the plant operating license (OL), November 1997. The Department of Energy (DOE) expects to begin operating a geologic repository within the next 25 years.

Also, DOE has under the new Administration expressed a positive attitude toward private commercial reprocessing.

Currently, the Nuclear Regulatory Commission is conducting a generic Waste Confidence Rulemaking Proceeding to evaluate the technical basis for assurance that radioactive waste can be safely disposed of, to determine when such disposal or off-site storage will be available, and to determine whether radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available. The Commission has not completed its proceeding and made its assessment.

44. How is nuclear waste transported? What roads does the Yankee Atomic waste take? How many shipments are there each year?

Nuclear waste from the Yankee-Rowe facility is normally transported by truck. However, spent fuel from Yankee-Rowe is stored at the plant site, so there are no high-level waste shipments from the plant.

The routing of nuclear waste material is a matter between the Department of Transportation, the shipper and the carrier. In the case of spent fuel shipments, the NRC would issue route approval in accordance with 10 CFR 73.37, but there are no shipments of this type from Yankee-Rowe. Regulations do not require that the NRC be notified of low-level waste shipments, and we have no record of the number of shipments of this type.

45. Is there a solution to the problems of safe, long-term storage of radioactive waste?

The industry, DOE, and NRC have had considerable experience in low-level waste (LLW) disposal and believe that current technology is capable of providing adequate safety during long-term storage. Recognizing this consensus, Congress enacted the Low Level Radioactive Waste Policy Act of 1980, containing provisions for the states to form regional compacts and develop new low-level waste burial sites. This legislation is intended to ensure that sufficient LLW burial capacity is available.

While the Commission understands that the majority of the scientific and technical community believe that the safe permanent disposal of high-level radioactive waste (HLW) in mined geologic repositories is feasible, experts have also expressed reservations concerning uncertainties in the current understanding of some earth science processes, uncertainties associated with the available data, and uncertainties in our ability to predict future events. These are some of the reasons the Commission is conducting a generic rulemaking proceeding to reassess its degree of confidence that radioactive wastes produced by nuclear facilities will be safely disposed of, to determine when such disposal will be available, and whether such wastes can be safely stored until they are disposed of. This proceeding was announced in the Federal Register in late 1979 (44 FR 61372, October 25, 1979) and is expected to conclude later this year.

46. What is plutonium? What are its effects on our health?

Plutonium is a heavy metal element, much like uranium. Except for minute quantities recently found in nature, plutonium is artificially produced, formed in nuclear reactors as a result of the nuclear reaction between neutrons and uranium. Beginning with wartime research and production activities in the early 1940s, the United States has made an intensive study of plutonium. As a result, its properties and characteristics are better known today than those of most other elements. The best known property of plutonium is its ability to sustain a nuclear fission chain reaction, so that it can be used as fuel in a nuclear reactor or as explosive material in an atomic bomb. The establishment of a nuclear fission chain reaction requires a certain minimum quantity of plutonium, the "critical mass," and when more than this amount of plutonium is brought together in one place, there is danger that a nuclear chain reaction will start. Under all but the very special -- and difficult to achieve -- conditions of an atomic bomb, the chain reaction will generate a great deal of heat but will not explode like a bomb.

Chemically, plutonium forms very stable oxides which are quite insoluble. Although many chemical compounds are known, the dioxide, PuO_2, is the most common form in nuclear applications. PuO_2 is so stable and insoluble that when it is spread on the ground surface it is taken up into the food chain only to a minor degree. As a consequence, the risks from plutonium ingestion through the food chain are insignificant, even in a contaminated area.

Plutonium has 15 isotopes ranging in atomic mass from 232 to 246. All are radioactive. The most prevalent type of radiation from plutonium is alpha-particle radiation, the same type emitted by uranium. However, plutonium emits from hundreds to hundreds of thousands times as many alpha particles per gram as uranium, depending on which isotopes are being compared. Other radiation from plutonium is comparatively minor in intensity and generally is not considered especially dangerous.

Because alpha particle radiation can be stopped by relatively thin materials -- even by the human skin, external radiation from plutonium generally is not considered hazardous. It is when plutonium is taken into the body, where radiation can reach the tissues and organs of the body with no shielding to stop it, that the biological hazards of plutonium are encountered. Because of its chemical stability and relative insolubility, plutonium which is eaten as a contaminant in foodstuffs is not appreciably absorbed by the body. It passes through relatively quickly, generally without lasting effects. These effects have been discussed in detail recently in the BEIR III Report of the National Academy of Sciences.

When fine particles of plutonium are suspended in the air, as they might be after an explosion or fire involving plutonium, the particles breathed into the lungs can sometimes stay there. In the soft tissues of the lung, alpha particle radiation from plutonium can cause damage, including the development of lung cancer. For this reason, breathing air contaminated with plutonium is considered the greatest biological hazard associated with this material. However, experience over nearly 40 years has shown that when accidents involving plutonium have occurred, plutonium has generally been confined within the building where the accident occurred. Even when it escaped the building, the high density of plutonium has caused the material to settle out within the plant site. Only very minute amounts of plutonium, well below the levels considered hazardous, have ever been detected beyond the boundaries of the site where an accident occurred.

47. What is Strontium 90? What are its effects on our health?

Strontium-90 is one of the most abundant fission products -- the lighter atoms formed when uranium atoms split. Strontium-90 is highly radioactive It is a major component of the radioactive fallout from nuclear weapons testing in air and is one of the factors considered in the international agreement to discontinue such tests.

Strontium is very similar to calcium in its chemical behavior, and, like calcium, is absorbed in bones and teeth when it is ingested. Strontium-90 is readily taken up by plants and animals in the food chain and appears rather quickly in milk supplies. Because so much milk is consumed by growing children, strontium-90 contamination in milk is viewed as especially undesirable. Once absorbed in the bones or teeth, strontium-90 tends to remain fixed for long periods rather than being excreted, and its radiation is damaging to the surrounding tissues and organs of the body.

The health effects of strontium-90 are classified as somatic or genetic. Among the somatic effects -- those affecting the tissues and organs of the body -- cancer is the most frequently observed serious effects. Genetic effects may occur in offspring of those exposed to radiation.

48. Last year, a truck carrying 25 tons of low level nuclear waste from Maine Yankee, nearly crashed on the hairpin turn on the Mohawk Trail in North Adams, when it's brakes overheated. What precautions are taken to prevent this kind of trouble with shipments from Yankee-Rowe?

The mechanical condition of the transport vehicle does not fall under the purview of the NRC. The Federal Motor Carrier Safety Regulations administered by the Federal Highway Administration are applicable.

49. Is Yankee-Rowe required to notify each town in each state along the route of each shipment of radioactive material so that fire department, policy and civil defense personnel can be prepared? If not, why not? Why can't these notifications be made?

Licensees who transport certain quantities of special nuclear material (enriched uranium or plutonium) or spent fuel are required to provide notification of each shipment to the NRC for security reasons. However, they are not presently required to make such notifications for each shipment of radioactive waste.

In response to Public Law 96-295 the Commission published two proposed regulations in the Federal Register (45 FR 81058-81062, December 9, 1980) which would provide for the advance notification to States of transportation of certain types of nuclear wastes and advance notification to Governors concerning shipments of irradiated reactor fuel. The Commission is reviewing the comments made on the proposed regulations and making appropriate changes to them. At the present time, power plants are required by the State to notify officials in Vermont in advance of all shipments of radioactive waste through Vermont. In Massachusetts, utilities have agreed to provide 24-hour notification to the Radiation Control Program of the Massachusetts Department of Health.

50. What impetus has there been in the past year to change the emergency plan?

The NRC issued revised emergency preparedness requirements on August 19, 1980 (45 FR 55403). These required the licensees to implement revised plans that meet the rule by April 1, 1981. The specific criteria used to evaluate the adequacy of the plans is contained in NUREG-0654, FEMA-REP 1, Revision 1, entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980.

This document is available from GPO Sales Program, Division of Technical Information and Document Control, USNRC, Washington, D.C., 20555, and is also available in the LPDR for each nuclear power plant.

51. Who approved the "approved emergency plan" mentioned in the company letter?

In response to revised NRC requirements, the licensee has upgraded the emergency plan that was previously reviewed and approved by the NRC. This updated plan will be reviewed by NRC and an on-site appraisal will be conducted to determine if the plan was adequately implemented. This review and appraisal is tentatively scheduled for late this year.

Copies of the new emergency plan were submitted by the licensee on March 27, 1981 and are available in the LPDR.

52. What is the rationale for the 10 mile radius in emergency evacuation planning? What geographical, topographical and weather conditions are considered in the decision to limit evacuation to the 10 mile radius?

The size of the plume exposure emergency planning zone was established as the result of work of an NRC/EPA Task force. The rationale is described in NUREG-0396, entitled, "Planning Basis For the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978. This document is available from the National Technical Information Service, Springfield, Virginia, 22161, and is also available in all LPDRs.

The size of the plume EPZ (about 10 miles) was based on assumptions relating to postulated accidents involving a 1000 mwe plant (6 times larger than Rowe). Based on these assumptions the following considerations were used in establishing the size of the zone:

a. projected doses from the traditional design basis accidents would not exceed Protective Action Guide levels outside the zone;

b. projected doses from most core melt sequences would not exceed Protective Action Guide levels outside the zone;

c. for the worst core melt sequences, immediate life threatening doses would generally not occur outside the zone;

d. detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

The NRC/EPA Task Force concluded that it would be unlikely that any protective actions for the plume exposure pathway would be required beyond the plume exposure EPZ. Also, the plume exposure EPZ is of sufficient size for actions within this zone to provide for substantial reduction in early severe health effects (injuries or deaths) in the event of a worst case core melt accident.

53. What is the evacuation plan? Please explain how it works.

54. How effective are current plans which in some cases move citizens closer to the plant?

55. What are the criteria for safe, quick evacuation? What is expected to be done to meet these criteria?

56. Will every citizen be notified?

57. How will people, such as farmers and loggers, who may be without the usual means of communication be notified?

58. What about dairy farms? Will farmers have farms to come back to? What provisions have been made for the evacuation of livestock?

59. Why doesn't anyone know exactly what is to happen in case of evacuation?

60. Have the people who will be relied upon to stay behind and facilitate evacuation been notified? Have they given consent? Have they been trained to deal with radiological emergencies? Have they been provided with monitors and protective equipment?

61. On a similar note, what is the validity of evacuating to the Mohawk Trail Regional High School, which sits on the river and wind currents from the plant?

By direction of President Carter on December 7, 1979, the Federal Emergency Management Agency is responsible for review of emergency plans, which include evacuation planning, of State and local authorities in the environs of a nuclear power plant. The NRC works closely with FEMA in this regard. Upon completion of its review, FEMA will present its findings on the adequacy of offsite emergency plans to NRC, and the NRC will then decide what action must be taken.

By a proposed rule issued on June 24, 1980 (45 FR 42341), FEMA establishes the policy that at least one public meeting will be conducted in the vicinity of the nuclear facility to acquaint the public with the State and local plans, answer any questions about the FEMA review of the State and local plans, and to receive suggestions from the public concerning improvement. This meeting will be noticed in local newspapers having the largest circulation in the area on at least two occasions and local radio and TV stations will be notified.

The current proposed FEMA schedule calls for the public meeting for Yankee-Rowe to be coordinated late this year. In addition, the NRC requires that information be disseminated on an annual basis that discusses radiation, contacts for additional information, protective measures (e.g., evacuation routes, sheltering, respiratory protection), and special needs of the handicapped.

The following questions refer to policy decisions made by the licensee and do not lend themselves to reply by the NRC.

62. Why does the company always stress the "equivalent barrels of oil" provided by Yankee power, when there are many other forms of replacement power? Aren't there more practical alternatives than oil? Aren't coal, hydro, wood, solar and wind also energy sources available to the northeast? Is this obsession with barrels of oil a scare tactic?

63. We understand that no definite plans for decommissioning exist. Thank you for informing us. We are, however, asking for <u>all</u> plans, as our letter clearly stated. In other words, what <u>indefinite</u> plans exist?

64. The letter we received states "we hope" to operate the plant at least until 1997. What could prevent the company from operating it that long? Why are the company's plans indefinite?

65. What kind of plant, if any, does the company want to build on the Rowe site after this plant is dismantled?

66. How was the 30 million dollar estimate for decommissioning arrived at? Will you make this study public?

67. Does the company agree with the report by Battelle research labs, a pro-nuclear group, that the costs of decommissioning, waste storage, government subsidized uranium mining, milling, enrichment, and reprocessing add 2.3 cents to each kilowatt-hour produced, tripling the cost of nuclear power?

68. The company has estimated that the cost of decommissioning would amount to 5% over our regular bills, averaged over the twenty year life of the plant. If the plant shut down and the consumer was expected to pay this in one year, wouldn't that make it a 100% rate hike?

69. The company states that it will cost approximately 40 million dollars to replace Yankee's power. How is that figure arrived at?

70. In view of the fact that the New England Electric Grid runs 46% over capacity, do we need to replace Yankee's power, which is only 1%?

71. Will the company make public immediately the studies upon which it bases its assertions?

72. What will happen to the tax base of the town of Rowe once the plant closes?

73. The company states that professionals can get jobs easily in a job market where this demand exists. As the United States, and the world, for that matter, turn away from nuclear power, will there still be this demand?

74. Will employees of the company who are in non-nuclear fields be guaranteed job security?

75. Must our neighbors who work at Yankee move to find other work? Will the company give them priority for local jobs at other non-nuclear plants in the area?

76. Now that the company is on record stating that there is no problem with job security, will the Yankee Atomic Electric Company pledge to stop accusing nuclear critics of trying to take away our neighbors' jobs?

77. Will the Yankee Atomic Electric Company guarantee that Rowe, Ma. will not be used for a New England wide nuclear waste dump?

78. The pilot facility referred to in Yankee Atomic's response ... is it the Waste Isolation Project in New Mexico? If so, is the company aware that the people there do not want it? Can the company in good conscience help to override the concerns of hard-working Americans like us, simply because they are in New Mexico?

79. Will the company guarantee that no reprocessing plant be built in Franklin County or surrounding counties?

80. How was the 3% cost-rise figure for waste storage arrived at? When added on to the 5% for decommissioning, that's 8%. What other hidden costs are there?

81. We are not satisfied with the company's response to our questions on the effects of nuclear radiation on health. We are not talking about normal background radiation from the environment, but about the alpha and beta emitters which are inhaled and/or ingested, which do not occur in nature, and which are solely the products of man-made nuclear reactions. We feel that the company is avoiding the issue by confusing these kinds of radiation. How were the statistics by the company arrived at?

82. Does the company have any present or planned policy to follow up employees' health records?

83. What long or short-term health effects have been observed?