UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON D.C. 20555

November 18, 1993

OFFICE OF THE
SECRETARY

Mr. Fred Katz
Citizens Awareness Network
RR1 Box 83
Shelbourne Falls, Massachusetts 01370

Dear Mr. Katz:

This letter responds to your letter to me dated September 8, 1993. In that letter, you ask for a "hearing on the early Component Removal Project (CRP) at Yankee Rowe." However, as you note in your letter, the NRC held a public meeting near the Yankee Rowe site on June 9, 1993, at which approximately 12 NRC staff and management personnel were present to explain the decommissioning process and to answer questions by members of the public. Your letter does not identify any way in which that meeting was deficient and the NRC believes that it has taken every reasonable effort to inform members of the public of the proposed actions for decommissioning the Yankee Rowe facility.

If you intended your letter to be a request for a formal adjudicatory hearing pursuant to Part 2 of the NRC's regulations, you have failed to identify the proposed action that might be taken by the NRC Staff that requires the offer of an adjudicatory hearing. In addition, there are currently no outstanding notices of proposed actions which contain the offer of an adjudicatory hearing. The Atomic Energy Act gives interested persons the right to request a hearing on license or amendment proceedings, but the NRC cannot grant a hearing unless a particular proceeding is identified.

During the past eight months, the NRC Staff has issued seven (7) amendments to the Yankee Rowe license. Before each amendment was issued, the NRC published a notice of the requested amendment in the Federal Register, announcing the proposed action and offering an adjudicatory hearing regarding the amendment. However, because no person or organization requested a hearing on any of the proposed amendments, no hearings have been held. If the licensee requests additional amendments, the NRC Staff will again publish notice of each proposed amendment, together with an announcement of the opportunity for a hearing regarding that proposed amendment, in the Federal Register.

In addition, you allege that the Commission has violated the rulemaking process by granting the licensee permission to engage in the CRP program. However, 10 C.F.R. §50.12 provides that the

NRC may grant an exemption from an NRC regulation if special circumstances are present and the granting of the exemption does not present an undue risk to the public health and safety. In this case, the NRC has issued six exemptions to the licensee within the last eight months, based upon the "possession only" license and the defueled condition of the plant. Each of the exemptions was announced in the Federal Register and, moreover, prior to issuing one of the exemptions the NRC Staff published an Environmental Assessment of the proposed exemption in the Federal Register. In addition, the NRC Staff is preparing to issue two other exemptions as this letter is being drafted. However, none of these exemptions is either directly or indirectly connected with the CRP project. In any event, the granting of an exemption is a well-recognized legal concept and does not constitute a violation of the rulemaking process.

Finally, the Commission has issued guidance to the NRC Staff interpreting the NRC's decommissioning regulations found in 10 C.F.R. Part 50. I am informed that you received a copy of this guidance as an attachment to a letter from the NRC Staff to the licensee dated March 29, 1993, which was provided to your organization. An additional copy of this guidance is enclosed with this letter.

Under this guidance, NRC licensees may initiate some decommissioning activities prior to approval of an overall decommissioning plan if those activities do not violate either the language or the intent of the Commission's decommissioning rules. More specifically, the licensee may undertake preliminary decommissioning activities that do not (1) foreclose future release of the site for unrestricted use, (2) significantly increase decommissioning costs, (3) cause a significant environmental impact which has not been previously reviewed, or (4) violate the terms of either the existing license or 10 C.F.R. §50.59. In addition, the licensee may use its decommissioning funds for these activities. However, this guidance does not constitute a violation of the rulemaking process because it does not create legal rights or obligations. If you believe that application of this guidance to any particular action at Yankee Rowe will create a safety or environmental problem, please provide us with specific information regarding that potential problem.

In accord with the provisions of this guidance, the NRC Staff has allowed Yankee Rowe to initiate some decommissioning activities prior to approval of the decommissioning plan. This approval was contained in a letter to the licensee dated July 15, 1993, and provided to your organization. In accordance with that approval, the licensee has removed the steam generators, the pressurizer, and some reactor internals from the Yankee Rowe containment and is preparing to ship them to the Barnwell facility in South

Carolina for disposal as low-level waste. This action will remove a significant source of radioactivity from the Yankee Rowe community and significantly reduce the licensee's decommissioning costs.

Finally, the NRC has reviewed the proposed shipment of the steam generators and has issued a Certificate of Compliance and a Safety Evaluation Report approving the shipping package. A copy of the Certificate of Compliance and the Safety Evaluation Report is also enclosed with this letter. In addition, the NRC will be issuing Safety Inspection Report No. 50-29/93-07, describing the removal of the steam generators from the containment structure, in the very near future. That document will be forwarded to you as well as being placed in the Yankee Rowe Local Public Document Room as soon as it is issued.

Sincerely,

Samuel J. Chilk
Secretary of the Commission

Enclosures:
1. Memorandum from Samuel J. Chilk, Secretary, to James M. Taylor, Executive Director for Operations, and William C. Parler, General Counsel (January 14, 1993).

2. Letter from Cass R. Chappell, NRC, to Mr. Jay K. Thayer, Yankee Atomic Electric Company (October 28, 1993), transmitting Certificate of Compliance No. 9256, Revision No. 0, and accompanying Safety Evaluation Report.

cc: Mr. Jay K. Thayer, YAEC

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

OFFICE OF THE
SECRETARY

January 14, 1993

IN RESPONSE, PLEASE
REFER TO: M921124

MEMORANDUM FOR: William C. Parler
General Counsel

James M. Taylor
Executive Director for Operations

FROM: Samuel J. Chilk, Secretary

SUBJECT: STAFF REQUIREMENTS - BRIEFING BY OGC ON REGULATORY ISSUES AND OPTIONS FOR DECOMMISSIONING PROCEEDINGS (SECY-92-382), 10:00 A.M., TUESDAY, NOVEMBER 24, 1992, COMMISSIONERS' CONFERENCE ROOM, ONE WHITE FLINT NORTH, ROCKVILLE, MARYLAND (OPEN TO PUBLIC ATTENDANCE)

The Commission was briefed by the Office of the General Counsel on the lessons learned from the Shoreham decommissioning effort and on the issues and options for handling the decommissioning of power reactors.

Based on this Commission briefing, the Commission has concluded that the staff should continue work on updating Regulatory Guide 1.86. The guidance should address what activities should be permitted prior to approval of a decommissioning plan and address, as well, the availability and use of money from the licensee's decommissioning fund for activities normally associated with decommissioning before approval of the decommissioning plan. Before any generic decisions on the use of decommissioning funds are made, the staff and OGC should provide an analysis and recommendations to the Commission on permitting licensees to use their decommissioning funds for decommissioning activities prior to approval of the decommissioning plans.

Pending final action by the Commission on SECY-92-382, on a case-by-case basis, the staff may implement the following approach with regard to evaluating what activities should be allowed prior to approval of a decommissioning plan:

1. After permanent shutdown of a facility, 10 CFR 50.59 should be applied on the basis of an assumption that the facility will not resume operation, provided that a possession-only-license (POL), a confirmatory shutdown

order, or other legally binding instrument to remove the authorization to operate has been issued by the agency for such facility.

2. Notwithstanding the Commission's statements in footnote 3 of CLI-90-08 and the Statements of Consideration for the decommissioning rules at 53 Federal Register 24025-26, licensees should be allowed to undertake any decommissioning activity (as the term "decommission" is defined in 10 CFR 50.2) that does not -- (a) foreclose the release of the site for possible unrestricted use, (b) significantly increase decommissioning costs, (c) cause any significant environmental impact not previously reviewed, or (d) violate the terms of the licensee's existing license (e.g., OL, POL, OL with confirmatory shutdown order etc.) or 10 CFR 50.59 as applied to the existing license.

3. The staff may permit licensees to use their decommissioning funds for the decommissioning activities permitted above (as the term "decommission" is defined in 10 CFR 50.2), notwithstanding the fact that their decommissioning plans have not yet been approved by the NRC.

These and the remaining items associated with SECY-92-382 will be addressed by the Commissioners in their vote sheets on the SECY paper and in the subsequent staff requirements memorandum.

cc: The Chairman
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
Commissioner de Planque
OIG
Office Directors, Regions, ACRS, ACNW (via E-Mail)
OP, SDBU/CR, ASLBP (via FAX)
PDR - Advance
DCS - P1-24

OCT 28 1993

STSB:NLO
71-9256

Yankee Atomic Electric Company
ATTN: Mr. Jay K. Thayer
580 Main Street
Bolton, MA 01740-1398

Dear Mr. Thayer:

As requested by your application dated April 12, 1993, as supplemented April 20, 1993, July 30, 1993, August 2, 1993, and September 10, 1993, enclosed is Certificate of Compliance No. 9256, Revision No. 0, for the Model No. YNPS Steam Generator package.

Yankee Atomic Electric Company has been registered as a user of the package under the general license provisions of 10 CFR §71.12.

The approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR §173.471.

Sincerely, Original Signed by
Cass R. Chappell

Cass R. Chappell, Section Leader
Cask Certification Section
Storage and Transport Systems Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosures:
1. Certificate of Compliance
No. 9256, Rev. No. 0
2. Safety Evaluation Report

cc w/encl:
Mr. James K. O'Steen
Department of Transportation

9311030189

NRC FORM 618
(6-89)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIALS PACKAGES

a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. PACKAGE IDENTIFICATION NUMBER	d. PAGE NUMBER	e. TOTAL NUMBER PAGES
9256	0	USA/9256/A	1	2

2. PREAMBLE

a. This certificate is issued to certify that the packaging and contents described in Item 5 below, meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."

b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

a. ISSUED TO (Name and Address)

Yankee Atomic Electric Company
580 Main Street
Bolton, MA 01740-1398

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Yankee Atomic Electric Company application dated April 12, 1993, as supplemented.

c. DOCKET NUMBER 71-9256

4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

(1) Model No.: YNPS Steam Generator

(2) Description

A steam generator filled with low density concrete, with seal-welded nozzle covers, impact limiters, and shear keys. The steam generator consists of the steam generator shell, internal U-tubes and tube supports. The steam generator is essentially cylindrical with an OD of approximately 8 feet 6-1/4 inches in the steam drum region and an OD of approximately 7 feet 1 inch in the tube bundle region. The shell wall thickness is approximately 2-3/4 inches in the tube bundle region and 3-1/8 inches in the steam drum region. The length of the steam generator package is approximately 40 feet 7-3/8 inches. The tube bundle is composed of 1620 U-tubes, which have an OD of approximately 3/4 inch, and an average wall thickness of 0.072 inch. The nozzles and other penetrations are covered with welded closures. The steam generator is filled with low density concrete on both primary and secondary sides. Three shear keys are welded to the steam generator shell bottom for axial restraint. Toroidal impact limiters, which are polyurethane foam with a carbon steel shell, are fixed at each end of the steam generator. Steel plates are welded onto the steam generator shell for radiation shielding, as required. The maximum weight of the package is approximately 273,000 pounds.

(3) Drawings

The package is constructed and assembled in accordance with the following Chem-Nuclear Systems, Inc. Drawing Nos.:

C-110-B-46063-1, Rev. 1
C-110-B-46063-2, Sheets 1 through 4, Rev. 0
C-110-D-46063-3, Sheets 1 and 2, Rev. 0
C-110-A-46063-4, Rev. 0

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(b) Contents

(1) Type and form of material

Steam generator containing radioactive contamination, filled with low density concrete, meeting the requirements of low specific activity radioactive material.

(2) Maximum quantity of material per package

Greater than a Type A quantity of radioactive material. Fissile material may be present provided the fissile material meets the exemption standards of 10 CFR §71.53.

6. In addition to the requirements of Subpart G of 10 CFR Part 71:

(a) The package must be prepared for shipment and transported in accordance with Chapters 7 and 8 of the application.

(b) The package must be transported in accordance with the operational controls of Table 1.1 of the application.

(c) Prior to transport, shielding must be welded onto the package in accordance with Chem-Nuclear Systems, Inc. Drawing No. C-110-B-46063-1, Rev. 1, as necessary, such that the package meets the external radiation standards of 10 CFR §71.47.

7. This certificate authorizes a one-time shipment for each of four packages from the Yankee Nuclear Power Station to a point near Barnwell, South Carolina.

8. The package authorized by this certificate must be transported on a motor vehicle and on a railroad car assigned for the sole use of the licensee.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.

10. Expiration date: September 30, 1998.

REFERENCES

Yankee Atomic Electric Company application dated April 12, 1993.

Supplements dated: April 20, July 30, August 2, and September 10, 1993.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Cass R. Chappell

Cass R. Chappell, Section Leader
Cask Certification Section
Storage and Transport Systems Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Date OCT 28 1993

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

SAFETY EVALUATION REPORT
Model No. YNPS Steam Generator Package
Certificate of Compliance No. 9256
Revision No. 0

SUMMARY

By application dated April 12, 1993, s supplemented, Yankee Atomic Energy Company requested approval of the Y (Yankee Nuclear Power Station) Steam Generator as a transportation packa for greater than a Type A quantity of low specific activity radioactive material. Based upon the statements and representations contained in the application and the conditions listed below, we have concluded that the YNPS Steam Generator package meets the requirements of 10 CFR Part 71.

REFERENCES

Yankee Atomic Electric Company application dated April 12, 1993.

Supplements dated: April 20, July 30, August 2, and September 10, 1993.

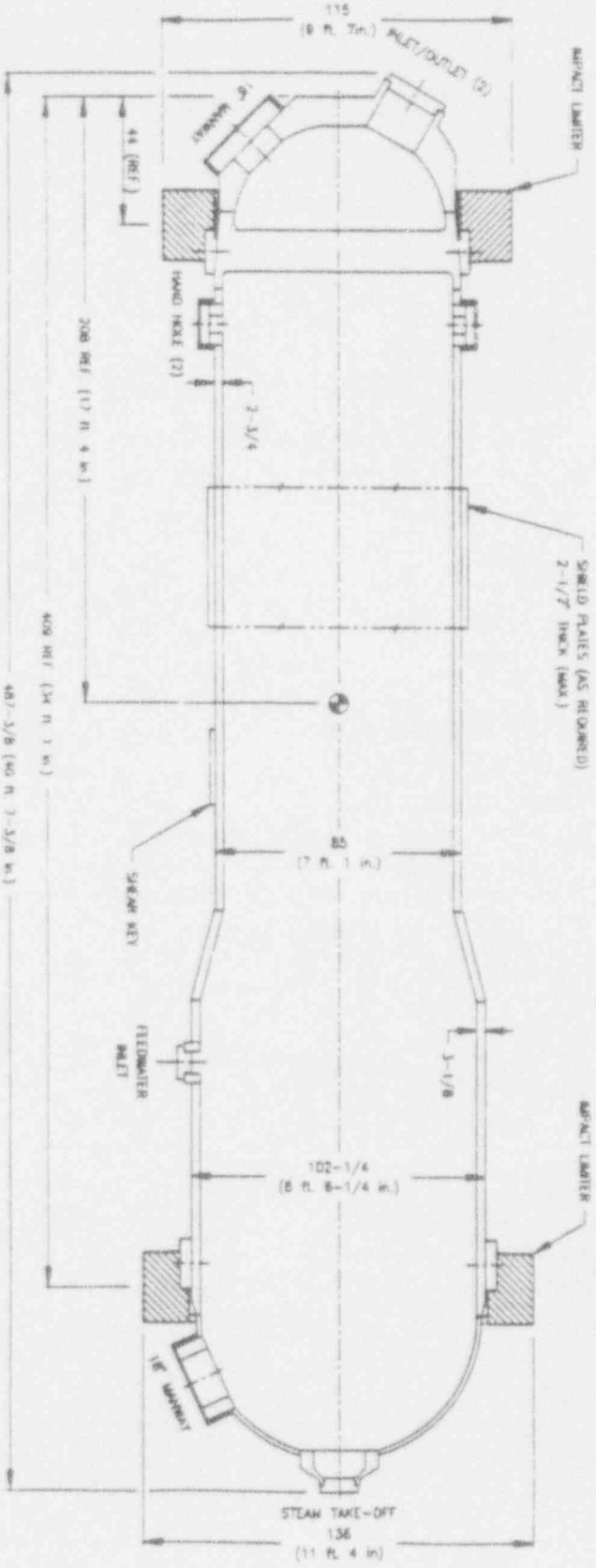
DESCRIPTION

A steam generator filled with low density concrete, with seal-welded nozzle covers, impact limiters, and shear keys. The steam generator consists of the steam generator shell, internal U-tubes and tube supports. The steam generator is essentially cylindrical with an OD of approximately 8 feet 6-1/4 inches in the steam drum region and an OD of approximately 7 feet 1 inch in the tube bundle region. The shell wall thickness is approximately 2-3/4 inches in the tube bundle region and 3-1/8 inches in the steam drum region. The length of the steam generator package is approximately 40 feet 7-3/8 inches. The tube bundle is composed of 1620 U-tubes, which have an OD of approximately 3/4 inch, and an average wall thickness of 0.072 inch. The nozzles and other penetrations are covered with welded closures. The steam generator is filled with low density concrete on both primary and secondary sides. Three shear keys are welded to the steam generator shell bottom for axial restraint. Toroidal impact limiters, which are polyurethane foam with a carbon steel shell, are fixed at each end of the steam generator. Steel plates are welded onto the steam generator shell for radiation shielding, as required. The maximum weight of the package is approximately 273,000 pounds.

DRAWINGS

The package is constructed and assembled in accordance with the following Chem-Nuclear Systems, Inc. Drawing Nos.:

C-110-B-46063-1, Rev. 1
C-110-B-46063-2, Sheets 1 through 4, Rev. 0
C-110-D-46063-3, Sheets 1 and 2, Rev. 0
C-110-A-46063-4, Rev. 0



YNPS STEAM GENERATOR PACKAGE

CONTENTS

A. Type and form of material

Steam generator containing radioactive contamination, filled with low density concrete, meeting the requirements of low specific activity radioactive material.

B. Maximum quantity of material per package

Greater than a Type A quantity of radioactive material. Fissile material may be present provided the fissile material meets the exemption standards of 10 CFR §71.53.

STRUCTURAL EVALUATION

The YNPS Steam Generator package contains greater than a Type A quantity of low specific activity radioactive material. Consequently, the structural evaluation of the package must demonstrate that the design meets the performance requirements of 10 CFR Part 71 for normal conditions of transport.

A. General Standards for all Packages

Minimum package size

No dimension of the package is less than 10 cm (four inches). The package meets the requirements of 10 CFR §71.43(a) for minimum size.

Tamper-proof feature

The steam generator package closures are all seal-welded. The intact welds are evidence that the package has not been opened by unauthorized persons.

Positive Closure

Since the steam generator package closures are seal-welded, unintentional opening of the package is precluded.

Chemical and Galvanic Reactions

There are no materials which will create significant chemical, galvanic, or other reactions among the packaging components, or between the packaging components and package contents, including reactions resulting from inleakage of water to a maximum credible extent.

Valves or other Devices

There are no valves or other devices on the package. All containment penetrations are welded closed.

B. Lifting and Tie-down Standards for all Package

Lifting Devices

The package is placed in a horizontal position while being prepared for shipment and is not lifted or moved into any other orientation during transport. There are no permanent welded attachments to the package that can be used in lifting the package during transport.

Tie-down Devices

During transport, the package rests on two support saddles made of structural steel. The package is secured to each saddle by five, 1-3/8 inch diameter pre-tensioned steel cables. The saddles, along with the pre-tensioned steel cables, resist inertia forces associated with transverse and vertical accelerations. The inertia force associated with the longitudinal acceleration of the package is resisted by the shear key assembly. Three longitudinal shear keys, which are 6 inches wide and 26 inches long, are welded to the bottom of the package. The shear keys are the only parts of the tie-down system that are structural parts of the steam generator shipping package. Therefore, the shear keys are designed to withstand a longitudinal acceleration of 10 g, as required in 10 CFR §71.45. Tie-down system components that are not a structural part of the package were designed in accordance with the acceleration criteria of ANSI N14.2, "Proposed American National Standard For Tie-Down For Truck Transport of Radioactive Material." The design allowable stresses were based on the AISC standards, which are more conservative than ANSI N14.2.

C. Normal Conditions of Transport

Heat

There will be no significant stress increase in the package under the normal transport heat condition.

Cold

Thermal stress in the package was evaluated by assuming that the ambient temperature was reduced from 100° F to -40° F in one hour (the maximum range of hot and cold environments specified in 10 CFR Part 71). Thermal stress in the steam generator shell was well below the allowable design stress. The primary material of construction of the steam generator vessel is ASTM A-212, Gr. B, which meets "normalized to fine grain practice," as specified in Regulatory Guide 7.11 for prevention of brittle fracture. The penetration covers are constructed of A516, Gr. 70, steel which also meets the "normalized to fine grain practice" standard. The tube sheet and channel head forging, which are constructed of ASTM A-266, Gr. II, are greater than 4 inches thick. The criteria of Regulatory Guide 7.11 are only applicable to sections less

than four inches thick. However, the stress intensity in the tube sheet and channel head forging is small for a one-foot drop (below 6,000 psi), and ASTM A-266 is authorized for use under ASME Section III. Coupled with the additional safety controls used during transport of the package (Table 1.1 of the application), it can be concluded that brittle fracture will not occur during transport.

Reduced External Pressure and Increased External Pressure

The applicant performed finite element analyses to show that stresses in the steam generator vessel were small due to reduced and increased external pressure, and were well below allowable values.

Shock and Vibration

There are no valves or other devices on the steam generator vessel that are susceptible to shock and vibration loads. Also, the radioactive contents are encapsulated in concrete. There will be no significant adverse effects on the package from the shock and vibration loads normally incident to transport.

Water Spray

The steam generator package closures are seal-welded. This test condition has no effect on the package.

Free Drop

Because of the large size and weight of the steam generator package, the only realistic drop orientation is the orientation in which the package is positioned during transport. Since the steam generator package will always be oriented in the horizontal position during transport, the package was evaluated for a one foot drop in the horizontal orientation.

The YNPS Steam Generator package has two, 12 lb/ft^3 rigid polyurethane foam impact limiters to absorb the drop energy and to reduce the impact force on the steam generator. The stress-strain data for the polyurethane foam was provided by the vendor (General Plastic). To account for changes in material properties due to density and temperature variations, a ±15 percent margin was assumed to bound the response of the impact limiters.

An energy balance approach was used to estimate the amount of crush (deformation) and reaction force developed in the impact limiters during the one foot free drop onto an unyielding horizontal surface. The maximum impact limiter deformation was used to confirm that the maximum strain of the polyurethane foam was below the design limit of 70%, and to confirm that none of the steam generator penetrations would directly contact the rigid surface during the free drop. The stresses in various components of the steam generator package during the one-foot free drop event were calculated with a combination of hand calculations and finite element analyses. Stresses in the steam generator vessel shell away

from the impact region were calculated by assuming the vessel acted as a beam. A finite element analysis using ANSYS was performed to evaluate the stresses in the package at the point of impact, i.e., underneath the impact limiter. The maximum stress intensity of 16.0 ksi occurred in the steam generator shell. This stress intensity was well within the allowable stress of 1.5 S_m (34.95 ksi) as prescribed in Regulatory Guide 7.6. Stresses in all other components of the steam generator package were also well within the allowable design stresses. Thus, the package meets the one foot free drop condition.

Corner Drop

This test is not applicable because the weight of the package exceeds 200 pounds and neither wood nor fiber board is used as a material of construction.

Compression

This test is not applicable for packages weighing more than 5000 kg.

Penetration

The applicant provided an analysis to show that the penetration test will have negligible effect on the package.

D. Conclusion

The package was evaluated against the applicable requirements of 10 CFR Part 71. Based on the results of the evaluation, it was concluded that the structural design of the package meets the performance criteria of 10 CFR Part 71.

THERMAL

The decay heat in the package is negligible.

CONTAINMENT

The containment vessel boundary is defined as the steam generator shell and the nozzle closures. The containment vessel is welded closed. Void spaces within the vessel are filled with low density concrete. The containment vessel remains intact under the normal conditions of transport as described above, and there is no loss or dispersal of radioactive material.

EVALUATION OF RADIOACTIVE CONTENTS AND SHIELDING

The radioactivity present in the package is in the form of a layer of activated corrosion products on the primary side surfaces of the steam generator (inside of the tubes and the channel head). Dose rate and contamination measurements were made to determine the magnitude and isotopic distribution of the radioactivity present in the steam generators.

A. Contents Determination

The applicant performed radiation dose rate measurements of the steam generators in January and February, 1993. The maximum contact dose rate was 340 mR/hr. The source term was based on the maximum measured dose rate. The radionuclide distribution was determined from a contamination sample taken from the primary side of the steam generator in 1992.

The computer code MICROSHIELD was used to calculate the dose rate on the outside of the steam generator per curie, using the isotopic distribution of the contamination survey. The measured dose rate was divided by the dose rate per curie to obtain the source term in the steam generator tubes. The source term in the channel head was calculated using the ratio of the surface area of the tubes to the surface area in the channel head. The shielding analysis used the sum of these two source terms.

The total radioactivity was estimated as 441 curies. The predominant nuclides were iron-55 (229 curies), nickel-63 (102 curies), and cobalt-60 (93 curies). Fissile materials were present in trace quantities, but were well below the fissile exempt quantities of 10 CFR §71.53.

The NRC staff performed a confirmatory analysis to determine the source term, using the applicant's values for the dose rate and the isotopic fractions in the application. The source terms were verified by the staff using the MICROSHIELD computer code.

Using the calculated source terms, the applicant determined the concentration of radioactivity in the package. Considering only the weight of the low-density concrete in the tube region, the concentration of radioactivity was determined to be within the concentration limits for low specific activity defined in 10 CFR §71.4. The weight of the steam generator tubes, tube supports, and shell was conservatively ignored in determining the concentration.

B. Shielding Calculation

The source term was used to determine the external dose rates for the package. The free space in the steam generator is filled with low density concrete, with a minimum density of 0.33ρ g/cm^3. The tubes, low density concrete, air, and downcomer were homogenized in the computer model. The outer steel wall was modeled explicitly. The applicant used MICROSHIELD to calculate the dose rates at the package surface and 2 meters. Results of the applicant's shielding analysis showed that the external dose rates at the top and bottom ends of the steam generator met the 10 CFR §71.47 external radiation standards. However, the dose rates at the surface and two meters from the conveyance exceeded the limits, without additional shielding. Shielding will be welded onto the package surface, as necessary, to meet the dose rate limits. The applicant estimated that a maximum of 2.5 inches of additional steel

shielding may be necessary to comply with the radiation standards in 10 CFR §71.47. The dose rates were verified by NRC staff using the MICROSHIELD computer code.

The table below summarizes the results of the applicant's and staff's shielding analyses.

	EXTERNAL DOSE RATES (mrem/hr)	
Location	Applicant	NRC
Package surface		
Side (with 2.5" steel shielding)	21	22
Top	0.033	----
Bottom	0.2	----
2 meters from surface		
Side (2 m from conveyance)	6.6	7.7
Top (2 m from package)	0.017	----
Bottom (2 m from package)	0.071	----

The Certificate of Compliance has been conditioned to require shielding to be added to the steam generators to meet the external radiation standards of 10 CFR §71.47. The shielding is in the form of steel plates up to 2.5 inches thick welded to the steam generator shell.

CRITICALITY

Trace amounts of fissile materials may be present. The Certificate of Compliance limits fissile materials to the exempt quantities defined in 10 CFR §71.53. Therefore, criticality is not a concern.

FABRICATION EVALUATION

The YNPS steam generators were fabricated in accordance with the ASME Code. These fabrication criteria are acceptable for a Category III transportation package. New welds will be made and inspected according to the ASME Code as specified on the package drawings referenced in the Certificate of Compliance.

OPERATING PROCEDURES, ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

Four steam generators will be shipped from the Yankee Nuclear Power Station site near Rowe, Massachusetts, to the disposal site near Barnwell, South Carolina. Each package will be loaded onto a motor vehicle designed for heavy loads. The steam generator will be transferred to the rail car from the trailer by cribbing the steam generator over the rail track, moving the trailer from under the steam generator, and positioning the rail car under the package. These procedures will also be used in reverse to transfer the packages from the rail car to the trailer for road transport to the disposal facility.

Chapter 7 and Table 1.1 of the application describe the operational controls which will be used during transport of the package. Some of operational controls are as follows: (1) Maximum speed of 5 mph for the motor vehicle leg of the shipments, (2) package not lifted by crane during modal transfers, (3) use of a dedicated train for the rail leg of the shipments, (4) shipments accompanied by qualified health physics personnel.

Chapter 8 of the application describes the acceptance tests which will be performed on the package prior to transport. These tests include: (1) radiation measurements which confirm that the contents meet the concentration limits for low specific activity material, (2) visual inspection of the closure plates and welds, (3) external radiation measurements which show the package meets the standards in 10 CFR §71.47, and (4) contamination surveys which show the package meets the standards in 10 CFR §71.87.

SHIPPING ROUTE

The steam generators will be transported by special heavy haul transporter from the Yankee Nuclear Power Station, near Rowe, Massachusetts, to the rail line at the Hoosac Tunnel, near the town of Florida, Massachusetts. After leaving the YNPS site the transporter will cross an earthen dam and a bridge, which are privately owned by New England Power Company. A temporary bridge will be placed over the existing bridge, to prevent overloading the existing bridge. The transporter will then travel approximately six miles over county-owned highway. At the Hoosac Tunnel, the steam generators will be transferred to a rail car for shipment to Barnwell, South Carolina. Shipment will be by dedicated train.

The applicant has evaluated the shipping route from the site to the rail line to assure the adequacy and safety of the roadway, the culverts, the earthen dam, and the temporary bridge (supplements dated August 2 and September 10, 1993). The Federal Highway Administration, in cooperation with the State of Massachusetts Highway Department, has reviewed and confirmed the adequacy of the roadway within Massachusetts and the temporary bridge. The evaluation of the dam was reviewed by NRC staff, and found to be adequate. In response to a recommendation by the Massachusetts Highway Department, the applicant will perform a dry run of the roadway route prior to transporting a steam generator. The dry run will consist of loading the transporter with a non-radioactive load exceeding the weight of the steam generator package. During the dry run, the transporter will travel across the earthen dam, across the temporary bridge, and along the same highway route as the actual shipments. After shipment by rail, the packages will again be moved by the transporter for approximately two miles. A heavy haul permit will be obtained from the State of South Carolina for this movement.

CONDITIONS

1. In addition to the requirements of Subpart G of 10 CFR Part 71:

   (a) The package must be prepared for shipment and transported in accordance with Chapters 7 and 8 of the application.

   (b) The package must be transported in accordance with the operational controls of Table 1.1 of the application.

   (c) Prior to transport, shielding must be welded onto the package in accordance with Chem-Nuclear Systems, Inc. Drawing No. C-110-B-46063-1, Rev. 1, as necessary, such that the package meets the external radiation standards of 10 CFR §71.47.

2. This certificate authorizes a one-time shipment for each of four packages from the Yankee Nuclear Power Station to a point near Barnwell, South Carolina.

3. The package authorized by this certificate must be transported on a motor vehicle and on a railroad car assigned for the sole use of the licensee.

CONCLUSIONS

Based on the review of the statements and representations contained in the application, as supplemented, and the conditions listed above, we have concluded that the YNPS Steam Generator package meets the requirements of 10 CFR Part 71.

Cass R. Chappell

Cass R. Chappell, Section Leader
Cask Certification Section
Storage and Transport Systems Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Date OCT 28 1993

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 14, 1993

Ms. Anne Rabe
Executive Director
Citizens' Environmental Coalition
33 Central Avenue
Albany, New York 12210

Dear Ms. Rabe:

Reference is made to your letter of November 9, 1993, to the Chairman. Your letter has been referred to me for a response.

Your letter urges the NRC to "...immediately order a halt to the illegal decommissioning of the Rowe atomic plant that is now in progress." Your letter further expresses support for the charges made in a complaint to the NRC Inspector General on October 5, 1993, by the Nuclear Information and Resource Service and the Citizens Awareness Network. Also, your letter specifically asks that "...the early Component Removal Project of the Yankee Atomic Electric Corporation (YAEC) be halted immediately, the YAEC submit a Decommissioning Plan before any more 'decontamination' work is undertaken or radioactive wastes are removed from the site, and the NRC hold the required hearings on the Decommissioning Plan."

The Commission has issued staff guidance in regard to the plant activities you are concerned about for plants, such as Yankee Rowe, that have permanently ceased operation but not yet filed a decommissioning plan. The staff has determined that Yankee Rowe has complied with all of the Commission guidance and has informed the licensee that we have no objection to the removal of the four steam generators, reactor vessel internals and pressurizer from the plant and site. The staff completed a review of the transportation of these components and found that the shipments complied with all applicable NRC regulations.

NRC and the Department of Transportation (DOT) share regulatory responsibility for the safe transport of radioactive materials. In general, NRC is responsible for packaging standards for large quantities of radioactive materials and for fissile materials. DOT has regulatory responsibility for all other considerations related to safety of carriage of radioactive materials, including rail carriage, which is predominantly being used here.

Regarding packaging of radioactive materials for transport, a licensee must comply with the requirements of 10 CFR Part 71, as well as applicable DOT regulations. These regulations have been developed to provide a high degree of safety in transport, and have been used domestically and internationally for many years. The regulations consider both normal conditions of transport and the possibility of severe transportation accidents. Safety under accident conditions is assured by either limiting the quantity of radioactivity which may be transported in a non-accident resistant package, or by ensuring that the package will retain the radioactive contents, even under accident conditions.

As you know, the licensee is transporting the Yankee Rowe steam generators, pressurizer, and reactor vessel internals to Barnwell, South Carolina for disposal. The quantity and concentration of radioactive material in the pressurizer is below the levels which require NRC-approved packaging. The pressurizer is to be transported in accordance with DOT regulations. The steam generators have been equipped with welded closure plates and filled with concrete prior to shipment. The steam generators, as prepared for transport, have been approved by NRC as their own transportation packages. Additionally, health physics personnel will accompany each steam generator shipment. The reactor vessel internals will be sectioned and transported in NRC-approved casks.

The staff has also performed inspections of the component removal program and has found that the licensee is in compliance with NRC regulations in regard to all other safety and environmental considerations.

We are enclosing a November 18, 1993, NRC letter (with enclosures) to the Citizens Awareness Network, a group of concerned citizens living near the plant, which provides additional details related to matters raised in your letter.

Since the licensee has planned and performed the component removal program under the regulations and policies of the NRC, and since your request did not contain any new information that would cause us to halt the operations or stop the shipments, you have not provided a basis on which to grant your request.

The charges made to the Inspector General by the two groups, which you support, are being handled separately by the Inspector General.

Sincerely,

Seymour H. Weiss

Seymour H. Weiss, Director
Non-Power Reactors and Decommissioning
Project Directorate
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Enclosure:
Letter to Mr. Fred Katz, Citizens' Awareness Network from Samuel J. Chilk, Secretary of the Commission, dated November 18, 1993, with two enclosures

cc w/enclosure:
Mr. Thomas Ellis, Citizens' Env. Coalition
Mr. Robert Bates, Don't Waste NY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 14, 1993

Mr. Thomas Ellis
Co-Chairperson
Citizens' Environmental Coalition
429 Hamilton Street
Albany, New York 12203

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Seymour H. Weiss

Seymour H. Weiss, Director
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