



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

TERA

November 24, 1980

Docket No. 50-213  
LS05-80-11-044

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Dr. & Mrs. Jay C. Smith  
East Shore Drive  
Higganum, Connecticut 06441

Dear Dr. & Mrs. Smith:

I am writing in response to your letter of April 30, 1980, concerning the construction of additional low level waste storage facilities on the Haddam Neck Plant site. I apologize for the delay, but as you can see from the discussion which follows, we have taken some steps since receipt of your letter to look into the issue you have raised.

Changes at operating nuclear power plants can fall into different categories. For example, if the change is a minor one, the licensee, after performing a safety evaluation, can make the change without receiving prior approval from the NRC. We review such changes after the fact to ascertain that the licensee's judgment was correct. For more significant changes, the licensee is required to obtain our approval prior to making the change.

In the case of the spent resin storage facility at the Haddam Neck Plant, the licensee can proceed with the change without our prior approval so long as the change does not involve an unreviewed safety question or does not involve a change to the license. What constitutes an "unreviewed safety question" is clearly defined in our regulations as any change which increases the probability of an accident; increases the consequences of an accident; introduces the possibility of an accident of a different type; or reduces the existing margin of safety. Northeast Utilities, the licensee, has completed the required safety evaluation and concluded that the new facility does not require a change in the license nor involve an unreviewed safety question. A copy of their evaluation is included for your information (Enclosure 1).

Because of your interest and concern regarding radioactive waste storage and that of others, we have asked for and received information from Northeast Utilities concerning their plans to build the spent resin storage facility.

PDR

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THIS DOCUMENT CONTAINS  
POOR QUALITY PAGES

Dr. & Mrs. Jay C. Smith

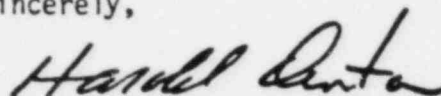
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November 24, 1980

In addition, we have conducted at the site an audit inspection of the licensee's safety evaluation. A summary of that audit is attached (Enclosure 2). On the basis of this information, we have found that the change is acceptable from a safety standpoint and that there is no reason to disagree with the licensee's conclusion regarding the need for prior NRC approval. Accordingly, no further NRC action is planned.

I appreciate your interest in this issue and thank you for writing to us about it.

Sincerely,



Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Enclosures:

1. Evaluation
2. Audit Summary

PLANT DESIGN CHANGE REQUEST

MTG # 80-55.

OP3773-1 Rev. 4-79  
QA 1.2-3.1

CONTROL NO. (PRE-NUMBER)	B-265
PDCR NO.	387

CHANGE AUTHORIZED FOR IMPLEMENTATION

TITLE	Spent Resin Storage Facility	PA 79-259
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PLANT OPERATIONS REVIEW COMMITTEE APPROVAL	
<i>R. L. Esping</i>	
<i>J. M. Leune</i>	
<i>D. B. ...</i>	
<i>Robert M. Stewart</i>	
APPROVED BY STATION SUPERINTENDENT	
<i>[Signature]</i>	
DATE	7-10-80

RESPONSIBILITY ASSIGNED:	<i>J. M. Leune</i>
CR NUMBER:	80-573

NOTE: OFFICE SUPERVISOR TO TRANSMIT PDCR TO CYQA AFTER PLANT OPERATIONS REVIEW COMMITTEE APPROVAL.

CYQA REVIEW	<i>[Signature]</i>	DATE	7-11-80
CYQA REVIEW		DATE	

*OPR*  
7-3-80

PLANT DESIGN CHANGE REQUEST

CONTROL NO. (PRE-NUMBER) B-265
PDCR NUMBER 387

OP3773-2 Rev. 4-79

TITLE Spent Resin Storage Facility	
SYSTEM	COMPONENT

CATEGORY I ITEM  YES  NO

QUALITY ASSURANCE  YES  NO

1. PROPOSED CHANGE

- Construct a reinforced concrete structure with dimensions of ~22' x ~29' x 10' high containing eleven (11) cylindrical cells 5'10" in diameter, adjacent to the ion exchanger and the resin storage pit. Each cell will have a drain, a removable concrete cover (2' thick), and the sidewalls will be lined with stainless steel. The structure will be founded on rock or fill concrete approximately 3' below grade. Also, shield walls will be provided for an additional 12' above the structure on the north and west sides. The drains will be routed into the sump in the existing spent resin pit.
- Drill a 3"± diameter hole in the north wall of the existing spent pit to allow installation of drain line from storage cells.

2. REASON FOR CHANGE

Events over the past six months have demonstrated that there is a high probability for radwaste shipment interruptions that could last for a minimum of a few months. The possibility of this interruption makes it prudent to provide enough shielded storage for spent resin produced in one (1) year.

SUBMITTED BY <i>J. L. [Signature]</i>	DATE 7-10-80
PREPARED BY VJ COLONERO / 97B [Signature]	DATE 7-3-80

**PLANT DESIGN CHANGE REQUEST  
CHECK LIST**

OP3733-3 Rev. 4-79

CONTROL NUMBER (PRE-NUMBER)	B-265
PDCR NO.	387

1. Description of proposed change - including system & component involved & QA Category.
2. Reason for change.
3. Review of Concept for operability.
4. Safety Evaluation per 10CFR50.59.
5. Environmental Evaluation per Appendix B 5.1.6
6. Technical Requirements (Codes)

PREPARED BY	Vincent J. Colaneri Jr.
PREPARED BY	Vincent J. Colaneri Jr.
REVIEWED BY	Helen P. Wong 5/1/80
PERFORMED BY	A. J. Grant 5/16/80
REVIEWED BY	R.A. Crandall 5-7-80
REVIEWED BY	W.R. Potholter 7-3-80

REQUIREMENTS

6. Unreviewed Safety Question.
7. Technical specification change required -A-
8. Technical specification change required -B-
9. FDSA change required.
10. Emergency plan change required.
11. In-Service inspection required (ISI)
12. ALARA review required.
13. Fire Hazards Analysis change required. Isolation valves installed in fire main.
14. Procedure initiation / change required.
15. Engineering work request required (EWR).

YES	NO	DATE COMPLETE	INITIALS
	X	5/16/80	AJG
	X	7/9/80	APQ
	X	7/10/80	HFW
	X	7/9/80	APQ
	X	7/10/80	HFW
	X	7/9/80	APQ
X			
X		5/16/80	APQ
X			
	X	N/A (REF INJEC PA 75-259)	VJC

ATTACHMENTS

1. USNRC/NRB Notified
2. Station work package prepared.
3. Design Package prepared.
4. Engineering work request prepared.


PLANT DESIGN CHANGE REQUEST  
CHECK LIST

OP3733-4 Rev. 4-79

CONTROL NUMBER (PRE-NUMBER)	B-265
PDCR NO.	387

DESIGN REVIEW

1. Suitability of material, equipment & parts.
2. Accessibility for inspection, test, repair.
3. Acceptance criteria
4. Failure consequences
5. Additional comments
6. Drawing changes required.
7. Spare Parts Recommendations.
8. Material procurement required.

YES	NO	NA	DATE COMPLETED	INITIALS

FINAL REVIEW

Design change log updated

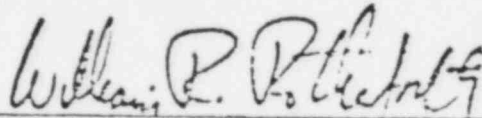
Material Received. CYSN \_\_\_\_\_


TECHNICAL EVALUATION--CIVIL DISCIPLINE

The design of the spent resin storage facility was designed in accordance with the ACI 318-77 concrete code.

Wind loads of 35 pounds per square foot were designed for and a seismic event using Regulatory Guide 1.60 was also designed for, although not required.

Review of the design calculations indicate the structure is adequate under the design loadings and will perform its intended function.



William R. Rotherforth  
Staff Engineer

7-3-80

Date

# Environmental Evaluation

PDCR # 387

## CY - Spent Resin Storage Facility

The construction and use of a spent resin storage facility at Connecticut Yankee does not constitute an Unreviewed Environmental Impact for the following reasons:

1. The potential dose rate from the storage facility at the critical site boundary was calculated using the QAD-PSF computer code to be only 0.022 mrem per year. The actual dose to the maximum individual should be much less as this calculation assumed continuous occupancy at the site boundary and that the storage facility was filled to its maximum capacity for the entire year.
2. This calculated dose is insignificant and undetectable when compared to fluctuations in natural background, EPA and NRC dose limits for the general public, and calculated potential doses from other plant related sources, all of the above being greater than 5 mrem/year. Thus, the additional dose due to this facility is insignificant when compared doses which have already been determined to be acceptable in regard to environmental impact.
3. The construction and use of this facility will actually reduce the potential environmental impact of plant operations in that during periods of time when transportation of waste is interrupted, the facility will provide for more positive control of wastes which must remain on-site during that period.
4. All potential liquid releases are directed to radwaste.

*R. A. Crandall*  
R. A. Crandall  
Senior Engineer  
May 7, 1980



SAFETY EVALUATION--CIVIL DISCIPLINE

The resin containers of approximately 126 cubic feet volume that could be stored in the facility are expected to contain less than one gallon of water and therefore can be considered solidified waste.

The site grade is Elevation 21.5 feet, which as documented in the FDSA provides sufficient flood protection for even the worst expected flood. The 1936 flood of record was elevation 19.5 and even if this flood were to recur, the water surface elevation at the site would be only 15.1 feet, the reduction due to flood control projects that have been constructed upstream. The top of the structure is approximately Elevation 29 and the bottom of each storage cell is approximately Elevation 19.5 feet.

The design of the facility is essentially a reinforced mass concrete block 22' x 29' in plan with a separate cell of approximately 5 feet in diameter for each container. Each cell would be covered with a 2 foot thick reinforced concrete cap seated on a compressible sealing ring. The mass concrete and cap, in addition to providing shielding, protects against any hypothetical missiles. The sealed cap also provides weather protection.

The mass concrete structure founded on rock is not susceptible to earthquake damage. Its design has been checked to verify that even the shield walls which extend to approximate Elevation 41 can withstand the design basis earthquake of 0.17 g zero period acceleration using the spectra shape of Regulatory Guide 1.60.

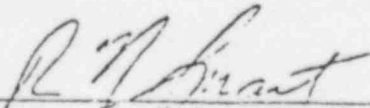
There is little, if any, chance of fire since the container for solidified waste is of coated steel and sealed. The storage of the containers in the facility as compared to present operation is no change in this risk.

Should any water be present in the cells, whether from the container or the outside, a drain from each cell to the radwaste treatment system is provided.

The storage facility will be located adjacent to the existing resin storage pit and both the caps and containers would be handled by the existing yard crane--no change in container handling from the present procedures.

The existing fire protection line will be modified to ensure the structure could not damage the line.

As summarized above, the design of the facility ( ) ensures no increase in risk related to the handling and storage of the waste, (2) no change in the possibility of an accident, and (3) no change in Tech Spec margin of safety. In accordance with the requirements of 10 CFR 50.59, the proposed change is found not to be an unreviewed safety question.

  
\_\_\_\_\_  
Robert N. Smart  
Chief of Generation Civil Engineering

  
\_\_\_\_\_  
Date

SAFETY EVALUATION-RADIOLOGICAL

PDCR # 387

CY ONSITE STORAGE FACILITY

The proposed onsite storage facility does not constitute an unreviewed safety question from a radiological aspect for the following reasons:

1. The maximum potential offsite dose is 0.022 mrem/year, which is insignificant compared to 40CFR190 or 10CFR50 Appendix I limits.
2. The storage facility was designed such that onsite dose rates will be ALARA. The maximum potential dose rate at contact with the wall of the facility is 1.2 mrem/hour. The facility is located in an area of infrequent occupancy such that the additional man-rem due to the facility will be negligible. Man-rem due to the handling of the waste is not expected to change significantly from the levels presently experienced.
3. All wastes will be packaged prior to storage. No waste processing will be performed in the facility such that the potential for unplanned releases is insignificant.
4. All drains are routed to the radwaste system. The capability will exist to obtain liquid grab samples to determine if leakage has or is occurring.
5. Each storage cubicle will be completely enclosed by concrete such that all stored wastes will be protected from the environment.
6. The facility design will ensure compliance with all applicable requirements of 10CFR20.
7. The potential for accident releases due to fire, flooding or seismic events is considered insignificant due to the nature and packaging of the wastes and design of the facility.

*R. C. Rodgers* 5/15/80

R. C. Rodgers, Chief  
Radiological Assessment Branch  
May 15, 1980

TITLE: Spent Resin Storage Facility

The spent resin storage facility with 5' inside diameter cylindrical cells can store up to 11 spent resin liners. The spent resin liners can be lifted by the existing yard crane and be transferred to the cells.

In order to facilitate the transferring job, a bevel should be built on top of each cylindrical cell.

The sketched drawings show the ID of the cylindrical cells as 5'. Since Chem. Nuclear resin liners are 5'1" diameter (OD), the cells ID should be changed to 5'2".

There will be no changes in the operations of what we are doing now. Instead of transferring the spent resin liners to the outside contractor's cask, they can be transferred to this storage facility in case of any radwaste shipment interruptions.

*H. H. Wong*

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H. H. Wong  
Engineer

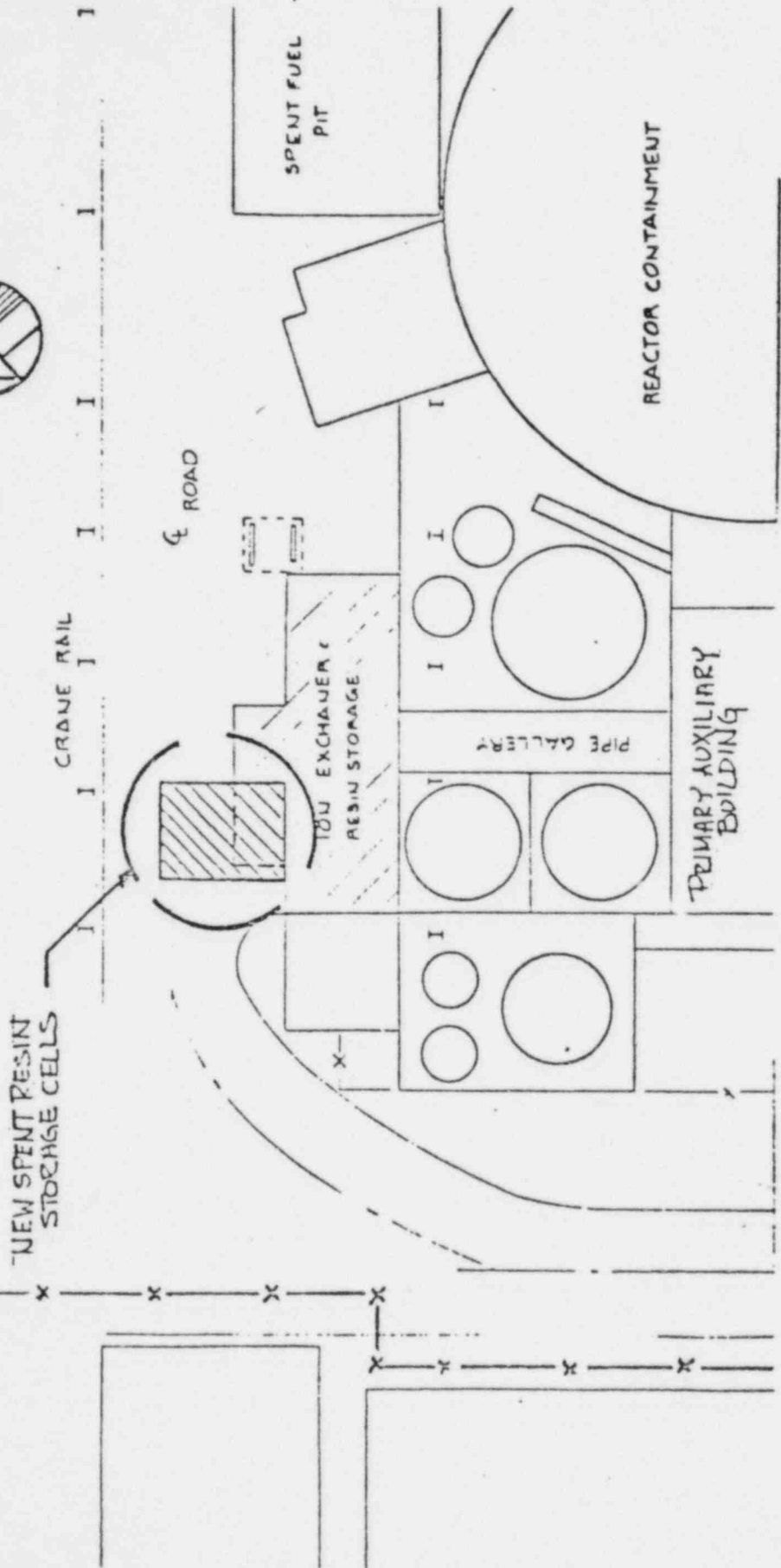
GENERAL LOCATION  
OF SPENT RESIN  
STORAGE CELLS



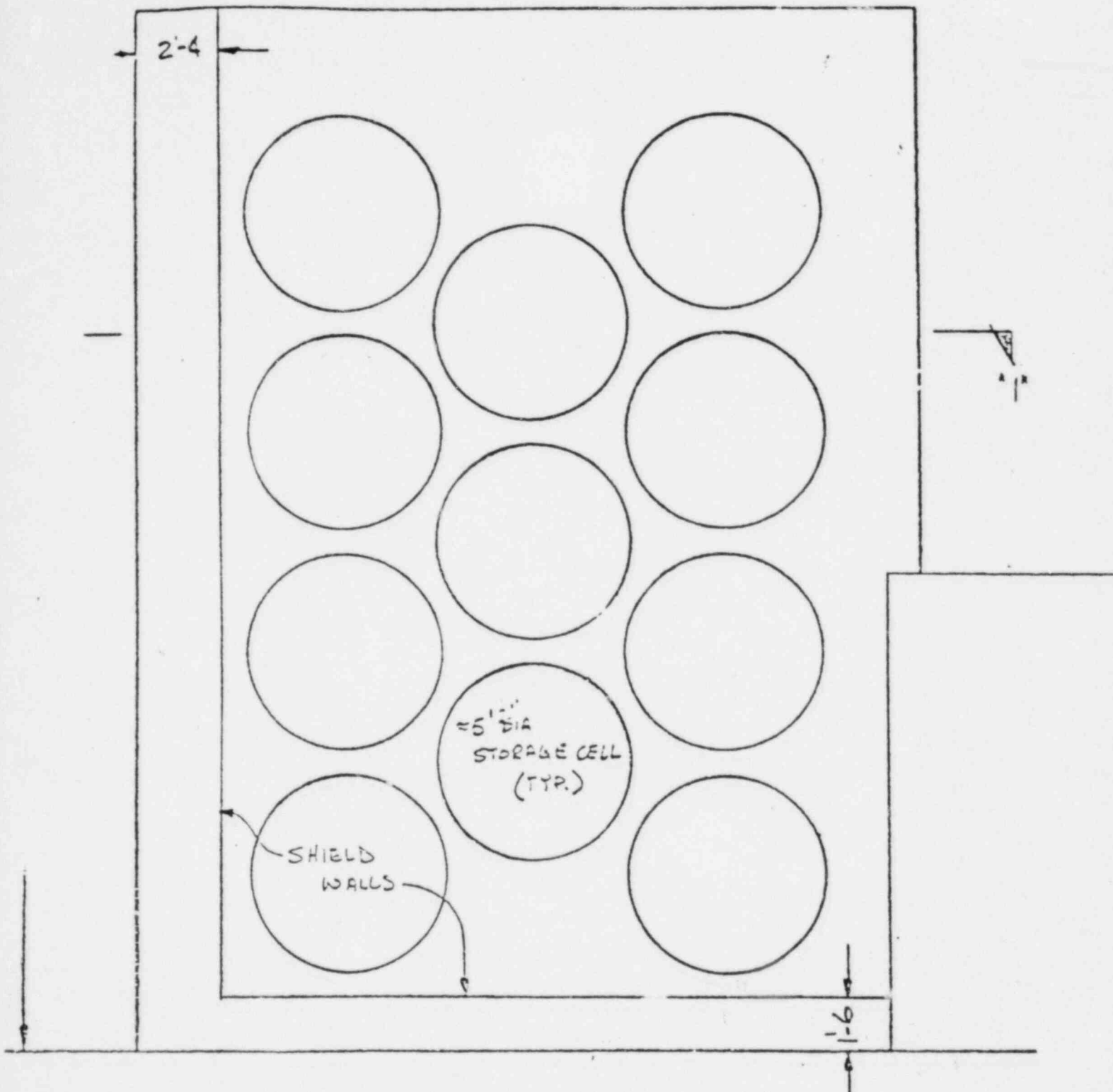
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APPROX SCALE 1"=200'

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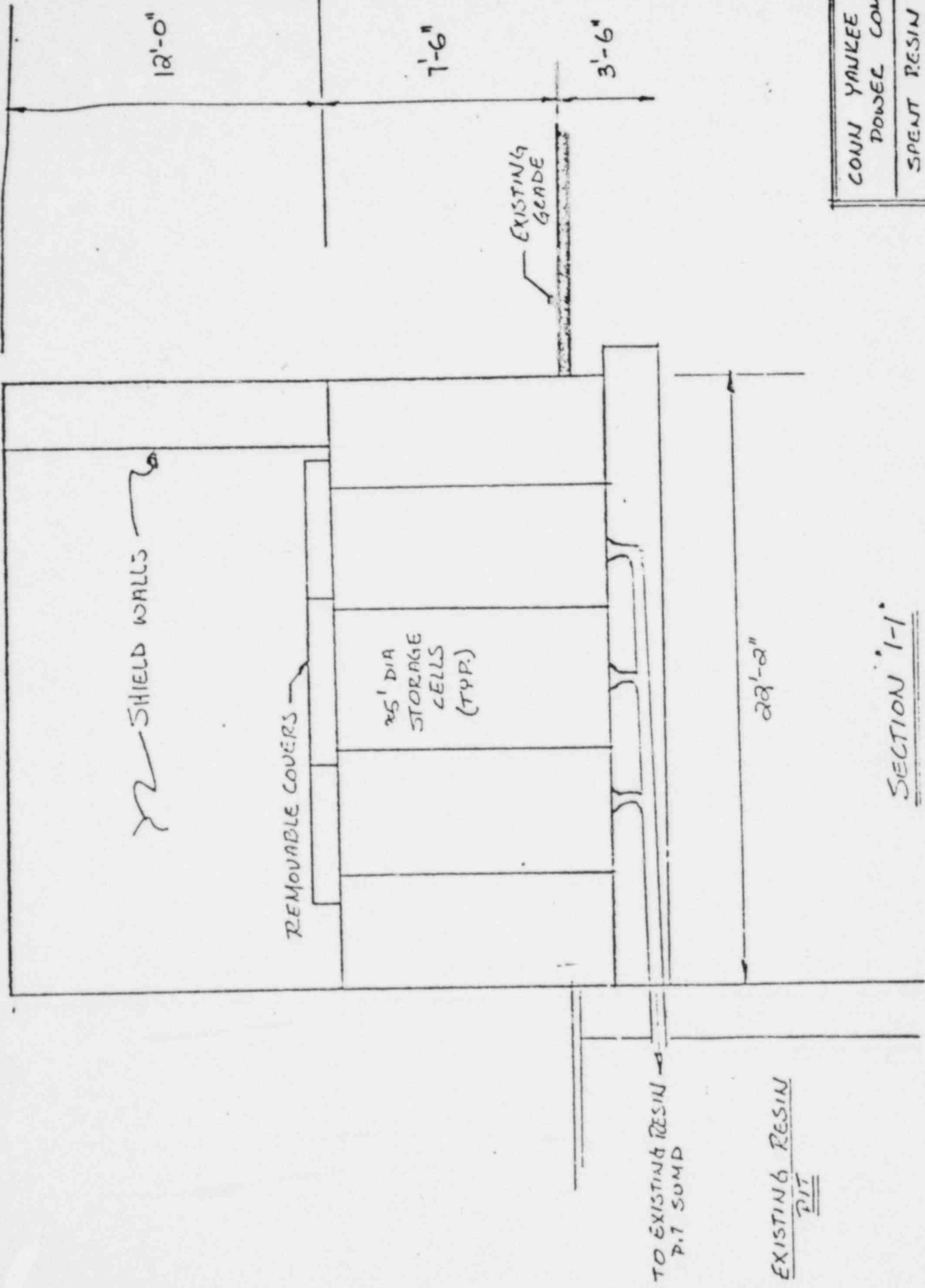


CONN YANKEE ATOMIC POWER COMPANY
SPENT RESIN STORAGE CELLS
Fig. 1



PLAN

CONN YANKEE ATOMIC POWER COMPANY	
SPENT RESIN STORAGE CELLS	
	FIG. 2



CONN YANKEE ATOM POWER COMPANY	FIG
SPEENT RESIN STO CELLS	

SECTION 1-1

EXISTING RESIN  
PIT

TO EXISTING RESIN  
P.T. SUMP

HADDAM NECK PLANT  
SPENT RESIN STORAGE FACILITY

SUMMARY OF NRC AUDIT  
OF LICENSEE EVALUATION

In the Spring of 1980, representatives of Connecticut Yankee Atomic Power Company (the licensee) began discussions with members of the Nuclear Regulatory Commission staff concerning the construction of a proposed Spent Resin Storage Facility at the Haddam Neck Plant. The licensee indicated that the purpose of this facility is to temporarily store spent resins because of a delay in the disposal at a licensed offsite waste storage facility. Following discussions with the staff, the licensee performed a written safety evaluation, in accordance with 10 CFR 50.59, and determined that construction and use of the new facility did not involve an unreviewed safety question. A member of the NRC staff subsequently conducted an audit of the safety evaluation and made the following determinations:

Structural

That part of the licensee's technical evaluation which dealt with the structure considered wind and seismic loads which would be required by a current licensing review. The design requirements of the ACI 318-77 concrete code were also included. External hazards such as floods and severe weather were also considered in the design, and fire protection capabilities were reviewed to ensure that no additional fire hazards would be created by the structure or its contents. Interactions between the waste material and the structure were considered and, due to the fact that the waste will be solidified, no additional hazard was identified.

Radiological

Construction and operation is not expected to involve the release of additional radioactive material to the environment. Each storage cell within the structure will be provided with drains that are connected to the plant radwaste system. Since the new facility will be located adjacent to the existing resin storage pit, the licensee has concluded that there will be no change in container handling from the present procedures and, therefore, the probability or consequences of a handling accident will not change. Calculations show that the potential dose rate from this new facility at the most limiting site boundary is only 0.022 mrem per year. This would occur only if the facility were to be full for the entire year. However, it is the intent of the licensee to use the new facility only if delays would occur in disposal of the resin at a licensed, offsite location. Therefore, the licensee has concluded that the actual estimated dose will be much lower and will, in fact, be insignificant and undetectable when compared to natural background radiation levels and the doses from other plant-related sources.



Conclusion

Based on their audit of the licensee's evaluation, the staff concludes that construction and operation of the Spent Resin Storage Facility does not involve an unreviewed safety question as defined by 10 CFR 50.59, and that there is little risk to public health and safety associated with the planned storage facility.