YANKEE ATOMIC ELECTRIC COMPANY

441 STUART STREET, BOSTON 16, MASSACHUSETTS

January 11, 1962

U. S. Atomic Energy Commission
Washington 25, D. C.

Attention: Division of Licensing and Regulation

Reference: License No. DPR-3 (Docket No. 50-29)

Dear Sirs:

L&R File Copy (Dicgot)

Pursuant to paragraph 3.A of License No. DPR-3, as amended, Yankee Atomic Electric Company hereby requests authorization to make the following change:

PROPOSED CHANGE: In preparation for the first refueling of the Yankee reactor we have reviewed and revised the pertinent maintenance instructions. The following revised instructions are attached:

MAINTENANCE INSTRUCTION 506E2

REACTOR REFUELING - Preparation of Reactor Systems for Refueling

MAINTENANCE INSTRUCTION 506E4

REACTOR REFUELING - Fuel and Control Rod Replacement

We propose that these instructions be substituted for the earlier versions currently included in the license application. We further propose that item D.2.a.(2) of the technical specifications be amended to read as follows:

> "During the refueling operation a record will be made of the neutron count rate before and after any change in core geometry. If an unexpected increase in the count rate by a factor of two on two of the three channels occurs after addition of a new fuel assembly or removal of a control rod, the fuel loading operation will be suspended until the situation can be reviewed by plant technical supervisory personnel. If necessary to establish the shutdown margin of the core, a single control rod will be withdrawn using the manipulator crane and regulated by a plot of control rod position vs. inverse count rate multiplication. Using the inverse count rate data obtained in this manner, the shutdown margin will be calculated. If these calculations indicate that there will be less than 5% $\Delta K/K$ shutdown with all control rods inserted in the fully loaded core, the boron concentration will be increased to provice the required 5% $\Delta K/K$ shutdown margin."

U.S. Atomic Energy Commission
Attn.: Div. of Lic. and Reg.

Proposed Change No. 15
January 11, 1962

Reasons for Change: As a result of the experience gained during the initial loading of the reactor in July and August of 1960, we have completely revised the Maintenance Instructions covering the refueling operations. The versions presently contained in the license application were prepared in 1959.

Item D.2.a.(2) of the Technical Specifications is, at best, applicable only to initial loading of a reactor or to a reloading arrangement in which all used fuel assemblies are removed before new fuel is added. During our initial loading we were delayed excessively by the requirements of this paragraph and found that it was unrealistically restrictive. Our present plan for reloading is to remove approximately one quarter of the old fuel and to proceed from that point with the addition of one new fuel assembly for each used assembly removed. The exchange would be made in such a way that the entire lower core support plate is gradually uncovered for examination during the refueling operation. The proposed substitute for Item D.2.a.(2) is suitable for any reloading arrangement but, more important, provides a means for the actual determination of shutdown margin at any point in the refueling operation.

Safety Considerations: In our opinion, the proposed changes do not present significant hazards considerations not described or implicit in the license application, as amended to June 23, 1961, the date of issuance of Amendment No. 3 to license No. DPR-3, or as amended to the date hereof, and does not affect the accident analysis set forth in Section 4 of the license application.

Scheduling of Change: Reactor refueling is presently scheduled to take place during February or March, 1962. The exact date is uncertain, in that it depends upon the extended lifetime available from Core I. Upon approval of these revised Maintenance Instructions, additional copies will be submitted as an amendment to the license application.

The proposed changes require authorization by the Commission pursuant to paragraph 3.A of the license, since they involve changes in the Technical Specifications. (See paragraphs D.1 and D.2 of Appendix A to License No. DPR-3.)

Respectfully submitted,

YANKEE ATOMIC ELECTRIC COMPANY

Roger J. Coe

Roger J. Coe, Vice President

Atts.

U.S. Atomic Energy Commission
Attn.: Div. of Lic. and Reg.

Proposed Change No. 15
January 11, 1962

Commonwealth of Massachusetts
Suffolk, ss

January 11, 1962

Then personally appeared before me Roger J. Coe, who, being duly sworn, did state that he is a Vice President of Yankee Atomic Electric Company, that he is duly authorized to execute and file the foregoing request in the name and on behalf of Yankee Atomic Electric Company, and that the statements therein are true to the best of his knowledge and belief.

Donald G. Allen

Donald G. Allen Notary Public
My Commission Expires Jan. 21, 1967

5-29
Reactor file Cy.

MAINTENANCE INSTRUCTION NO. 506E2

REACTOR REFUELING
PREPARATION OF REACTOR SYSTEMS FOR REFUELING

I. Objective To provide a safe and efficient method of preparing the reactor systems for refueling and subsequently assembling the reactor vessel after refueling.

II. Conditions Prior to Head Removal

1. The reactor is shut down and depressurized; all main coolant stop valves are closed.

2. The reactor has been borated to shutdown concentration and cooled down in accordance with O.I. No. 504C2, PLANT SHUTDOWN-REACTOR AND PRIMARY PLANT COOLDOWN.

3. The pressurizer is filled with borated water and is prepared for draining.

4. The main coolant system temperature is below 140°F.

5. The spent fuel storage pit is filled with demineralized water to a depth approximately even with the top of the spent fuel storage rack.

6. Approximately 38 new fuel elements have been moved into underwater storage in fuel transfer pit using one temporary neutron channel to monitor the transfer into the fuel storage racks.

7. A mixed bed resin is in place for fuel transfer pit demineralization as soon as water level allows operation.

8. Pertinent auxilary systems are in the following status:

System	Status
Component Cooling System (Refer to O.I. No. 504I)	In operation, as required
Shutdown Cooling System (Refer to O.I. No. 504M)	In operation
Nuclear Instrumentation System (Refer to O.I. No. 504O)	In operation

System	Status
Vapor Container Atmosphere Control Systems (Refer to O.I. No. 504Q)	In operation
Radiation Monitoring System (Refer to O.I. No. 504P)	In operation

III. Precautions

1. The radiation level above the surface of the refueling water will be continuously monitored by a gamma guard mounted on the fuel handling crane.

2. Minimum depths of water over the various reactor internals should be maintained to limit radiation level above the refueling water.

3. The tools and equipment used should be kept free of dirt, grease, and foreigh matter.

4. Personnel must wear special work clothing in all radiation and contamination areas. Refer to Section 507, RADIOLOGICAL HEALTH AND SAFETY.

5. A positive pressure must be maintained in the isolated loops, or the loops must be open to atmospheric pressure, so as to prevent main coolant pump stator can damage.

6. For action to be taken in the event of a refueling accident, refer to Emergency Instruction 505B21, REFUELING ACCIDENTS.

7. Foreign material must be prevented from falling into the reactor vessel while the reactor head is off, and no unauthorized or unnecessary personnel are to be allowed on the manipulator cranes or in refueling areas.

8. Equipment such as MC valves which might cause inadvertent changes in reactivity shall be tagged out of service.

IV. Instructions	Date Complete	Initials
1. Enter the vapor container. Comply with M.I. No. 506D, VAPOR CONTAINER ACCESS.	_____	_____
2. Remove missile shield and store on steam generator cubicles 1 and 1.	_____	_____

		Date Completed	Initials
3.	Ready manipulator crane.	_____	_____
	a. Install control cabinets	_____	_____
	b. Install trolley resistors	_____	_____
	c. Check guide rods	_____	_____
	d. Install pointer and stops and provide targets for drive rod and guide tube storage racks	_____	_____
	e. Change lubrication in gear boxes	_____	_____
	f. Replace SS boom guide bearings with C.S. bearings	_____	_____
	g. Install warning bell	_____	_____
	h. Add lights	_____	_____
	i. Install bracket for in-core instrumentation locking rod	_____	_____
	j. Install universal handling tool	_____	_____
	k. Install T.V.	_____	_____
	l. Get elevations for guide tube plugs in rack	_____	_____
4.	Remove grating and beams over equipment hatch and store on #4 steam generator cubicle.	_____	_____
5.	Remove equipment hatch cover and store on #3 steam generator cubicle.	_____	_____
6.	Remove rod drive air supply ducts and store on flat car.	_____	_____
7.	Remove flux wire tubes between reactor head and cavity edge, thermocouple connections, and intercom.	_____	_____
8.	Remove rod drive cables.	_____	_____
9.	Remove rod drive cable trays and store on flat car.	_____	_____
10.	Remove rod drive coil stacks and store in racks.	_____	_____
11.	Remove shield tank shielding blocks and store on #1 steam generator cubicle.	_____	_____
12.	Remove reactor head thermal insulation and store on flat car.	_____	_____

	Date Completed	Initials
13. Remove top hat air duct and baffles.		
a. Baffles bolted to top hat should be marked for reassembly		
b. Southeast segment of upper top hat must be removed first		
c. Lower section of top hat must be modified to facilitate removal		
d. Baffles bundled and stored on charging floor		
e. Top hat sections stored on flat car		
14. Install control rod and follower disengaging mechanism.		
15. Install track for bolt stretcher.		
16. Install parts of guide tube rack.		
17. Install jacking mechanism. Rig level in order or set into dowel pins.		
18. Complete jacking pump changes.		
a. Install prefabricated gage and accumulator board		
b. Install suction and discharge piping to cavity		
19. Remove fuel chute blank. (Cable car now rests against blank)		
20. Complete winch changes and check out:		
a. Wire DC motor		
b. Check rotation of motor		
c. Check proper operation of following:		
1. Stop and wait positions		
2. Slow down point		
3. Carriage speeds (loaded and light)		
4. Lower lock valve		
5. Proper operation of dewatering system so far as possible in dry condition of shield tank cavity and fuel pit about storage rack		

	Date Completed	Initials
6. Check upper lock valve for water tightness	_____	_____
d. Install stand pipe float and remove jumpers	_____	_____
21. Add fuel assembly support block to carriage.	_____	_____
22. Operate fuel handling system with new fuel element through 5 complete cycles with shield tank cavity dry and only bottom of fuel transfer pit wet.	_____	_____
23. Complete filling of fuel transfer pit and place demineralization in service as required by water quality.	_____	_____
24. Tighten neutron shield tank expansion joint rings.	_____	_____
a. Check condition of gasket	_____	_____
b. Replace missing washers removed placing shielding block racks	_____	_____
c. Install hooks on shield tank rim	_____	_____
25. Check that 4 BF_3 counters are operable and are indicating counts in the control room.	_____	_____
26. Install kidney covers with new gaskets.	_____	_____
27. Place caps with O rings on valves on reactor head.	_____	_____
28. Install extension on reactor head tell tale valve to bring to operating position above insulation.	_____	_____
29. Paint the following carbon steel parts:		
a. Welds and clips added to head lifting rig since original painting	_____	_____
b. Nuts and washers of expansion joint ring	_____	_____
c. Moat between expansion joints	_____	_____
d. Bracket of temperature indicator	_____	_____
30. Set up internals stacking plate to scribe marks on cavity floor and add guide tubes.	_____	_____

	Date Completed	Initials
31. Start to lower reactor vessel water level to desired height.	_____	_____
a. Check that hydrogen pressure has been reduced to approximately 2 psig of H_2 on LPST	_____	_____
b. Open pressurizer vent valve	_____	_____
c. Check solenoid relief valve and motor operated isolation valve closed	_____	_____
d. Open pressurizer drain valve and associated valves in line to LPST	_____	_____
e. When the water level in the pressurizer falls below 150", open the vent connections on all the control rod drive mechanisms	_____	_____
f. Close the pressurizer drain valve 30 minutes after the water level in the pressurizer has reached 20" on the wide range water level indicator	_____	_____
32. Remove reactor head studs (see B&W Instruction Book, Pages 4-9).	_____	_____
a. Place numbered sets of stud, washer, and nut in stud carrier	_____	_____
b. Store carrier on charging floor	_____	_____
c. Remove unground studs to shop for completion of machining	_____	_____
d. Install 48 stud hole seal plugs and "O" rings	_____	_____
e. Install 4 guide studs at hole numbers 9, 21, 33,45	_____	_____
33. Install head lifting fixture.	_____	_____
a. Observe point markings on legs	_____	_____
b. Weld bails on lifting rig and on polar crane hook	_____	_____
c. Clean and paint turnbuckle threads (after Step 39)	_____	_____
34. Install platform on side of cavity manipulator crane.	_____	_____
35. Cut instrumentation port welds, remove thimbles and Conoseals.	_____	_____
a. Smaller weld cut first by Yankee cutter	_____	_____

	Date Completed	Initials
b. Larger weld cut by AMF cutter c. See Instruction Book, IN-CORE INSTRUMENTATION Section IV. P.2		
36. Place bullet nose covers on in-core instrumentation thimbles.		
37. Clean cavity, head, moat, etc.		
38. Open 3/4" vent valve on the reactor head.		
39. Lift reactor head 1/2 to 1 inch to check levelness of head. Fasten line to bail of lifting rig.		
40. Fill shield tank cavity to level of two feet of borated refueling water. Refer to M.I. No. 506E3, REACTOR REFUELING, SHIELD TANK CAVITY-FILL DRAIN.		
41. Check shield tank cavity for leaks via the tell tales, compartments, and fuel chute.		
42. Continue to fill the shield tank cavity to a level of ten feet while running a capacity test on both SI pumps.		
43. Open the equalizer valve in the fuel transfer chute equalizer line in order to fill completely the upper portion of the fuel transfer chute with borated water from the shield tank cavity.		
44. Make several trial runs with a new fuel element for final check of operability of fuel handling system in wet conditon.		
45. Check TV for underwater operation.		
46. Position and turn on underwater lights. Lights must not be turned on until submerged in water.		
47. Remove head and store in allotted position.		
a. Manipulator crane must be in extreme south position		
b. Reactor centerline position for polar crane is marked with balck paint on primary shielding, bridge and trolley		

	Date Completed	Initials
48. Remove guide tube hold down plate and hold down ring using plate and barrel lifting fixture.		
a. Install 2 levels on plate and barrel lifting fixture		
b. Install air hose and control valve on lifting fixture		
c. Use lifting fixture in proper orientation as marked on guide holes		
d. Store plate and ring on internals stacking plate		
49. Remove 4 guide tube support plate plugs and store in rack.		
a. Three section boom is required to be on manipulator crane. For details of installing third boom section, see Instruction Book, FUEL HANDLING SYSTEM USMC, Page 61		
b. See rack elevations taken previously		
50. Remove one guide tube.		
a. Two section boom is required on manipulator crane. For details of removing third section, see Instruction Book, FUEL HANDLING SYSTEM, USMC Page 61		
b. For operation of Universal Tool, see Instruction Books, Fuel Handling System, USMC, Page 62, UNIVERSAL HANDLING TOOL, West. Page 34		
c. See elevation data taken on installation of first core		
d. Maintain positive identification of guide tubes i.e., record core positions and rack positions		
51. Remove one unsupported drive shaft.		
a. Two section boom is required on manipulator crane		
b. See Instruction Books, FUEL HANDLING SYSTEM, USMC, Page 63, UNIVERSAL HANDLING TOOL, West. Page 26, 27, 36		
c. See elevation data taken on installation of first core		

	Date Completed	Initials
d. Maintain positive identification of drive rods, i.e. record core positions and rack positions	_____	_____
52. Repeat above two steps until all 24 guide tubes and drive shafts have been removed.	_____	_____
53. Remove guide tube support plate and store on top of guide tube hold down plate, with plate and barrel lifting fixture observing levelness and proper orientations (during removal).	_____	_____
54. Retract in-core instrumentation thimbles from fuel elements. See Instruction Book, IN-CORE INSTRUMENTATION, west. Page 29. Welding called for on locking tool See Instruction Book, IN-CORE INSTRUMENTATION, West. Page 19.	_____	_____
55. Ready the upper core support barrel with attached core support plate and contained in-core instrumentation structure for removal.	_____	_____
NOTE: Use plate and barrel lifting fixture observing levelness and proper orientation, longer slings may be required for this operation.		
56. Fill the shield tank cavity to the upper level limit.	_____	_____
57. Remove charging pumps from main coolant loop pressure maintenance service and establish water level equilibrium between shield tank cavity, pressurizer and steam generator through pressurizer and loop drain lines.	_____	_____
58. Momentarily shut down flow in the shutdown cooling system while doing Step 59 below to avoid cocking of upper core support barrel by hydraulic pressure.	_____	_____
59. Remove upper core support barrel with attached core support plate and contained in-core instrumentation structure.	_____	_____

		Date Completed	Initials
60.	Disengage polar crane hook leaving lifting fixture attached to core barrel.		
61.	Remove control rods, fuel assemblies, and shim rods as described in MI 506E4.		
62.	Inspect lower core support plate using portable viewing equipment.		
63.	Install vessel radiation specimens.		
64.	Replace control rods, fuel assemblies, and shim rods as described in 506E4.		
65.	Replace upper core support barrel containing upper core support plate and in-core instrumentation. (Make momentary shutdown of shutdown cooling system while lowering into place).		
66.	Insert in-core instrumentation thimbles into fuel assemblies. See Instruction Book. IN-CORE INSTRUMENTATION West. Page 32.		
67.	Replace guide tube support plate using plate and barrel lifting fixture.		
68.	Replace 1 drive shaft. (If the drive shafts are to be reused, they must be replaced in the core location from which they were taken.		
69.	Replace 1 guide tube on the unsupported drive shaft. The guide tube must be replaced in the core location from which it was taken.		
70.	Repeat above two steps until all 24 drive rods and guide tubes are placed in the vessel.		
71.	Replace 4 guide tube support plate plugs. 3 section boom of manipulator crane is required.		
72.	Replace guide tube hold down plate using plate and barrel lifting device.		
73.	Remove vessel head gaskets using gasket removal tool.		

	Date Completed	Initials
a. The tool requires installation of air hose and control valve		
b. Care should be taken not to damage gasket grooves in any way		
74. Clean gaskets grooves with a plastic nosed underwater pipe water jet.		
75. Place new head gaskets into grooves using gasket tool.		
76. Replace reactor vessel head in its original orientation.		
77. Turn off and remove underwater viewing lights and viewing equipment.		
78. Drain pressurizer and refueling water from shield tank cavity complying with M.I. No. 506E3, REACTOR REFUELING-SHIELD TANK CAVITY - FILL AND DRAIN, Section V-B.		
CAUTION: Check radiation and contamination level of shield tank cavity prior to personnel entry.		
79. Dewater the upper portion of the fuel transfer chute, remove ring and replace with solid plate.		
80. Drain the dewatering system.		
81. Decontaminate tools, equipment and shield tank cavity, when necessary, by scrubbing and flushing.		
82. Lower necessary vessel head replacement equipment and tools from the charging floor to the reactor level.		
83. Remove head lifting fixture mark legs 3 for future identification.		
84. Remove guide studs and stud hole plugs. Clean and dry stud holes as required.		

		Date Completed	Initials
85.	Install reactor head studs. See B&W Instruction Book, Page 4-5.	_____	_____
86.	Install Conoseals, using gasket seals only - Do not weld. See Instruction Book, IN-CORE INSTRUMENTATION.	_____	_____
87.	Fill and vent main coolant system in accordance with O.I. No. 504D1, MAIN COOLANT SYSTEM - FILLING AND VENTING OF COMPLETE SYSTEM.	_____	_____
88.	Leak test primary system complying with M.I. No. 506B3, PRIMARY PLANT - COLD LEAK TEST.	_____	_____
89.	Lower pressurizer water level to below Conoseals. (This step may not be necessary if Conoseal gaskets are tight).	_____	_____
90.	Weld Conoseal seal caps.	_____	_____
	a. Larger diameter seal weld may be done by the AMF machine or by hand.	_____	_____
	b. Smaller diameter seal weld will be made by hand.	_____	_____
91.	Install thermocouple junction assemblies and flux wire tubes. See Instruction Book, IN-CORE INSTRUMENTATION, Page 22.	_____	_____
92.	Refill and Vent Main Coolant System (OI 504D1).	_____	_____
93.	Install top hat air duct and baffles.	_____	_____
94.	Install reactor head thermal insulation.	_____	_____
95.	Replace shielding.	_____	_____
96.	Install cable tray on north side of cavity and position manipulator crane on north side of cavity with boom to west of cable tray.	_____	_____
97.	Install south cable tray.	_____	_____
98.	Install rod drive air supply ducts.	_____	_____

		Date Completed	Initials
99.	Install coil stacks.	_____	_____
100.	Install coil stack cables.	_____	_____
101.	Install equipment hatch cover.	_____	_____

V. Final Conditions

1. The reactor has been refueled and reassembled for operation.

2. The complete main coolant system has been leak tested and is ready for normal startup from cold condition. Refer to O.I. No. 504D4, MAIN COOLANT SYSTEM - STARTUP OF COMPLETE SYSTEM.

PARTS ACCOUNTABILITY TABLE

LOCATION IN REACTOR	LOCATION IN RACK	STAMPED NOS IF ANY	REMARKS ETC	CONDITION	MANIPULATOR LOCATION INFO

50-29

506E4:1
1/11/62 Suppl file

MAINTENANCE IN RUCTION NO. 506E4

REACTOR REFUELING
FUEL AND CONTROL ROD REPLACEMENT

I. Objective To provide a safe and efficient method for replacing fuel assemblies, control rods, and shim rods during Core I refueling.

II. Conditions

1. MI 506E2, Preparation of Reactor Systems for Refueling, is completed through step 60.

2. In addition to the public address system, 3-way sound powered phone communications have been established between the control center, the shield tank cavity manipulator crane, and the spent fuel pit.

3. Two of the charging pumps are in ready standby condition for addition of concentrated boric acid to the pressure vessel whenever the reactor vessel head is removed.

4. A channel for continuous gamma monitoring is installed near each manipulator crane whenever spent control rods or spent fuel assemblies are being handled.

III. Precautions

1. At least two of the three channels of nuclear instrumentation must be in operation whenever the core geometry is being changed. One channel will be equipped with a high count rate alarm which will sound both in the control center and in the Vapor Container.

2. The shield tank cavity water must be sampled at least once a day and analyzed for boron concentration to assure that the minimum shutdown boron concentration of 1150 ppm is maintained.

3. A record of the neutron count rate before and after any change in core geometry must be maintained at the control center and the manipulator crane operator notified of any significant changes in count rate.

4. At least one AEC licensed person shall be present at the control center at all times, and at least one AEC licensed person shall be in the vicinity of the fuel handling system whenever fuel is being moved. At all times there shall be one AEC licensed person

designated as being in overall charge of operations. Normally, this person will be the Shift Supervisor.

5. If an unexpected increase in the count rate by a factor of two on two of the three channels occurs after addition of a new fuel assembly or removal of a control rod, the fuel loading operation will be suspended until the situation can be reviewed by plant technical supervisory personnel. If necessary to establish the shutdown margin of the core, a single control rod will be withdrawn using the manipulator crane and regulated by a plot of control rod position versus inverse count rate multiplication. Using the inverse count rate data obtained in this manner, the shutdown margin will be calculated. If these calculation indicate that there will be less than 5% Δ K/K shutdown with all control rods inserted in the fully loaded core, the boron concentration will be increased to provide the required 5% Δ K/K shutdown margin.

6. Foreign material must be prevented from falling into the reactor vessel while refueling and no unauthorized or unnecessary personnel (or objects) are to be allowed on the manipulator crane.

7. All personnel should limit their time in the vicinity of the fuel chute when a spent fuel element is in or passing through the chute as radiation levels can possibly reach 100 mr/hr.

IV. Operating Instructions

The detailed instructions and operational check off are prepared in the form of a book of index file cards which detail the steps to be performed in removing and inserting each core element. A core element is considered to be either a control rod, shim rod, fuel assembly, or source vane.

There will be a separate card for each core position which details the steps involved in removing and inserting the core element in that position. The operator will note on the card the completion of each step so as to maintain an up to date record of the operation as it progresses and to provide a final record of the disposition of all spent, as well as new core elements.

The general sequence of performing the refueling is as follows:

1. After reactor internals are removed and stored as outlined in MI 506E2, prepare to replace core elements.

2. Selected control rods will be removed, one at a time, from the core for inspection. Coupling will be measured and the absorber section checked with the underwater boroscope for distortion and

surface condition. Drive shafts and absorber sections will be reused or replaced depending on the results of these inspections.

3. Unload the spent fuel from one quadrant of the core following the operating instructions for removal of a fuel element from reactor to storage pit as outlined in USMC Instruction Book, Pages 47-57. (Two to eight old fuel assemblies may be left in the core to achieve higher burnup of these elements. If left in the core, these elements will be visually inspected for crud buildup and structural integrity, using the boroscope and underwater TV viewing.) Selected control rods may also be unloaded from this quadrant if required for improved visibility of the structural materials.

4. Inspect sources for structural integrity using boroscope and underwater TV viewing equipment.

5. Inspect the lower core support plate in the quadrant which was unloaded using the boroscope and TV.

6. For moving new fuel elements from the storage pit to the reactor, follow instructions in USMC Instruction Book, Pages 57-58.

7. Should a fuel element be damaged to the extent it will not fit the fuel chute or should the normal fuel handling systems become in-operative such that repair requires unwatering of the shield tank cavity, place the fuel element into the damaged fuel element container. Remove the fuel element to the spent fuel storage pit via the shipping hatch using the polar and yard cranes.

8. Should a spent fuel element become stuck in the fuel chute, the design of the chute and its dewatering system is such that no immediate action is required by the operator. Accessible areas adjacent to the chute should be checked for high radiation levels, and posted and barricaded as appropriate.

NOTE: The most critical condition would be with the element in the wait position and the lower lock valve stuck closed. The operator would be unable to recognize this condition until the following actions had been completed:

a. Equalizing valve closed
b. Upper portions of the fuel chute pumped out
c. Attempt made to open the valve

Since the fuel element under the above condition will be covered with only a small isolated volume of water, the equalizing valve should be opened immediately after ascertaining that the lower lock valve is in the stuck closed position.

9. The remaining core elements will be unloaded and replaced individually in a sequence that will effectively rotate the open quadrant so that other portions of the lower core support plant can be inspected as desired. (New assemblies will be added to one side of the quadrant and spent assemblies removed from the other side.)

10. Load the remaining assemblies into the open quadrant until the core is completely refueled.

11. Recheck all index file cards with the Reactor Engineer for accountability and completeness.

12. Reinstall internals in accordance with MI 506E2.

V. Final Conditions

The reactor is ready for assembly of remaining internals and preparation for cold startup according to steps 59-92 of MI 506E2.

FROM: Yankee Atomic Electric Company
Boston 16, Massachusetts
Roger J. Coe

DATE OF DOCUMENT: 1-11-62
DATE RECEIVED: 1-22-62
NO.: 1398

LTR: x MEMO: REPORT: OTHER:

TO: DLER

ORIG: x CC: OTHER: 24 reproduced cys.

ACTION NECESSARY ☐ CONCURRENCE ☐ DATE ANSWERED:
NO ACTION NECESSARY ☐ COMMENT ☐ BY:

CLASSIF.: U POST OFFICE REG. NO.:

FILE CODE: 50-29

DESCRIPTION: (Must be Unclassified)
PROPOSED CHANGE NO. 15, furnishing revised maintenance instructions and propose that Item D.2.a.(2) of the tech spec be amended to read: "during the refueling operation..... (notarized 1-11-62)

ENCLOSURES: (25 cys. each)
Maintenance Instruction No. 50612
and No. 50614

3 to ACRS
2 compliance
1 CRBC
1 TI

REFERRED TO	DATE	RECEIVED BY	DATE
Mr. Bryan: 2 for Compliance 7 Extras file cy. (Sup. 1)	1-23		
File		Receipt acknowledged	

REMARKS:
DTIE Distribution: 1 - Formal file cy.
2 - CCC
1 - PDR
1 - H. Steele

U. S. ATOMIC ENERGY COMMISSION

MAIL CONTROL FORM FORM AEC-326S (8-60)

☆ U. S. GOVERNMENT PRINTING OFFICE: 1961 — 613938