

SAXTON NUCLEAR EXPERIMENTAL CORPORATION

GENERAL PUBLIC UTILITIES SYSTEM

JERSEY CENTRAL POWER & LIGHT COMPANY
NEW JERSEY POWER & LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY
METROPOLITAN EDISON COMPANY

P. O. Box 542, Reading, Pa. 19603

P. O. Box 99, Saxton, Pa. 16678

Telephone: Area 215 - 929-3601

Area 814 - 635-2937

March 19, 1969

Docket No. 50-146
License DPR-4

For Div of Compliance

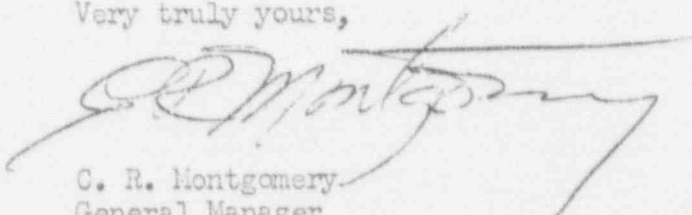
Mr. Donald J. Shovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Shovholt:

Three signed copies and 40 conformed copies of a request for interim authority to load Core III fuel into the Saxton reactor are enclosed.

Because of the urgent need for the use of the Saxton reactor for operator training commitments, it is important that we begin loading Core III into the reactor as soon as possible. We anticipate that we will be ready to begin loading fuel on March 27 and are therefore requesting interim authority to do so, without operating the reactor, pending your final action on our Change Request No. 32 in which we proposed the technical Specifications for the new core.

Very truly yours,


C. R. Montgomery
General Manager

cc: G. G. Trowbridge, Esquire



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SIXTON NUCLEAR EXPERIMENTAL CORPORATION

By /s/ R. E. Meidig
President

(S E A L)

Attest

/s/ R. E. Heist
Secretary

Sworn and subscribed to before me this 19th day of March , 1969

(S E A L)

/s/ Martin A. Kehr
Notary Public
Muhlenberg Township, Berks County
My Commission Expires February 1, 1970

1. DESCRIPTION OF CHANGE

Make the following change to the Saxton Technical Specifications.

Change Section F.1 through F.3.c to read as follows:

F. REACTOR CORE

A reactor core having the following features shall be provided:

1. The main coolant shall be light water, and shall serve as the moderator and reflector. The designed effective reflector thickness shall be 10 inches.
2. Mixed natural uranium and plutonium dioxide enriched initially to a nominal 6.6 w/o PuO₂ and previously irradiated in Saxton to a maximum of 33,500 MWD/MTM shall be in seven of the nine central fuel assemblies. The remaining 2 central assemblies will be unirradiated enriched UO₂ fueled, having enrichments which vary from a nominal 5.7 w/o to a nominal 12.5 w/o U-235. Eleven of the enriched twelve peripheral assemblies, except for the test assemblies described in F.3.f, will be irradiated UO₂ assemblies (originally 5.7 w/o U-235 enriched) from Saxton Core I. The twelfth peripheral assembly will be unirradiated and contain 5.7 w/o U-235, Zircaloy-4 clad fuel.
3. The fuel assemblies shall be supplied as follows:
 - a. General Description: Plutonium fuel assemblies

Each main plutonium fueled assembly shall have a total overall length of 50.23 inches with a nominal fuel length of 36.6 inches and shall approximate a 5.386 inch square in cross section.

The fuel rods shall be composed of Zircaloy-4 clad ceramic pellets or vibrationally compacted fuel. The rods shall be arranged in a square lattice with an initial 0.580 inch center-to-center distance.

Every alternate rod will be a water filled tube so that the center-to-center distance of the fuel rods will be 0.820. The ceramic pellets shall have a diameter of 0.3374 inch (nominal) and a length of 0.3660 inch (nominal).

One end of each pellet shall be initially dished. The total pellet column tolerance shall be 0.183 inches initially. The maximum initial moisture content of the pellet column shall not exceed 30 ppm on a weight basis. The maximum initial nitrogen content of the pellet

F. REACTOR CORE (Continued)

column shall not exceed 100 ppm on a weight basis.

The vibrationally compacted loose oxide shall have a total column tolerance of 0.188 inches initially. The maximum initial moisture content of the loose oxide fuel column is 100 ppm on a weight basis. The maximum initial nitrogen content of the loose oxide fuel column is 100 ppm on a weight basis.

The initial clad diameter shall be 0.3445 inches (nominal).

The initial diametral clearance for the pelletized fuel shall be 0.0071 inches (nominal).

The cladding shall have a wall thickness initially of 0.0233 inches (nominal).

The gap between the pellet column and the internal plug end shall contain sintered aluminum oxide (Al_2O_3) discs to provide a minimum end gaps initially of 0.609 inches.

The fuel rods shall be initially hermetically sealed with end plugs welded to the tubing. The end plugs shall be Zircaloy.

The top nozzle of these assemblies is removable.

b. General Description: Uranium fuel assemblies from Core I.

Each Core I uranium fueled assembly shall have a total overall length of 50.25 inches with a nominal fuel length of 36.6 inches and shall approximate a 5.386 inch square in cross section.

The fuel rods shall be composed of stainless steel tubes which contain uranium dioxide fuel in the form of cylindrical ceramic pellets. The rods shall be arranged in a square lattice with an initial 0.580 inch center-to-center distance. The pellets shall have the following initial dimensions:

Diameter (nominal)	0.357 inches
Length (nominal)	0.732 inches

The ends of each pellet shall be dished initially. The total pellet column tolerance shall be 0.366 inches initially.

F. REACTOR CORE (Continued)

The initial clad inside diameter shall be 0.361 inches. The diametral clearance between clad I.D. and pellet O.D. shall be initially 0.004 inches.

The gap between pellet stack and internal plug end shall contain sintered aluminum oxide (Al_2O_3) circular hollow discs, to provide a minimum of 0.174 inch end gap. The initial moisture content of the pellet stack shall not exceed 75 ppm on a weight basis. The fuel rod ends shall be initially hermetically sealed with end plugs welded to the tubing. Those fuel rods which require no further welding shall be clad with 0.015 inch wall of Type 304 welded stainless steel 10% cold-worked with a 400 ppm maximum cobalt content. The end plugs shall be Type 304 L or 308 stainless steel. Those fuel rods which require subsequent brazing shall be composed of 0.028 inch wall of Type 348 modified carbon, annealed stainless steel with a 500 ppm maximum cobalt content. The end plugs shall be Type 304 or 304 L stainless steel.

c. General Description: Unirradiated Uranium Fuel Assemblies

Two of the central nine assemblies will be unirradiated uranium fueled and shall have a total overall length of 50.23 inches with a nominal fuel length of 36.6 inches and shall approximate a 5.386 inch square in cross section.

The fuel rods shall be composed of ceramic pellets clad in Zircaloy and stainless steel and the rods shall be arranged in a square lattice with an initial 0.580 inch center-to-center distance. The dimensions of the ceramic pellets are given in the addendum.⁽¹⁾

The top nozzle of these assemblies is removable and held in place with three tie rods. Two of the tie rods in the UO_2 fueled assemblies will be filled with Inconel and one of the tie rods will be filled with stainless steel.

(1) WCAP-7219 Addendum to Saxton Core III Licensing Application (Westinghouse Confidential) July 1968.

F. REACTOR CORE (Continued)

One of twelve peripheral assemblies will contain unirradiated 5.7 w/o U-235 enriched Zircaloy-4 clad uranium fuel. This assembly has a reinforced assembly can and shall have a total overall length of 30.23 inches with a nominal length of 36.0 inches and shall approximate a 5.386 inch square in cross section.

The fuel rods shall be composed of Zircaloy-4 tubes which contain uranium dioxide fuel in the form of cylindrical ceramic pellets. The rods shall be arranged in a square lattice with an initial 0.580 inch center-to-center distance. The pellets shall have the following initial dimensions:

Diameter (nominal)	0.338 inches
Length (nominal)	0.600 inches

The ends of each pellet shall be initially dished. The total pellet column tolerance shall be 0.656 inches initially. The initial clad inside diameter shall be 0.3345 inches. The diametral clearance between clad I.D. and pellet O.D. shall be initially 0.0065 inches.

The gap between pellet stack and internal plug end shall contain sintered aluminum oxide (Al_2O_3) circular hollow discs, to provide a minimum of 1.473 inch end gap. The initial moisture content of the pellet stack shall not exceed 30 ppm on a weight basis. The fuel rod ends shall be initially hermetically sealed with end plugs welded to the tubing. The end plugs shall be Zircaloy-4.