NRC LICENSE, CHANGES ATTACHMENT, VOLUME 2

APPENDIX A

NUCLEAR FUEL SERVICES, INC.
AND
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

IRRADIATED NUCLEAR FUEL PROCESSING PLANT

TECHNICAL SPECIFICATIONS
LICENSE CSF-1

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APPENDIX A

TECHNICAL SPECIFICATION

FOR

LICENSE CSF-1

Nuclear Fuel Services, Inc.

New York State Atomic and Space Development Authority

0.0 INTRODUCTION

These Technical Specifications identify the significant design features, operating conditions and operating limitations which are considered important in providing reasonable assurance that the facility will be operated without undue hazard to the health and safety of either the public or plant personnel. The Technical Specifications have been grouped in seven sections whose purposes are described below.

A summary description of the processing facility is provided in Section 1.0 to aid the presentation of the Technical Specifications. Details of the facility layout, plant design, process, equipment design, methods of protecting plant personnel, methods of protecting the public and plant operation are presented in the Final Safety Analysis Report for the Nuclear Fuel Services Fuel Reprocessing Plant.

Technical terms which are commonly used at the processing plant but which may be ambiguous are defined in Section 2.0 in order to clearly indicate the intent of the various Technical Specifications.

The types and quantities of source, special nuclear and byproduct material which can be safely stored and utilized at the plant are identified in Section 3.0. These nuclear materials include irradiated fuel, unirradiated fuel for checkout or processing operations, calibration sources and laboratory standards.

The limits established in Section 4.0 define the boundaries of safe operation yet permit the flexibility essential to chemical processing. The limits have been set above the values required by normal operation but well below the values at which an accident could occur or the public safety could be jeopardized.

Unlike a nuclear reactor which is designed to operate in a critical region, a chemical processing plant is designed and operated in such a way as to remain subcritical at all times. No single malfunction can lead to nuclear criticality. Secondary controls are installed to provide compensation in the event of the failure of a primary control. In addition, administrative controls are imposed to further assure the safe operation of the facility. For these reasons, if the specifications in Section 4.0, other than those for gaseous effluents are exceeded, shutdown is not mandatory. If such an

occasion arises, plant operations may continue in a "ready condition" until normal operations are restored; however, if during this period there is any occurrence that would further reduce the margin of safety, an immediate shutdown is required. If the specifications for gaseous effluents are exceeded, processing operations will be shut down and immediate corrective action will be taken.

The specifications included in Section 5.0 set forth minimum conditions for safe plant operation. If specifications for monitoring gaseous and liquid effluents cannot be fulfilled, the operations which could cause a release of radioactive effluents must be shut down, with the exception of the main ventilation system which would normally remain in operation. Other specifications in Section 5.0 indicate primary and alternate conditions which may be fulfilled. If the alternate condition is in use the operations shall be considered to be continuing in a "ready condition." If neither primary nor alternate conditions for a particular operation can be fulfilled, the operations shall be shut down with the exception of the waste tank off-gas system, which must be in operation while appropriate repairs are made.

The specifications listed in Section 6.0 require inspections of certain equipment or systems which, with one exception, are not primary safeguards but which are desirable for a defense in depth if a primary safeguard fails. The lone exception is Specification 6.1.1 requiring surveillance of the boron glass Raschig rings which are a primary safeguard in the high enriched uranium product storage tanks and the off-specification plutonium product storage tank. Surveillance requirements under Specification 6.1.1 conform to the proposed ANS standard Use of Borosilicate-Glass Raschig Rings as a Fixed Neutron Absorber in Solution of Fissile Materials. The other specifications in this section focus attention on controls which, while not primary safeguards, are of sufficient importance that immediate and continuing action should be made toward returning the failed component to service. If inspection required by Specification 6.2 through 6.10 reveals the inoperability of any of the specified equipment, plant operation may continue under "ready condition."

Section 7.0 identifies the administrative requirements, i.e., organization, standard procedures and reviews, etc., deemed necessary for safe operation.

SECTION 1.0

PLANT DESCRIPTION

1.0 PLANT DESCRIPTION

1.1 LOCATION OF SITE

The NFS Spent Fuel Processing Plant is located at the Western New York Nuclear Service Center, a 3300-acre site in the Town of Ashford in the north central section of Cattaraugus County (14 acres in Erie County). The boundaries of the site superimposed on a topographic map of the area are shown in Figure 2.7a of the Safety Analysis. The plant is located near the center of the site on a mesa-like peninsula, bordered on the east by Erdman Brook and on the west by Quarry Creek. These two defiles are deep enough that, considering the water table contours, any activity getting into the ground water in the plant site area will show up eventually in one of these two streams and nowhere else, except, of course, for that which is absorbed upon the soils and held therein.

1.2 LOCATION OF THE PLANT

The plant is located near the center of the Service Center and is separately fenced with an 8-foot high exclusion fence. The plant is about 1200 meters from the nearest site boundary. The process areas have been grouped together as much as possible to minimize piping runs and to provide reasonable flow of material from the introduction of the fuel into the plant to the shipment of purified products.

1.3 FLOW OF MATERIAL THROUGH THE PLANT

Spent fuel assemblies are received in casks by rail or truck into the Fuel Receiving and Storage Area (FRS). The cask is placed into the cask unloading pool, the cover is removed and the assemblies are placed into storage canisters. These canisters are then transferred to the fuel storage pool for storage prior to further processing.

The next sequential operation is performed in the Process Mechanical Cell (PMC). During a processing campaign, the storage canisters are moved by an underwater transfer conveyor to the PMC hatch where the assemblies are lifted into the PMC. Here, the fuel assemblies are mechanically disassembled, if required, and sheared to prepare them for dissolution. The

sheared assemblies are loaded in baskets, stored in the General Purpose Cell (GPC) and are subsequently charged to the dissolver located in the Chemical Processing Cell (CPC).

After dissolution with acid, the dissolver solution is transferred to the accountability and feed adjustment tank. After analysis and adjustment, the feed is jetted to the partition cycle feed tank.

Countercurrent solvent extraction separates fission products from the uranium and plutonium and, subsequently, separates the uranium and plutonium. After initial decontamination the uranium-bearing solution may undergo two further solvent extraction purification cycles while the plutonium-bearing solution undergoes one solvent extraction purification cycle. After leaving the solvent extraction columns, the uranium-bearing solution may undergo an additional purification step by means of silica gel bed sorption, the plutonium-bearing solution by ion-exchange. Product solutions are concentrated, then packaged, stored and shipped in approved containers.

1.4 AUXILIARY SYSTEMS

Additional systems provide for rework of off-specification process materials, off-gas treatment, acid recovery, solvent recovery, plant ventilation, temporary holdup of liquid effluents, underground tank storage of liquid radioactive waste and solid radioactive waste burial.

SECTION 2.0

DEFINITIONS

2.0 Definitions

The following terms are defined only for the purpose of clearly indicating the intent of the various provisions given within these Technical Specifications.

Blanking Off	The insertion of a removable positive barrier in a line.
Boral	A sandwich-type plate with a core of boron carbide (B_4C) crystals suspended in cast aluminum, clad on both sides with aluminum.
Concentration Control	A technique used to ensure nuclear safety through control of the concentration of fissionable isotopes in process and product solutions.
Fixed Poison Tanks	A tank (or vessel) containing fixed neutron absorbers, i.e., borosilicate - glass Raschig rings or boron-stainless steel Raschig rings.
Flooding velocity	That velocity of one or both phases in a column at which the column is no longer capable of providing deentrainment of phases in the effluent streams.
Geometrically Favorable	A vessel which is safe by geometry for all credible concentrations of fissionable material.
Gross count	Total alpha, beta and gamma radioactivity not classified according to nuclide.
Locking Out	A control switch or valve handle which is fixed in either the open or closed position by one or more padlocks. The lock(s) may be removed only by designated supervisors.
Poison	A material having a high neutron capture cross section (e.g. boron, cadmium).

Sump	A small pit at the low point in the floor of processing areas which serves as a collection drain for liquids and equipped with means for detection and removal of accumulated liquids.
U-235 Equivalent Concentration	U-235 equivalent concentration (g/l) = 1.66 x Pu concentration (g/l) + 1.66 x U-233 concentration (g/l) + U-235 concentration (g/l). This formulation should not be applied to solution systems that depend on geometry control. The conversion analyses are based upon calculations reported in BNWL-3 and ORNL-TM-686.
Ready Condition	A temporary condition of operation using prescribed alternative instrumentation and controls or additional administrative safeguards while immediate corrective action is being taken in accordance with the requirements of the license.

2.0 DEFINITIONS

Term	Definition
Assembly	A group of elements or subassemblies combined in a structural unit. The assembly is usually that fuel structure which is removed from the reactor as an individual unit.
Area	A portion of the plant which is described by physical boundaries for identification and communication purposes.
Blank-Off	A removable barrier is inserted that prevents flow in a pipe.
Campaign	The processing of a defined amount of similar nuclear fuel under a specific Letter of Authorization and Run Plan with a material inventory at the beginning and end.
Concentration Control	A technique used to assure nuclear safety that limits the concentration of fissile isotopes in process and product solutions.
Favorable Geometry	A geometry which is nuclearly safe for all credible concentrations of fissile material.
Fixed Neutron Absorber	A tank or vessel equipped with neutron absorbers that will not drain away, i.e., borosilicate glass Raschig rings or boron stainless steel Raschig rings
Fissile Isotopes	The fissile isotopes are uranium-233, uranium-235, plutonium-239, and plutonium-241.
Gross Count	Total alpha, beta or gamma radioactivity not classified according to specific isotope.
Locked-Out	A control switch or valve handle is fixed in either the opened or closed position by one or more padlocks or seals. The lock may be removed only by the originator or a supervisor of equal or higher authority.

Term	Definition
MPC	The maximum permissible concentration of radioactivity in air or water to which an individual may be exposed for a specified period without exceeding regulatory limits for radiation protection.
Neutron Absorber (Poison)	A material having a high probability for capturing neutrons, e.g., boron and cadmium.
Ready Condition	A temporary condition of operation using prescribed alternate instrumentation and controls or additional administrative safeguards while immediate action is being taken to restore normal operation.
Routine Entry Areas	A plant area to which entry is routinely scheduled for at least daily.
System	An integrated series of equipment and piping in which a specific function or operation is carried out.
U-235 Equivalent Concentration	A method of evaluating fissile material on the same basis. The formulation is not applicable to systems that depend upon geometrical control. U-235 equivalent concentration (g/l) = 1.66 x Pu concentration (g/l) + 1.66 x U-233 concentration (g/l) + 1.00 x U-235 concentration (g/l). For this purpose, all plutonium is considered fissile and the U-235 concentration is assigned as that of the maximum pre-irradiation enrichment unless the isotopic concentrations are determined by analyses.

SECTION 3.0

AUTHORIZED MATERIALS

3.0 AUTHORIZED MATERIALS

3.1 NUCLEAR FUEL

3.1.1 Materials

Source, special nuclear and byproduct materials may be received in irradiated or unirradiated solid fuel elements of the following categories:

Category	Pre-Irradiation Fuel Compound	Pre-Irradiation U-235 Enrichment in U	Cladding
1	UO_2	Not exceeding 5%	Stainless steel, zirconium or Zircaloy
2	UO_2	Exceeding 5% but not exceeding 10%	Stainless steel, zirconium or Zircaloy
3	ThO_2 + UO_2, Not exceeding 8.5% U	Not exceeding 93.5%	Stainless steel, zirconium or Zircaloy
4	U - Mo alloy	Not exceeding 26.5%	Stainless steel, zirconium or Zircaloy
5	U - Zircaloy alloy or U - Zr alloy (U content not exceeding 10 w/o of alloy plus cladding)	Not exceeding 93.5%	Zirconium or Zircaloy
6	U metal or UO_2	Not exceeding 5%	Aluminum
7	U - Al alloy	Not exceeding 93.5%	Aluminum
8	U - Mo alloy	Not exceeding 4.5%	Aluminum
9	U metal	Not exceeding 1.5%	Zirconium or Zircaloy

3.1.2 Possession Limits

The quantity of materials authorized by Specification 3.1.1 shall be limited so that the special nuclear material at the facility at one time does not exceed the following:

3.0 AUTHORIZED MATERIALS

3.1 NUCLEAR FUEL

3.1.1 Materials

Source, special nuclear and byproduct materials may be received in irradiated or unirradiated solid fuel elements of the following categories:

Category	Pre-irradiation Fuel Compound	Pre-irradiation U-235 Enrichment in U
1	UO_2	Not exceeding 5%
2	UO_2	Exceeding 5% but not exceeding 10%
3	$ThO_2 + UO_2$, Not exceeding 8.5% U	No limitation
4	U - Mo alloy	Not exceeding 26.5%
5	U - Zircaloy alloy or U - Zr alloy (U content not exceeding 10 w/o of alloy)	No limitation
6	U metal or UO_2	Not exceeding 5%
7	U - Al alloy	No limitation
8	U - Mo alloy	Not exceeding 4.5%
9	U metal	Not exceeding 2.5%

3.1.2 Possession Limits

The quantity of materials authorized by Specification 3.1.1 shall be limited so that the special nuclear material at the facility at one time does not exceed the following:

3.0 AUTHORIZED MATERIALS

3.1 NUCLEAR FUEL

3.1.1 Materials

Source, special nuclear and byproduct materials may be received in irradiated or unirradiated solid fuel elements of the following categories:

Category	Pre-irradiation Fuel Compound	Pre-irradiation U-235 Enrichment in U
1	UO_2	Not exceeding 5%
2	UO_2	Exceeding 5% but not exceeding 10%
3	$ThO_2 + UO_2$ Not exceeding 8.5% U	No limitation
4	U - Mo alloy	Not exceeding 26.5%
5	U - Zircaloy alloy U - Zr alloy (U content not exceeding 10 w/o of alloy)	No limitation
6	U metal or UO_2	Not exceeding 5%
7	U - Al alloy	No limitation
8	U - Mo alloy	Not exceeding 4.5%
9	U metal	Not exceeding 2.5%

Source and/or special nuclear materials may also be received as solutions in the following category:

Category	Fuel Compound	Fissile Concentration, g/l
10	Plutonium Nitrate - Depleted Uranyl Nitrate	Not exceeding 250 grams fissile plutonium (Pu-239 and Pu-241) per liter

(Change No. 14)

21,000 kilograms of U-235
3,200 kilograms of U-233
4,000 kilograms of Plutonium

3.1.3 Form of Materials

Material Categories 1, 2, 3, 4, 6, 8 and 9 authorized in Specification 3.1.1 may be in those forms required for (a) the flow of material through the plant described in Section 1.3 and (b) related research and/or development work.

Material Categories 5 and 7 authorized in Specification 3.1.1 may be received and retained in the fuel storage pool in the form in which they are received, but are not to be converted into any other form until tankage which may be necessary for storage of the processing wastes from these categories has been completed and approved by the United States Atomic Energy Commission.

Bases

The facility has been constructed with a capability to process the categories of irradiated nuclear fuel specified in 3.1.1, above, and to accommodate the byproducts associated therewith except for wastes derived from the categories specified in 3.1.3, Paragraph 2.

The possession limits specified in 3.1.2 are derived from the following assumptions:

(a) the 924 canister spaces in the fuel pool are filled with canisters each of which contain 10 kg of U-235 in addition to the Pu and U-233 which could be produced by a 40% burnup of this quantity of U-235 at a conversion ratio of 0.8,

(b) all product storage tanks are filled with solution at a concentration of 21.6 g/l of U-235 as low enriched uranium, 360 g/l of Pu and 360 g/l of U-235 as high enriched uranium, and

(c) the birdcage storage spaces are occupied with birdcages containing solutions at a concentration of 360 g/l of U-235, Pu or U-233.

.2 UNIRRADIATED SOURCE MATERIAL

3.2.1 Materials

Uranium of natural isotopic composition
Uranium depleted in the isotope U-235
Thorium

3.1.2 Possession Limits

The quantity of materials authorized by Specification 3.1.1 shall be limited so that the special nuclear material at the facility at one time does not exceed the following:

21,000 kilograms of U-235
3,200 kilograms of U-235
4,000 kilograms of Plutonium

3.1.3 Form of Materials

Material Categories 1, 2, 3, 4, 6, 8 and 9 authorized in Specification 3.1.1 may be in those forms required for (a) the flow of material through the plant described in Section 1.3 and (b) related research and/or development work.

Material Categories 5 and 7 authorized in Specification 3.1.1 may be received and retained in the fuel storage pool in the form in which they are received, but are not to be converted into any other form until tankage which may be necessary for storage of the processing wastes from these categories has been completed and approved by the United States Atomic Energy Commission.

Material Category 10 authorized in Specification 3.1.1 may be received in shipping packages authorized by the USAEC. Storage shall be in accordance with Technical Specification 4.10.1.3. Category 10 material shall not be transferred from the shipping packages before the processing plan for the material has been approved by the Unites States Atomic Energy Commission.

Bases

The facility has been constructed with a capability to process the categories of nuclear fuel specified in 3.1.1, above, and to accommodate the byproducts associated therewith except for wastes derived from the categories so specified in 3.1.3, Paragraph 2.

The possession limits specified in 3.1.2 are derived from the following assumptions:

(a) the 924 canister spaces in the fuel pool are filled with canisters each of which contain 10 kg of U-235 in addition to the Pu and U-233 which could be produced by a 40% burnup of this quantity of U-235 at a conversion ratio of 0.8,

3.1.2 Possession Limits

The quantity of materials authorized by Specification 3.1.1 shall be limited so that the special nuclear material at the facility at one time does not exceed the following:

21,000 kilograms of U-235
3,200 kilograms of U-235
4,000 kilograms of Plutonium

3.1.3 Form of Materials

Material Categories 1, 2, 3, 4, 6, 8 and 9 authorized in Specification 3.1.1 may be in those forms required for (a) the flow of material through the plant described in Section 1.3 and (b) related research and/or development work.

Material Categories 5 and 7 authorized in Specification 3.1.1 may be received and retained in the fuel storage pool in the form in which they are received, but are not to be converted into any other form until tankage which may be necessary for storage of the processing wastes from these categories has been completed and approved by the United States Atomic Energy Commission.

Material Category 10 authorized in Specification 3.1.1 may be received in shipping packages authorized by the USAEC and storage shall be in accordance with Technical Specification 4.10.1.3. Transfer to process storage and processing of Category 10 fuel shall be in accordance with Technical Specifications 4.4, 4.5, 4.11 and 7.5.

Bases

The facility has been constructed with a capability to process the categories of nuclear fuel specified in 3.1.1, above, and to accommodate the byproducts associated therewith except for wastes derived from the categories so specified in 3.1.3, Paragraph 2.

The possession limits specified in 3.1.2 are derived from the following assumptions:

(a) the 924 canister spaces in the fuel pool are filled with canisters each of which contain 10 kg of U-235 in addition to the Pu and U-233 which could be produced by a 40% burnup of this quantity of U-235 at a conversion ratio of 0.8,

3.1.2 Possession Limits

The quantity of materials authorized by Specification 3.1.1 shall be limited so that the special nuclear material at the facility at one time does not exceed the following:

21,000 kilograms of U-235
3,200 kilograms of U-233
4,000 kilograms of Plutonium

3.1.3 Form of Materials

Material Categories 1, 2, 6, 8, and 9 authorized in Specification 3.1.1 may be in those forms required for a) the flow of material through the plant described in Section 1.3 and b) related research and/or development work.

Material Categories 5 and 7 authorized in Specification 3.1.1 may be received and retained in the fuel storage pool in the form in which they are received, but are not to be converted into any other form until tankage which may be necessary for storage of the processing wastes from these categories has been completed and approved by the United States Atomic Energy Commission.

Material Categories 3, 4, 5, and 7 authorized in Specification 3.1.1 may be received and retained in the fuel storage pool in the form in which they are received, but are not to be converted into any other form until a nuclear criticality analysis of the dissolver (NFS Drawing E-3549-59) has been made by NFS and approved by the United States Atomic Energy Commission.

Material Category 10 authorized in Specification 3.1.1 may be received in shipping packages authorized by the United States Atomic Energy Commission and storage shall be in accordance with Technical Specification 4.10.1.3. Transfer to process storage and processing of Category 10 fuel shall be in accordance with Technical Specifications 4.4, 4.5, 4.11, and 7.2.

(Change No. 18)

3.2.2 Possession Limits

80,000 pounds of natural uranium
100,000 pounds of depleted uranium
80,000 pounds of thorium

3.2.3 Form of Materials

Unirradiated source materials may be in those forms required for (a) the flow of material through the plant described in Section 1.3 and (b) related research and/or development work. In addition, storage is authorized of the following forms:

NPR-type fuel elements of normal uranium
UO_2, metal prototype fuel elements and U_3O_8 granules of depleted uranium
Thorium nitrate or thorium oxide

.3 CALIBRATION, LABORATORY STANDARD AND TEST MATERIALS

The following materials may be received, possessed, stored and used for standards, tests, measurements and calibration:

Material	Possession Limit	Form
Uranium-235	105. grams	any
Uranium-233	75. grams	any
Plutonium	62. grams	any
Plutonium	14. grams	sealed source
Plutonium-242	6. grams	any
Plutonium-238	1. gram	any
Neptunium-237	3.5×10^{-3} curie	any
Americium-241	1.1×10^{-9} curie	any
Thallium-204	$5. \times 10^{-6}$ curie	any
Cesium-137	$6. \times 10^{-5}$ curie	any
Cesium-137	33. curies	sealed source

(Change No. 8)

(b) all product storage tanks are filled with solution at a concentration of 21.6 g/l of U-235 as low enriched uranium, 360 g/l of Pu and 360 g/l of U-235 as high enriched uranium, and

(c) the birdcage storage spaces are occupied with birdcages containing solutions at a concentration of 360 g/l of U-235, Pu or U-233.

3.2 UNIRRADIATED SOURCE MATERIAL

3.2.1 Materials

Uranium of natural isotopic composition
Uranium depleted in the isotope U-235
Thorium

3.2.2 Possession Limits

50,000 pounds of natural uranium
100,000 pounds of depleted uranium
50,000 pounds of thorium

3.2.3 Form of Materials

Unirradiated source materials may be in those forms required for (a) the flow of material through the plant described in Section 1.3 and (b) related research and/or development work. In addition, storage is authorized of the following forms:

NPR-type fuel elements of normal uranium
UO_2, metal prototype fuel elements and U_3O_8 granules of depleted uranium
Thorium nitrate or thorium oxide

3.3 CALIBRATION, LABORATORY STANDARD AND TEST MATERIALS

In addition to quantities of materials exempt under 10 CFR Part 30.18, the following materials may be received, possessed, stored and used for standards, tests, measurements and calibration:

Material	Possession Limit	Form
Uranium-235	105. grams	any
Uranium-233	75. grams	any

(Change No. 14)

Bases

The facility has been constructed with a capability to process the categories of nuclear fuel specified in 3.1.1, above, and to accommodate the byproducts associated therewith except for wastes derived from the categories so specified in 3.1.3, Paragraph 2. Paragraph 3 of 3.1.3 restricts the dissolution of fuels enriched above 10 w/o U-235 until a nuclear criticality evaluation of the slab portion of a new dissolver is completed.

The possession limits specified in 3.1.2 are derived from the following assumptions:

(a) the 924 canister spaces in the fuel pool are filled with canisters each of which contain 10 kg of U-235 in addition to the Pu and U-233 which could be produced by a 40% burnup of this quantity of U-235 at a conversion ratio of 0.8,

(b) all product storage tanks are filled with solution at a concentration of 21.6 g/l of U-235 as low enriched uranium, 360 g/l of Pu and 360 g/l of U-235 as high enriched uranium, and

(c) the birdcage storage spaces are occupied with birdcages containing solutions at a concentration of 360 g/l of U-235, Pu or U-233.

3.2 UNIRRADIATED SOURCE MATERIAL

3.2.1 Materials

Uranium of natural isotopic composition
Uranium depleted in the isotope U-235
Thorium

3.2.2 Possession Limits

50,000 pounds of natural uranium
100,000 pounds of depleted uranium
50,000 pounds of thorium

3.2.3 Form of Materials

Unirradiated source materials may be in those forms required for (a) the flow of material through the plant described in

Section 1.3 and (b) related research and/or development work. In addition, storage is authorized of the following forms:

NPR-type fuel elements of normal uranium
UO_2, metal prototype fuel elements and U_3O_8 granules of depleted uranium
Thorium nitrate or thorium oxide

(Change No. 18)

Material	Possession Limit	Form
Cesium-134	6. x 10^{-6} curie	any
Iodine-131	6. x 10^{-6} curie	any
Strontium-90	6. x 10^{-3} curie	any
Iodine-129	5. x 10^{-6} curie	any
Zinc-65	2. x 10^{-5} curie	any
Cobalt-60	5. x 10^{-2} curie	any
Carbon-14	1. x 10^{-5} curie	any
Tritium	1. x 10^{-3} curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	3. x 10^{-5} curie each	any

3.3

Material	Possession Limit	Form
Cesium-134	$6. \times 10^{-5}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-6}$ curie	any
Strontium-90	$6. \times 10^{-3}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$2. \times 10^{-5}$ curie	any
Cobalt-60	$5. \times 10^{-2}$ curie	any
Carbon-14	$1. \times 10^{-5}$ curie	any
Tritium	$1. \times 10^{-3}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

Material	Possession Limit	Form
Cesium-134	$6. \times 10^{-5}$ curie	any
Cerium-144	$3. \times 10^{-5}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-6}$ curie	any
Ruthenium-106	$3. \times 10^{-5}$ curie	any
Zirconium-95	$3. \times 10^{-5}$ curie	any
Strontium-90	$6. \times 10^{-3}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$2. \times 10^{-5}$ curie	any
Chromium-51	$5. \times 10^{-5}$ curie	any
Cobalt-60	$5. \times 10^{-2}$ curie	any
Carbon-14	$1. \times 10^{-5}$ curie	any
Tritium	$1. \times 10^{-3}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

Material	Possession Limit	Form
Cesium-134	$6. \times 10^{-5}$ curie	any
Cerium-144	$3. \times 10^{-5}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-6}$ curie	any
Ruthenium-106	$3. \times 10^{-5}$ curie	any
Zirconium-95	$3. \times 10^{-5}$ curie	any
Strontium-90	$6. \times 10^{-3}$ curie	any
Strontium-85	$5. \times 10^{-3}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$2. \times 10^{-5}$ curie	any
Chromium-51	$5. \times 10^{-5}$ curie	any
Cobalt-60	$5. \times 10^{-2}$ curie	any
Carbon-14	$1. \times 10^{-5}$ curie	any
Tritium	$1. \times 10^{-3}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

Material	Possession Limit	Form
Plutonium	62. grams	any
Plutonium	14. grams	sealed source
Plutonium-242	6. grams	any
Plutonium-238	1. gram	any
Neptunium-237	3.5×10^{-3} curie	any
Americium-241	1.1×10^{-7} curie	any
Americium-241	$6. \times 10^{-6}$ curie	sealed source
Thallium-204	$5. \times 10^{-5}$ curie	any
Cesium-137	$6. \times 10^{-5}$ curie	any
Cesium-137	33. curies	sealed source
Cesium-134	$6. \times 10^{-5}$ curie	any
Cerium-144	$3. \times 10^{-6}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-5}$ curie	any
Ruthenium-106	$3. \times 10^{-5}$ curie	any
Zirconium-95	$3. \times 10^{-3}$ curie	any
Strontium-90	$6. \times 10^{-3}$ curie	any
Strontium-85	$5. \times 10^{-5}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$2. \times 10^{-2}$ curie	any
Cobalt-60	$5. \times 10^{-5}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

Material	Possession Limit	Form
Plutonium	62. grams	any
Plutonium	14. grams	sealed source
Plutonium-242	6. grams	any
Plutonium-238	1. gram	any
Neptunium-237	3.5×10^{-3} curie	any
Americium-241	1.0×10^{-3} curie	any
Thallium-204	$5. \times 10^{-6}$ curie	any
Cesium-137	$5. \times 10^{-3}$ curie	any
Cesium-137	33. curies	sealed sources
Cesium-134	$5. \times 10^{-3}$ curie	any
Cerium-144	$1. \times 10^{-2}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-6}$ curie	any
Ruthenium-106	$1. \times 10^{-2}$ curie	any
Zirconium-95	$5. \times 10^{-2}$ curie	any
Strontium-90	$1. \times 10^{-2}$ curie	any
Strontium-85	$1. \times 10^{-2}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$1. \times 10^{-2}$ curie	any
Cobalt-60	$5. \times 10^{-2}$ curie	any
Cobalt-58	$1. \times 10^{-2}$ curie	any
Manganese-54	$5. \times 10^{-3}$ curie	any
Antimony	$5. \times 10^{-3}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

3.3 CALIBRATION, LABORATORY STANDARD AND TEST MATERIALS

In addition to quantities of materials exempt under 10 CFR Part 30.18, the following materials may be received, possessed, stored and used for standards, tests, measurements and calibration:

Material	Possession Limit	Form
Uranium-235	105. grams	any
Uranium-233	75. grams	any
Plutonium	62. grams	any
Plutonium	14. grams	sealed source
Plutonium-242	6. grams	any
Plutonium-238	1. gram	any
Neptunium-237	3.5×10^{-3} curie	any
Americium-241	1.0×10^{-3} curie	any
Thallium-204	$5. \times 10^{-6}$ curie	any
Cesium-137	$5. \times 10^{-3}$ curie	any
Cesium-137	33. curies	sealed source
Cesium-134	$5. \times 10^{-3}$ curie	any
Cerium-144	$1. \times 10^{-2}$ curie	any
Iodine-131	$6. \times 10^{-6}$ curie	any
Iodine-129	$5. \times 10^{-6}$ curie	any
Ruthenium-106	$1. \times 10^{-2}$ curie	any
Zirconium-95	$5. \times 10^{-2}$ curie	any
Strontium-90	$1. \times 10^{-2}$ curie	any
Strontium-85	$1. \times 10^{-2}$ curie	any
Krypton-85	3. curies	any
Zinc-65	$1. \times 10^{-2}$ curie	any
Cobalt-60	$5. \times 10^{-2}$ curie	any
Cobalt-58	$1. \times 10^{-2}$ curie	any
Manganese-54	$5. \times 10^{-3}$ curie	any
Antimony	$5. \times 10^{-3}$ curie	any
Any byproduct material with atomic numbers from 3 to 85 inclusive	$3. \times 10^{-6}$ curie each	any

SECTION 4.0

SAFETY LIMITS

4.0 SAFETY LIMITS

The limits established in this section of the Technical Specifications permit flexibility essential to chemical processing and define the boundaries of safe operations. The limits have been set above the values required by normal operations and below the values at which an accident could result or the safety of the public could be jeopardized. If Specifications 4.1.1 or 4.2.2 are exceeded, the plant will be shutdown pursuant to Specification 7.1.7.3. Unlike a nuclear reactor which is designed to operate in a critical region, a chemical processing plant is designed and operated in such a way as to remain subcritical at all times. No single malfunction can lead rapidly to a critical incident; there is sufficient capacitance inherent in the process to ensure an extended time period before the limits for safe operation are exceeded. Secondary controls are installed to provide compensation in the event of the failure of a primary control. In addition, administrative controls are imposed to further ensure the safe operation of the facility. For these reasons, if the other specifications in this section are exceeded, shutdown is not mandatory. If such an occasion arises, plant operations may continue in a "ready condition" until normal operations are restored; however, if during this period there is any occurrence or indication of an occurrence that would further reduce the margin of safety, an immediate shutdown is required.

4.1 RADIOACTIVITY CONTENT OF RELEASED GASEOUS EFFLUENTS

Applicability

This specification applies to the discharge of Krypton-85, Iodine-131 and radioactive particulates from the stack.

Objective

To provide reasonable assurance that concentrations of radioactivity occurring off-site from the airborne release of radioactivity will meet with the requirements of Title 10, Code of Federal Regulations Part 20, and the guidance values established by the Federal Radiation Council.

Specification

4.1.1 RADIOACTIVITY RELEASED FROM THE STACK SHALL BE LIMITED AS FOLLOWS:

a.	KRYPTON-85	1.26×10^4	CURIES PER DAY
b.	IODINE-131	3.3	CURIES PER YEAR
c.	PARTICULATE	0.1	MICROCURIES PER SECOND (Monthly Average, gross alpha plus beta)

4.1.2 NO DISSOLUTION OPERATION SHALL BE INITIATED UNLESS AN AVERAGE WIND VELOCITY OF 4 MILES PER HOUR OR GREATER SHALL HAVE PREVAILED AT THE TOP OF THE PROCESS BUILDING OR AN AVERAGE WIND VELOCITY OF 2 MILES PER HOUR OR GREATER SHALL HAVE PREVAILED AT THE TOP OF THE STACK FOR THE PREVIOUS 30 MINUTES.

Bases

The discharge of radioactive effluents via the stack is discussed in paragraphs 7.6 through 7.9 of the Final Safety Analysis Report. It was shown therein that the only significant isotopes which will be discharged from the stack are Kr-85, I-129, I-131, Xe-131, Xe-133 and H-3. It was shown further that only krypton would be significant from a direct radiation dose standpoint, and that the control of Iodine 131 would afford adequate protection against a health hazard due to the ingestion of radioactive material.

The Final Safety Analysis Report considered site meteorology in some detail. In paragraph 7.7 it was shown that on the basis of reasonable assumptions, the following dilutions would be applicable for diffusion from the stack exit to the site

boundary under the assumed normal and inversion meteorological conditions.

Normal (Slightly unstable): 5×10^6 cubic meters per second.

Inversion (Moderately stable): 1×10^5 cubic meters per second.

As stated in paragraph 2.12 to 2.14 of the Final Safety Analysis Report, the frequency of moderately stable conditions in this geographical area is expected to be low.

The Krypton-85 content of a design basis batch of nuclear fuel is listed as 6,300 curies in paragraph 7.6. The discharge of the Krypton-85 from two such batches per day would be diluted to an average concentration of 3×10^{-7} microcurie per cubic centimeter by a 4.36×10^5 cubic meters per second flow of air. This is less than one-tenth the normal aeolian dilution of 5×10^6 cubic meters per second expected in this area. Hence, the limitation of 12,600 curies per day Krypton-85 released from the stack provides reasonable assurance that acceptable concentrations will not be exceeded off-site.

In paragraph 7.6 the Iodine-131 content of a design basis batch of nuclear fuel is listed as 1.8 curies, and it is stated that the off-gas treatment equipment is designed to remove 99.5 per cent of the incident iodine so that only 9×10^{-3} curie would be discharged.

In the case of iodine, the Federal Radiation Council has suggested a radioactivity intake guide of 10^{-10} curies of I-131 per day by children. Assuming that a child will drink one liter of milk per day and that the radioactivity in a liter of milk is one-tenth that distributed over one square meter of grass, as observed in the Windscale incident, the permissible equilibrium concentration on the grass would be 10^{-9} curie per square meter of grass.

If 9×10^{-3} curie of Iodine-131 from a batch were discharged through the stack per day, a total of 3.3 curies per year, an average dilution with 1.0×10^6 cubic meters of air per second would be needed to maintain pasture concentrations of 10^{-9} curie per square meter, with deposition in equilibrium with radioactive decay.

$$\text{Dilution} = \frac{\text{Iodine Emission} \times \text{Deposition Velocity}}{\text{Decay Constant} \times \text{Pasture Concentration}}$$

$$= \frac{9 \times 10^{-3} \times 10^{-2}*}{8.6 \times 10^{-2} \times 10^{-9}}$$

$$= 1.0 \times 10^6 \text{ cubic meters per second}$$

---

* Deposition velocity taken to be 0.01 meter per second from A. C. Chamberlin, Quarterly Journal of the Meteorological Society, Volume 85, No. 336, p.358.

This is about one-fifth of the normal aeolian dilution of 5×10^6 cubic meters per second expected in this area. Milk produced at the on-site farm and in neighboring pastures is to be tested routinely for Iodine-131 content to provide assurance that adequate dilution is afforded by the meteorological conditions that actually prevail. If the collected data show the calculation to be in error, the 3.3 curies per year Iodine-131 stack discharge limit will be subject to revision.

There are two safety factors not taken account of in the above calculation. Cattle will be on pasture approximately one-half of each year, and losses to the soil have been observed to reduce the effective half-life to Iodine-131 on grass to approximately 5 days. These factors would reduce the average dilution needed to 6.7 percent of the 5×10^6 cubic meters per second normally expected value.

$$0.067 = \frac{5 \times 1.0 \times 10^6}{2 \times 8 \times 5 \times 10^6}$$

Abrupt complete failure of the iodine removal equipment is unlikely. But if this should happen coincident with stack monitoring failure and release all the Iodine-131 in a processing lot of fuel under inversion meteorological conditions, the maximum concentration in milk expected to result may be computed to be 1.8×10^{-8} curie per liter, and the projected dose to the thyroid of a child drinking 1 liter per day of milk following such an incident would be 2 rads which compares to the Federal Radiation Council Protective Action Guide of 30 rads to an individual.

The limit for particulate release is based on the normal dilution reducing the average concentration to 2×10^{-14} microcuries per milliliter or less at ground level beyond the exclusion area.

(Change No. 4 Revision)

10/15/62 TRANSMITTING
AMEND. 1 10/12/62

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JAN 8 1973

Docket 50-201

CHANGE 15 DEFERRED UNTIL 2/6/73 REPROCESSING BEGINS

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection and
Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

Gentlemen:

This refers to your letter of December 19, 1972, in which approval was requested to continue under interim technical specification for liquid effluents until reprocessing operations are again resumed at the West Valley plant.

In view of the progress made to date and the effort being made by NFS to improve the performance of the low-level waste treatment plant, as evidenced by the progress described in past reports, discussions with the staff and the additional development and optimization program proposed for the interim period, we have deferred the effective date of Change 15 as set forth below and have established the following interim requirements:

1. NFS shall actively pursue the development and optimization program described in the NFS submittal of December 19, 1972, toward the objective of meeting the limits specified in deferred Change 15.

2. NFS shall describe the progress made and results obtained from the development and optimization program in the regular NFS Quarterly Operating Reports.

3. NFS, pending completion of the low-level waste treatment development program and the adoption or modification of Change No. 15, shall minimize effluent releases to the environs and, in any case, limit release such that:

   a. The concentration of Cs-137 in the liquid waste at the point of release from the lagoon system will not exceed 2×10^{-5} uCi/ml.

b. The concentration of radioactivity in the Cattaraugus Creek will not exceed either:

i. Ten percent (10%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 averaged over any quarterly period; or

ii. Twenty percent (20%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 for any weekly composite sample taken in accordance with Technical Specification 5.1.1.

c. If the radioactive concentrations exceed either a. or b. above, then NFS shall:

i. Take such action as is necessary to come into prompt compliance.

ii. Make an investigation to identify the cause or causes for such levels of radioactivity.

iii. Define and initiate a program of action to reduce such levels, and

iv. Report these actions to the Commission on a timely basis.

We have determined that operation with these interim requirements does not present significant hazards considerations, and that there is reasonable assurance that the health and safety of the public will not be endangered.

Pending further notice, it is hereby ordered that Change 15 previously issued shall, in accordance with 10 CFR 2.204, not become effective until reprocessing operations resume at the NFS West Valley Reprocessing Plant.

FOR THE ATOMIC ENERGY COMMISSION

R. B. Chitwood, Chief
Fuel Fabrication and Reprocessing
Branch
Directorate of Licensing

cc: Mr. James Cline

4.2 RADIOACTIVITY CONTENT OF RELEASED LIQUID EFFLUENTS

Applicability

This specification establishes limits for the discharge of radioactivity contained in liquid effluents from the site.

Objective

To provide reasonable assurance that concentrations of radioactivity in Cattaraugus Creek will meet the requirements of Title 10 Code of Federal Regulations Part 20.

Specification

4.2.1 ALL PROCESS STEAM CONDENSATE SHALL BE COLLECTED BATCHWISE AND SAMPLED FOR GROSS ALPHA AND BETA ACTIVITY. THE CONDENSATE MAY BE DISCHARGED WITHOUT PASSING THROUGH THE STORAGE LAGOONS AFTER IT IS DETERMINED THAT ITS CONCENTRATION IS 0.3 PICOCURIES PER MILLILITER OR LESS. ALL OTHER LIQUID PLANT EFFLUENTS CONTAINING RADIOACTIVITY FROM PLANT OPERATION OR WHICH HAVE BEEN IN CONTACT WITH EQUIPMENT CONTAINING RADIOACTIVITY SHALL BE MONITORED BY AN INLINE MONITOR SET TO ALARM AT 5 NANOCURIES PER MILLILITER AND SHALL BE COLLECTED IN THE INTERCEPTOR. THE INTERCEPTOR DISCHARGE VALVE SHALL BE FULLY OPENED AFTER THE INTERCEPTOR HAS BEEN SAMPLED AND THE ANALYSIS VERIFIED TO BE LESS THAN 5 NANOCURIE PER MILLILITER. THE CONTENTS SHALL BE DISCHARGED AS RAPIDLY AS POSSIBLE. WHEN THE INTERCEPTOR IS EMPTY, THE DISCHARGE VALVE SHALL BE CLOSED AND THE CYCLE REPEATED. IF THE INLINE MONITOR ALARMS DURING DISCHARGE OF THE INTERCEPTOR, THE DISCHARGE VALVE SHALL BE CLOSED IMMEDIATELY AND THE CAUSE OF THE DIFFICULTY DETERMINED AND CORRECTED. DURING ANY CALENDAR QUARTER NO MORE THAN 48 CURIES COMBINED EQUIVALENT UNIDENTIFIED ALPHA AND BETA ACTIVITY OTHER THAN TRITIUM OR I-131 SHALL BE TRANSFERRED TO THE LAGOONS.

See letter dated 1/8/93 from NRC

4.2.2 ACTIVITY RELEASED TO CATTARAUGUS CREEK FROM ALL SOURCES ON THE SITE SHALL NOT AT ANY TIME RESULT IN A CONCENTRATION, AS MEASURED AT THE MONITORING STATION IN CATTARAUGUS CREEK, WHICH EXCEEDS TWICE THE CONCENTRATION SPECIFIED IN TITLE 10 CODE OF FEDERAL REGULATIONS PART 20; PROVIDED HOWEVER, THAT IN ANY 365 CONSECUTIVE DAY PERIOD, THE AVERAGE CONCENTRATION OF RADIOACTIVITY IN CATTARAUGUS CREEK SHALL NOT EXCEED THAT SPECIFIED IN TITLE 10 CODE OF FEDERAL REGULATIONS PART 20. SUFFICIENT DATA ON STREAM FLOWS AND RADIOISOTOPE CONCENTRATIONS MUST BE RETAINED TO DEMONSTRATE COMPLIANCE WITH TITLE 10 CODE OF FEDERAL REGULATIONS PART 20.

4.2 RADIOACTIVITY CONTENT OF RELEASED LIQUID EFFLUENTS

APPLICABILITY

This is an interim specification which applies to radioactivity contained in liquid effluents from the site.

OBJECTIVE

To limit the concentrations of radioactivity in liquid effluents discharged from the site.

SPECIFICATION

4.2.1 ALL PROCESS STEAM CONDENSATE SHALL BE COLLECTED BATCHWISE AND SAMPLED FOR TOTAL ALPHA AND BETA ACTIVITY. THE CONDENSATE MAY BE DISCARDED WITHOUT PASSING THROUGH THE INTERCEPTOR, STORAGE LAGOON OR LOW LEVEL WASTE TREATMENT PLANT IF IT HAS BEEN DETERMINED THAT THE TOTAL ALPHA PLUS BETA ACTIVITY IS LESS THAN 3.0×10^{-7} MICROCURIES PER MILLILITER (EXCLUDING TRITIUM).

4.2.2 LAUNDRY WASTE SHALL BE COLLECTED BATCHWISE AND SAMPLED FOR TOTAL ALPHA AND BETA ACTIVITY. THIS WASTE MAY BE DISCHARGED TO THE LAGOONS DOWNSTREAM OF THE LOW LEVEL WASTE TREATMENT PLANT IF THE TOTAL ALPHA PLUS BETA ACTIVITY IS LESS THAN 1×10^{-4} MICROCURIES PER MILLILITER.

4.2.3 A. EXCEPT AS PROVIDED IN 4.2.3 B, ALL OTHER LIQUID WASTES CONTAINING RADIOACTIVITY OR WHICH HAVE BEEN IN CONTACT WITH EQUIPMENT CONTAINING RADIOACTIVITY SHALL BE COLLECTED BATCHWISE IN THE INTERCEPTORS, ANALYZED FOR TOTAL ALPHA PLUS BETA RADIOACTIVITY, AND TREATED IN THE LOW LEVEL WASTE TREATMENT PLANT.

B. IF THE TOTAL RADIOACTIVITY OF WASTE IN THE INTERCEPTOR IS GREATER THAN 5.0×10^{-3} MICROCURIES PER MILLILITER (EXCLUDING TRITIUM), THE WASTE SHALL BE TRANSFERRED BACK TO THE MAIN PLANT FOR FURTHER TREATMENT OR STORAGE.

4.2.4 IF DURING OPERATION OF THE WASTE TREATMENT PLANT, THE FLOCCULATION, CLARIFICATION, OR ION EXCHANGE SECTIONS OF

THE LOW LEVEL WASTE TREATMENT PLANT ARE BYPASSED, THE TREATED WATER SHALL BE RECYCLED TO THE FEED OF THE LOW LEVEL WASTE TREATMENT PLANT.

4.2.5 TREATED WASTE MAY BE DISCHARGED FROM THE LAGOON SYSTEM PROVIDED THAT THE RADIOACTIVE CESIUM AND STRONTIUM CONCENTRATIONS IN THE WASTE AT THE POINT OF DISCHARGE FROM THE LAGOON SYSTEM DO NOT EXCEED VALUES THAT SATISFY THE SUM OF THE FOLLOWING RATIOS:

$$\frac{C_{Cs-134}}{9 \times 10^{-6}} + \frac{C_{Cs-137}}{2 \times 10^{-5}} + \frac{C_{Sr-89}}{3 \times 10^{-6}} + \frac{C_{Sr-90}}{3 \times 10^{-7}} \leq 1$$

WHERE C = CONCENTRATION, IN MICROCURIES PER MILLILITER, OF THE INDICATED ISOTOPE IN THE TREATED WASTE.

IF THE CONCENTRATIONS OF CESIUM AND STRONTIUM RADIOISOTOPES PERMITTED BY THIS SPECIFICATION ARE EXCEEDED, THE LICENSEE SHALL:

(a) TAKE SUCH ACTION AS IS NECESSARY TO COME INTO PROMPT COMPLIANCE WITH THE TECHNICAL SPECIFICATIONS,

(b) MAKE AN INVESTIGATION TO IDENTIFY THE CAUSE OR CAUSES FOR SUCH LEVELS OF RADIOACTIVITY,

(c) DEFINE AND INITIATE A PROGRAM OF ACTION TO REDUCE SUCH LEVELS, AND

(d) REPORT THESE ACTIONS TO THE COMMISSION ON A TIMELY BASIS.

SUBJECT TO THE PROVISIONS OF 4.2.5, TRITIUM AND RUTHENIUM 106 MAY EXCEED, AT THE POINT OF DISCHARGE FROM THE LAGOON SYSTEM, THE RESPECTIVE CONCENTRATIONS LISTED FOR THESE NUCLIDES IN APPENDIX B, TABLE II, 10 CFR PART 20.

4.2.6 RADIOACTIVITY IN CATTARAUGUS CREEK RESULTING FROM THE DISCHARGE OF ALL LIQUIDS FROM THE SITE IS DETERMINED FROM WEEKLY COMPOSITE SAMPLES TAKEN IN ACCORDANCE WITH SPECIFICATION 5.1.1. IF THE RADIOACTIVITY IN CATTARAUGUS CREEK AS DETERMINED FROM SUCH SAMPLES(S) EXCEEDS:

(1) TWENTY PERCENT (20%) OF THE PRORATED CONCENTRATIONS LISTED IN APPENDIX B, TABLE II, 10 CFR PART 20 FOR ANY SAMPLE, OR

Bases

These specifications limit the radioactivity in the storage lagoons and the radioactivity concentration in Cattaraugus Creek. The discharge of liquids from the site has been discussed in paragraph 7.11 through 7.13 of the Final Safety Analysis Report. The dominant isotope in the liquid effluent is expected to be tritium for which a separate analysis will be made. (See Specification 5.1.2). In addition, the quality of liquid effluents may be such that the quantity of other isotopes such as Sr-89, Sr-90, Cs-137, Ce-144, Ru-106, I-129, I-131, and Zr-Nb-95 may also have to be specifically measured.

The alarm setting of the inline monitor will be established in terms of beta activity other than tritium as determined by analyses of the liquid flowing through the neutralization tank. As shown below, the limited plant throughput of tritium makes it unnecessary to detect tritium in analyses of liquid samples from the interceptor.

"Combined equivalent unidentified curies" will be calculated as follows.

When specific analyses are made for any isotope, the curies of that isotope found will be miltiplied by the ratio of $\frac{3 \times 10^{-7}}{MPC_i}$.*
The "equivalent curies" so determined will be summed as illustrated in the following example to determine the total amount released to the lagoons. I-131 is a special case. For I-131 a minimum holdup time of 48 days (6 half lives) is assumed in the lagoon system, and credit is taken for this decay.

EXAMPLE:

Assume that an interceptor batch is found to contain 10 curies of radioactivity other than tritium, plus 600 curies of tritium (from 2 tonnes of fuel). Specific analyses are made which show that the isotopic composition, except for tritium, is as follows:

Ru-106	40%
Zr-95	30%
I-131	25%
Other (unidentified)	5%
Total	100%

*3×10^{-7} microcuries per milliliter is the maximum permissible concentration in unrestricted areas for Sr-90 which is one of the most radiotoxic isotopes expected to be released in the liquid effluent from an irradiated nuclear fuel processing plant. MPC_i is the maximum permissible concentration for each particular isotope as indicated in Appendix B, Table II, Column 2 of 10 CFR 20.

(Change No. 4 Revision)

(2) TEN PERCENT (10%) OF THE PRORATED CONCENTRATIONS LISTED IN APPENDIX B, TABLE II, 10 CFR PART 20 AVERAGED OVER ANY QUARTERLY PERIOD,

THE LICENSEE SHALL:

(a) TAKE SUCH ACTION AS IS NECESSARY TO COME INTO PROMPT COMPLIANCE WITH THE TECHNICAL SPECIFICATIONS,

(b) MAKE AN INVESTIGATION TO IDENTIFY THE CAUSE OR CAUSES FOR SUCH LEVELS OF RADIOACTIVITY.

(c) DEFINE AND INITIATE A PROGRAM OF ACTION TO REDUCE SUCH LEVELS, AND

(d) REPORT THESE ACTIONS TO THE COMMISSION ON A TIMELY BASIS.

BASIS

These specifications limit:

the total radioactivity transferred to the storage lagoons from the main plant,

the cesium and strontium radioactivity in the waste discharged from the lagoon system after treatment in the low level liquid waste treatment plant and

the concentration of radioactivity in Cattaraugus Creek.

After treatment in the low level liquid waste treatment plant the dominant radioisotopes in the liquid effluent are expected to be ruthenium and tritium. The tritium is not affected by the treatment system and the ruthenium is not effectively removed by the present treatment system.

This is an interim specification in that the ultimate objective of liquid waste control is to reduce radioactivity discharges to as low a level as is practicable for all isotopes in liquids at the point of release from the lagoon systems. Additional treatment or other disposal methods may be needed in the future to meet the objective.

4.2.1 Process steam condensate is normally expected to be free of radioactivity. This effluent may be discharged to the environment if it has been determined that the total radioactivity content is less than the 10 CFR 20 limit for strontium-90,

Then the "equivalent unidentified curies" are:

Isotope	Measured Curies	MPCi	$\frac{3\times10^{-7}}{MPC_i}$	Iodine Factor	Equivalent Unidentified Curies
Ru-106	4	1×10^{-5}	0.03	-	0.12
Zr-95	3	6×10^{-5}	0.0048	-	0.015
I-131	2.5	3×10^{-7}	1	0.0155	0.04
Other (unidentified)	0.5	3×10^{-7}	1	-	0.5
Combined Equivalent Unidentified Curies					0.675

The contribution of the tritium would be calculated as follows:

Isotope	Measured Curies	MPCi	$\frac{3\times10^{-7}}{MPC_i}$	Iodine Factor	Equivalent Unidentified Curies
H-3	600	3×10^{-3}	1×10^{-4}	-	0.06

It is apparent from these calculations that tritium need not be specifically analyzed to determine its contribution to the "combined equivalent unidentified curies."

It is not the intent of NFS to discharge from the plant the maximum quantity of radioactivity which could be accommodated within permissible concentrations by the flow of Cattaraugus Creek. Prudent plant operation dictates that the quantity of radioactivity released to Cattaraugus Creek be kept at the lower practical amount. To assure an in-depth control of liquid effluents released to Cattaraugus Creek, a quarterly limit of 48 curie equivalents of liquid discharged to the lagoons has been set, and the concentration of liquid fed to the lagoons is limited to 5×10^{-3} µc/ml. These limits are consistent with meeting the requirements of Specification 4.2.2 in Cattaraugus Creek.

Activity released into the liquid effluent system goes through four separate holdup units, via an interceptor, a 300,000 gallon lagoon, and two successive 2,300,000 gallon lagoons. Thus, there are four separate chances to apprehend errant activity and the total possible holdup time is about four months. Plant operations, therefore, has a high degree of control over the discharge of radioactivity in the liquid effluent and there is plenty of time to shut the plant down in an orderly fashion if this Technical Specification cannot be met.

(Change No. 4 Revision)

one of the most restrictive isotopes which could be expected to be found in liquid wastes from reprocessing plants. The 10 CFR Part 20 limit for strontium-90 is ten to one hundred times smaller than the limit for other isotopes which would also be present in the condensate should a contaminating leak occur in a steam heating system. Thus use of the strontium-90 limit assures that the condensate released will always be below the 10 CFR 20 limit for any isotopes which might be present.

4.2.2 Laundry waste contains small quantities of radioactivity. It also contains phosphates and complexing agents which may interfere with the proper operation of the low level liquid waste treatment plant. This waste, therefore, is discharged downstream of the low level waste treatment plant.

The quantity of laundry waste is less than 10% of the total current low level liquid waste volume generated, and the activity level is about 5×10^{-5} microcuries per milliliter total beta. Both strontium and cesium are expected to be below their respective Part 20 MPC values in the undiluted waste. Experience indicates that the total beta activity carried by this stream is about 1 millicurie per day. This is predominantly ruthenium-106 with cesium-137 and strontium-90 amounting to about 18 and 4 microcuries per day respectively. Release of this waste without treatment will not substantially increase the total radioactivity release.

The laundry waste will be collected batchwise and sampled to assure that it does not exceed 1×10^{-4} microcuries per milliliter total alpha plus beta activity. Release of laundry waste at this concentration would result in a whole body exposure to a suitable sample of the population (as shown in the Commission Safety Analysis) of 0.033 mrem/year.

4.2.3 Other liquid wastes (including water from the high level solid waste burial ground) which contain or may be suspected to contain radioisotopes will be treated in the low level liquid waste treatment plant. The radioactivity in the feed to the treatment plant (via the interceptors and lagoon system) is limited to prevent excessive radiation levels near the lagoons and in the waste treatment plant, and to prevent overloading the low level waste treatment facility.

4.2.4 Except as specified in 4.2.2 all waste transferred to the lagoon system will be processed through the waste treatment plant to assure that as much of the radioactivity is removed as is

Continuous sampling will be conducted at the monitoring station near the site boundary on Cattaraugus Creek. At least on a weekly basis, the composite sample from this station (see Specification 5.1.2) will be analyzed for gross alpha and gross beta activity and for tritium. Discharge from the storage lagoons will be regulated to conform to the flow in Cattaraugus Creek. Stream flow is measured with an instrument which records the level of the stream. The flow is calculated using the cross section of the stream bed and a series of velocity measurements at various water heights.

An auxiliary monitoring station has been provided near the plant site at the confluence of Frank's and Quarry Creeks. This station serves as a sensitive monitor of any unsuspected or unregulated discharges. Measurement of flow at this point and maintenance of the system is quite difficult due to the rugged terrain. Consequently data taken here cannot be expected to have the consistency necessary to make use of this station as a part of the discharge inventory. It will, however, be maintained in operation to the greatest extent possible as an added margin of safety.

(Change No. 4 Revision)

practicable with the installed equipment. For this same reason, all process steps in the waste treatment plant must be operating if the effluent is to be released from the lagoon system. During periods of process upsets or failures, the low level treatment plant effluent will be recycled.

4.2.5 The low level waste treatment plant is designed specifically to remove cesium and strontium from the aqueous wastes. Proper operation and control of the low-level liquid waste treatment plant, including continuous monitoring for Cs-137 at the exit of the ion-exchange unit, should assure that the concentrations of strontium and cesium are within specification limits at the time of discharge. Analyses for strontium-90 require time delays for the buildup of yttrium. Compliance with Specification 4.2.5 will be based on analytical results obtained after the waste has been released from the lagoon system.

4.2.6 Ruthenium and tritium are isotopes present in significant quantities in the waste transferred from the main plant and which will not be effectively removed by the waste treatment plant. Until additional treatment or other disposal is provided for these isotopes, they will be present in greater than MPC limits in the lagoon effluents and will be the predominate radioisotopes in Cattaraugus Creek. The concentrations of radioactive strontium and cesium in Cattaraugus Creek will be low; about 0.1% of the respective 10 CFR Part 20 limits. The action values given in Specification 4.2.6 are based on the recognition of the limitations of the present waste treatment system. The specification requires prompt action on the part of NFS to investigate releases above the predetermined values and to define and initiate corrective action.

4.3 STORAGE CANISTER LOADING AND SPACING

Applicability

This specification establishes limits governing fuel distribution in the Storage Pool.

Objective

To assure that individual units and arrays of units are maintained in sub-critical configuration.

Specification

4.3.1 IRRADIATED NUCLEAR FUEL IN THE FUEL STORAGE POOL SHALL BE STORED IN CANISTERS.

4.3.2 THE QUANTITY OF FUEL STORED IN A CANISTER SHALL BE LIMITED SO THAT THE EFFECTIVE NEUTRON MULTIPLICATION FACTOR (k_{eff}) SHALL NOT EXCEED 0.85 BASED ON UNIRRADIATED FUEL. THE PRECISION OF THE k_{eff} CALCULATION SHALL BE CONFIRMED BY APPLYING THE CALCULATIONAL METHOD TO KNOWN CRITICAL SYSTEMS OF SIMILAR FUEL MATERIAL.

4.3.3 IN LIEU OF DETERMINING THE k_{eff} OF A CANISTER LOADING, ANY SINGLE FUEL ASSEMBLY OR PACKAGE WHICH HAS BEEN STORED UNDER WATER PRIOR TO SHIPMENT MAY BE STORED IN A CANISTER, PROVIDED THE GEOMETRY OF THE ASSEMBLY OR PACKAGE IS NOT REARRANGED.

4.3.4 CANISTERS SHALL BE SPACED TO PROVIDE A MINIMUM OF 12 INCHES OF WATER BETWEEN FUEL CONTAINED IN ADJACENT CANISTERS EXCEPT AS PROVIDED BELOW.

4.3.4.1 THOSE CANISTERS CONTAINING DRESDEN CANNED FUELS SHALL BE SPACED TO PROVIDE AT LEAST 9.6 INCHES OF WATER BETWEEN ADJACENT FUEL CANS AND THE IMMEDIATELY ADJACENT STORAGE RACKS SHALL REMAIN EMPTY.

4.3.4.2 THOSE CANISTERS CONTAINING BONUS SUPERHEATER FUELS SHALL BE SPACED TO PROVIDE AT LEAST 8 INCHES OF WATER BETWEEN ADJACENT CANISTERS CONTAINING SUPERHEATER FUEL AND AT LEAST 12 INCHES OF WATER BETWEEN CANISTERS CONTAINING SUPERHEATER AND THOSE CANISTERS CONTAINING OTHER TYPES OF FUEL.

Bases

The Fuel Receiving and Storage Area (FRS) has been designed to permit the handling of fuel assemblies such that geometry and administrative control prevents the interaction of one fuel assembly with another. These precautions are necessary since the FRS will at most times contain fuel in excess of that necessary to result in a criticality if placed in optimum array.

4.3 STORAGE CANISTER LOADING AND SPACING

Applicability

This specification establishes limits governing fuel distribution in the Storage Pool.

Objective

To assure that individual units and arrays of units are maintained in sub-critical configuration.

Specification

4.3.1 IRRADIATED NUCLEAR FUEL IN THE FUEL STORAGE POOL SHALL BE STORED IN CANISTERS.

4.3.2 THE QUANTITY OF FUEL STORED IN A CANISTER SHALL BE LIMITED SO THAT THE EFFECTIVE NEUTRON MULTIPLICATION FACTOR (k_{eff}) SHALL NOT EXCEED 0.85 BASED ON UNIRRADIATED FUEL. THE PRECISION OF THE k_{eff} CALCULATION SHALL BE CONFIRMED BY APPLYING THE CALCULATIONAL METHOD TO KNOWN CRITICAL SYSTEMS OF SIMILAR FUEL MATERIAL.

4.3.3 IN LIEU OF DETERMINING THE k_{eff} OF A CANISTER LOADING, ANY SINGLE FUEL ASSEMBLY OR PACKAGE WHICH HAS BEEN STORED UNDER WATER PRIOR TO SHIPMENT MAY BE STORED IN A CANISTER, PROVIDED THE GEOMETRY OF THE ASSEMBLY OR PACKAGE IS NOT REARRANGED.

4.3.4 CANISTERS SHALL BE SPACED TO PROVIDE A MINIMUM OF 12 INCHES OF WATER BETWEEN FUEL CONTAINED IN ADJACENT CANISTERS EXCEPT AS PROVIDED BELOW.

4.3.4.1 CANISTERS CONTAINING THREE OR LESS FUEL ASSEMBLIES FROM THE DRESDEN-1 REACTOR SHALL BE SPACED TO PROVIDE AT LEAST 7.25 INCHES OF WATER BETWEEN ADJACENT CANISTERS.

4.3.4.2 THOSE CANISTERS CONTAINING BONUS SUPERHEATER FUELS SHALL BE SPACED TO PROVIDE AT LEAST 8 INCHES OF WATER BETWEEN ADJACENT CANISTERS CONTAINING SUPERHEATER FUEL AND AT LEAST 12 INCHES OF WATER BETWEEN CANISTERS CONTAINING SUPERHEATER AND THOSE CANISTERS CONTAINING OTHER TYPES OF FUEL.

The storage racks and canisters provide a minimum edge to edge spacing of eight inches between adjacent canisters and a minimum edge to edge spacing of twelve inches between the fuel contained in adjacent canisters. This separation of twelve inches of water prevents significant interaction of neutrons and provides a safe array.

A k_{eff} less than 0.85 provides a reasonable margin of safety to account for uncertainty in calculations and error in the identification of the fissile material content. By comparing the calculative method with known critical systems of similar fuel material, uncertainties in the method are minimized.

Individual fuel elements or packages previously stored under water have been demonstrated as safe and, therefore, no further calculations are deemed necessary provided that 12 inches is maintained between fuel in adjacent canisters in storage.

Administrative procedures are established to assure correct canister loadings. The decreased water spacings permitted for Dresden canned fuel and BONUS superheater fuel have been shown to be nuclearly safe in NFS letters to USAEC Division of Materials Licensing dated April 28, 1965 and January 22, 1969.

The consequence of exceeding this specification would be to decrease the margin of safety for the prevention of criticality. In Paragraphs 7.33, 7.34 and 8.29 of the Safety Analysis it has been assumed that despite all design efforts, a criticality incident somehow does occur. The consequences of such an unlikely event have been analyzed and show that neither operating personnel nor the general public would be injured as a result.

The action to be taken to correct an exceeding of this specification is to take immediate steps to increase spacing of fuel in storage or decrease canister loading.

Bases

The Fuel Receiving and Storage Area (FRS) has been designed to permit the handling of fuel assemblies such that geometry and administrative control prevents the interaction of one fuel assembly with another. These precautions are necessary since the FRS will at most times contain fuel in excess of that necessary to result in a criticality if placed in optimum array.

The storage racks and canisters provide a minimum edge to edge spacing of eight inches between adjacent canisters and a minimum edge to edge spacing of twelve inches between the fuel contained in adjacent canisters. This separation of twelve inches of water prevents significant interaction of neutrons and provides a safe array.

A k_{eff} less than 0.85 provides a reasonable margin of safety to account for uncertainty in calculations and error in the identification of the fissile material content. By comparing the calculative method with known critical systems of similar fuel material, uncertainties in the method are minimized.

Individual fuel elements or packages previously stored under water have been demonstrated as safe and, therefore, no further calculations are deemed necessary provided that 12 inches is maintained between fuel in adjacent canisters in storage.

Administrative procedures are established to assure correct canister loadings. The decreased water spacings permitted for Dresden canned fuel and BONUS superheater fuel have been shown to be nuclearly safe in NFS letters to USAEC Division of Materials Licensing dated April 28, 1965, January 22, 1969, and July 3, 1973.

The consequence of exceeding this specification would be to decrease the margin of safety for the prevention of criticality. In Paragraphs 7.33, 7.34 and 8.29 of the Safety Analysis it has been assumed that despite all design efforts, a criticality incident somehow does occur. The consequences of such an unlikely event have been analyzed and show that neither operating personnel nor the general public would be injured as a result.

The action to be taken to correct an exceeding of this specification is to take immediate steps to increase spacing of fuel in storage or decrease canister loading.

4.3 STORAGE CANISTER LOADING AND SPACING

Applicability

This specification establishes limits governing fuel distribution and handling in the Fuel Storage Pool (FSP) and the Cask Unloading/Loading Pool (CUP) section of the Fuel Receiving and Storage (FRS) Area.

Objective in the FRS

To assure that individual units and arrays of units are maintained in subcritical configuration.

Specification

4.3.1 Irradiated nuclear fuel assemblies in the Fuel Storage Pool (FSP) and the Cask Unloading/Loading Pool (CUP) shall be stored in canisters.

4.3.2 The quantity of fuel stored in a canister and the handling of fuel and fuel canisters in the FRS Storage Pool and the CUP shall be limited so that the effective neutron multiplication factor (k_{eff}) shall not exceed 0.95 including the possible nonconservative bias of the calculational method used and the statistical uncertainty (normally 95 percent confidence) as well as considered credible accidents, corrosion, and manufacturing uncertainties.

4.3.3 Fuel canisters shall not contain more than the following number of assemblies:

a) One PWR assembly

b) Two BWR assemblies

c) Three Dresden-1 assemblies

4.3.4 Canisters shall be spaced to provide a minimum of twelve (12) inches of water between fuel contained in adjacent canisters except as provided below.

4.3.4.1 Canisters containing three or less fuel assemblies from the Dresden-1 reactor shall be spaced to provide at least 7.25 inches of water between adjacent canisters.

4.3.5 Only one canister (whether or not it contains fuel assemblies) may be handled at a time out of the storage locations in the FSP and/or the CUP. Simultaneous handling operations in the FSP and the CUP are permitted.

(Change No WVDP-003)
October 29, 1984

4.3.6 No fuel permitted in lift rack when moving or transferring the pool gate or a shipping container into or out of the CUP.

4.3.7 No more than one fuel assembly of any type may be handled outside of its canister or licensed shipping container at a time in the CUP. The following maximum number of canisters are permitted to be present in the CUP:

4.3.7.1 One canister of PWR fuel, or

4.3.7.2 Four canisters of BWR fuel, or

4.3.7.3 Three canisters of Dresden-1 fuel, or

4.3.7.4 Up to 18 Dresden-1 thoria rods.

4.3.7.5 No more than one fuel type is permitted to be present in the CUP at any time except that 18 Dresden-1 thoria rods and 6 Dresden-1 assemblies may be in the cask at one time. This exception expires on December 31, 1984.

4.3.8 The maximum quantity of fuel assemblies permitted in a shipping cask at a time in the CUP will be limited to that quantity permitted by the license for that container:

4.3.9 The maximum quantity of fuel assemblies permitted in a shipping cask at a time in the CUP will be limited to that quantity permitted by the license for that container:

4.3.10 Fuel handling shall be stopped immediately upon any of the following occurances and shall remain shutdown until written permission to restart has been granted by the Radiological and Nuclear Safety Manager:

4.3.10.1 Any time a fuel assembly is dropped

4.3.10.2 Any time a canister is dropped whether or not it contains fuel

4.3.10.3 Any time a fuel assembly is stuck in a canister and cannot be freed in accordance with the operating procedure

4.3.10.4 In the event that fuel rods or hardware separate from an assembly in transit or during handling

4.3.10.5 Any criticality alarm other than planned tests

4.3.10.6 Failure of any criticality alarm system

Bases

The Fuel Receiving and Storage Area (FRS) has been designed to permit the handling of fuel assemblies such that geometry and administrative control prevents the interaction of one fuel assembly with another. These precautions are necessary since the FRS will at most times contain fuel in excess of that necessary to result in criticality if placed in optimum array.

The storage racks and canisters provide a minimum edge to edge spacing of eight inches between adjacent canisters and a minimum edge to edge spacing of twelve inches between the fuel contained in adjacent canisters. This separation of twelve inches of water prevents significant interaction of neutrons and provides a safe array.

A k_{eff} less than 0.95 ($k_{eff} + 2\sigma \leq 0.95$) provides a reasonable margin to critical. The base case fuel used in the analysis is unirradiated and provides an additional safety margin since the stored fuel is irradiated. By comparing the calculational method with known critical systems of similar fuel material, uncertainties in the method are known.

Individual fuel elements or packages previously stored under water have been demonstrated as safe and, therefore, no further calculations are deemed necessary provided that twelve inches is maintained between fuel in adjacent canisters in storage.

Administrative procedures are established to assure correct canister loadings. The decreased water spacing permitted for Dresden-1 fuel has been shown to be nuclearly safe in NFS letter to USAEC Division of Materials Licensing dated July 3, 1973.

Calculations performed in 1983 have shown that the Technical Specification limit of 0.95 will not be exceeded for intended operations and postulated accident scenarios as long as the requirements in this Technical Specification are complied with.

The consequence of exceeding this specification would be to decrease the margin of safety for the prevention of criticality.

4.4 DISSOLVER CHARGING

Applicability

This specification establishes limits to govern the dissolver charging operation.

Objective

To prevent criticality in the dissolvers.

Specification

4.4.1 OXIDE FUELS CONTAINING MORE THAN 5 WEIGHT PERCENT U-235 PRIOR TO IRRADIATION SHALL BE CHARGED INTO DISSOLVERS 3C-1 OR 3C-2 ONLY IN BASKETS IN WHICH SUFFICIENT FIXED NEUTRON ABSORBER IS DISTRIBUTED SUCH THAT THE k_{eff} OF A DISSOLVER BARREL DURING DISSOLUTION SHALL NOT EXCEED 0.93.

4.4.2 THE MODE OF CHARGING DISSOLVENT SHALL BE SUCH THAT THE RESULTANT AVERAGE CONCENTRATION OF U-235 IN SOLUTION SHALL NOT EXCEED THE VALUES SHOWN IN FIGURE 4.4.1. THE U-235 CONTENT OF THE CHARGED FUEL SHALL BE ASSUMED TO BE THE U-235 CONTENT OF THE FUEL PRIOR TO IRRADIATION, EXCEPT THAT

4.4.3 FOR CATEGORY 3 FUELS, THE RESULTANT CONCENTRATION OF U-235 IN SOLUTION MAY BE INCREASED ABOVE THAT SPECIFIED IN 4.4.2 BY THE USE OF A SOLUBLE NEUTRON ABSORBER PROVIDED (A) THE ABSORBER IS ADDED BEFORE OR WITH THE DISSOLVENT (B) THE EXCESS NITRIC ACID EXCEEDS 4 M, (C) THE BORON CONCENTRATION OF THE DISSOLVENT EXCEEDS 0.03 M, AND (D) THE RESULTANT U-235 CONCENTRATION, BASED UPON FUEL CONTENT PRIOR TO IRRADIATION IS LESS THAN 15.6 GRAMS PER LITER.

Bases

During dissolution, fines generated in shearing of the oxide fuels can escape from the dissolver charging baskets. If there is no agitation and little dissolution, these fines could be dispersed in the annulus around the dissolver baskets thus increasing the k_{eff} of the barrel region. To establish nuclear safety of oxide fuels exceeding 5% enrichment, a neutron absorber is fixed and distributed in the charging baskets. The calculation determining the amount and distribution of the absorber takes into account changes in geometry of the charge and the presence of concentrated solution and fines adjacent to the baskets during dissolution. Surveillance of neutron absorber material (Technical Specification 6.10) will reveal when corrosion losses diminish the absorber's effectiveness to the limit specified.

(Change No. 8)

4.4 DISSOLVER CHARGING

Applicability

This specification establishes limits to govern the dissolver charging operation.

Objective

To prevent criticality in the dissolvers.

Specification

4.4.1 OXIDE FUELS CONTAINING MORE THAN 5 WEIGHT PERCENT U-235 PRIOR TO IRRADIATION SHALL BE CHARGED INTO DISSOLVERS 3C-1 OR 3C-2 ONLY IN BASKETS IN WHICH SUFFICIENT FIXED NEUTRON ABSORBER IS DISTRIBUTED SUCH THAT THE k_{eff} OF A DISSOLVER BARREL DURING DISSOLUTION SHALL NOT EXCEED 0.95.

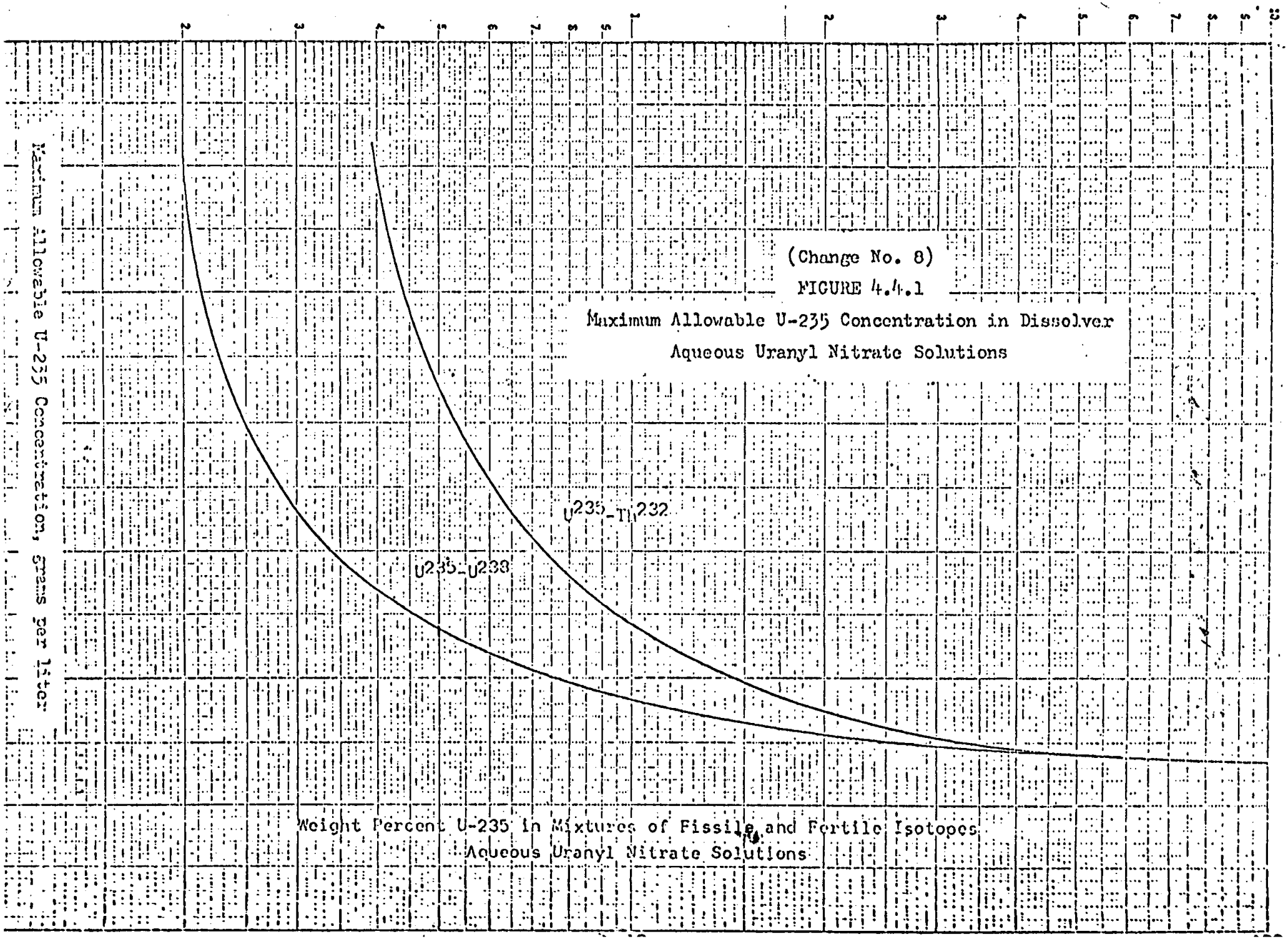
4.4.2 THE MODE OF CHARGING DISSOLVENT SHALL BE SUCH THAT THE RESULTANT AVERAGE CONCENTRATION OF U-235 IN SOLUTION SHALL NOT EXCEED THE VALUES SHOWN IN FIGURE 4.4.1. THE U-235 CONTENT OF THE CHARGED FUEL SHALL BE ASSUMED TO BE THE U-235 CONTENT OF THE FUEL PRIOR TO IRRADIATION, EXCEPT THAT

4.4.3 FOR CATEGORY 3 FUELS, THE RESULTANT CONCENTRATION OF U-235 IN SOLUTION MAY BE INCREASED ABOVE THAT SPECIFIED IN 4.4.2 BY THE USE OF A SOLUBLE NEUTRON ABSORBER PROVIDED (A) THE ABSORBER IS ADDED BEFORE OR WITH THE DISSOLVENT (B) THE EXCESS NITRIC ACID EXCEEDS 4 M, (C) THE BORON CONCENTRATION OF THE DISSOLVENT EXCEEDS 0.03 M, AND (D) THE RESULTANT U-235 CONCENTRATION, BASED UPON FUEL CONTENT PRIOR TO IRRADIATION IS LESS THAN 15.6 GRAMS PER LITER.

4.4.4 FOR CATEGORY 10 FUELS, TRANSFERS TO THE DISSOLVERS SHALL BE CONTROLLED SO THAT THE RESULTANT U-235 EQUIVALENT CONCENTRATION IN A DISSOLVER SHALL NOT EXCEED THE CONCENTRATIONS SHOWN IN FIGURE 4.4.2.

Bases

During dissolution, fines generated in shearing of the oxide fuels can escape from the dissolver charging baskets. If there is no agitation and little dissolution, these fines could be dispersed in



(Change No. 8)

FIGURE 4.4.1

Maximum Allowable U-235 Concentration in Dissolver Aqueous Uranyl Nitrate Solutions

111738

PROPOSED CHANGE

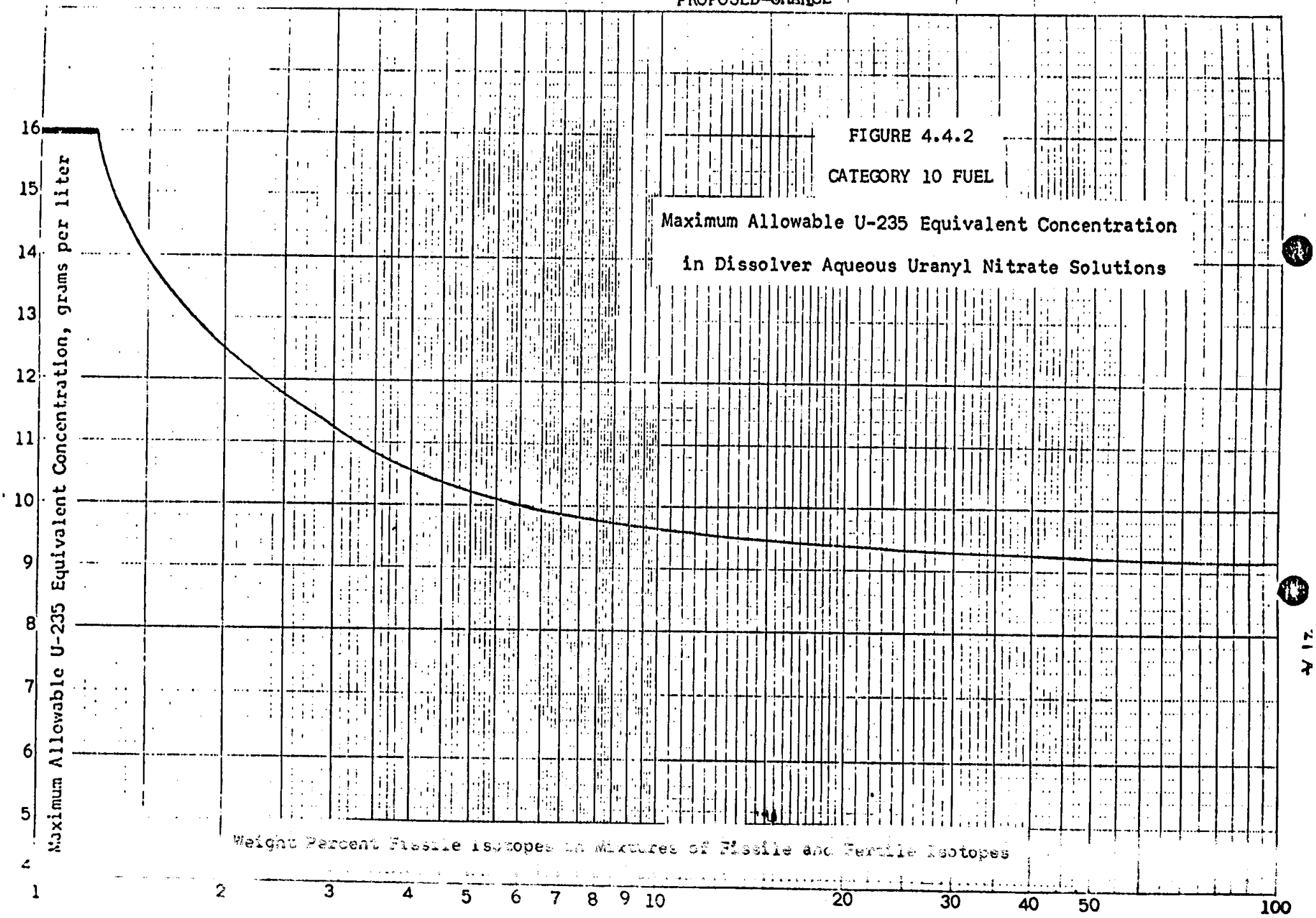


FIGURE 4.4.2

CATEGORY 10 FUEL

Maximum Allowable U-235 Equivalent Concentration

in Dissolver Aqueous Uranyl Nitrate Solutions

4.4-12

Neither the upper portions of the dissolver nor the subsequent feed adjustment tank to which solutions are transferred prior to assay are of favorable geometry. Hence, the concentrations of solutions in the dissolver must be controlled to values that are made for the U-235 enrichment of the fuel prior to irradiation. The concentrations specified in Figure 4.4.1 are 70% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. To take into account variance in analytical and instrumentation data used in determining concentrations, three standard deviations in the conservative direction will be applied to the data.

Soluble neutron absorbers such as B-10 in boric acid have been extensively studied for primary criticality control as shown in ORNL-3309, Soluble Neutron Poisons as a Primary Criticality Control in Shielded and contained Radiochemical Facilities. Since the U-235 concentration limit specified in 4.4.3 would (with thorium in solution) be subcritical without the boron and excess acid, these soluble neutron absorbers are considered a secondary criticality control. Soluble neutron absorber is added, under administrative control, with the dissolvent in a concentration such that U-235 concentration of the dissolver solution is less than 70% of the critical concentration with the neutron absorber. The limits of Specification 4.4.3 are based upon a criticality evaluation performed by NFS using the most restrictive parameters for Category 3 fuels. Written permission of the shift supervisor will be required on the dissolver data sheet prior to the addition of acid-soluble absorber solution to the dissolver.

A criticality excursion in a heavily shielded cell is a possible consequence of exceeding this specification. In paragraphs 7.30 - 7.32 and 8.24 - 8. 28 of the Safety Analysis, it has been shown that even if a nuclear criticality were to occur, the dose through the 6-foot thick concrete walls of the Chemical Processing Cell would not be likely to exceed 0.1 rem, and under highly unlikely recycling of radioiodine into the plant by a downdraft from the stack, thyroid doses to personnel would not exceed 75 rem.

The action to be taken in the event of exceeding this Technical Specification is to stop dissolving operations and inform the Technical Services Manager (or his designated alternate). Specific directions for recovery will be issued by the Plant Safety Committee.

the annulus around the dissolver baskets thus increasing the k_{eff} of the barrel region. To establish nuclear safety of oxide fuels exceeding 5% enrichment, a neutron absorber is fixed and distributed in the charging baskets. The calculation determining the amount and distribution of the absorber takes into account changes in geometry of the charge and the presence of concentrated solution and fines adjacent to the baskets during dissolution. Surveillance of neutron absorber material (Technical Specification 6.10) will reveal when corrosion losses diminish the absorber's effectiveness to the limit specified.

Neither the upper portions of the dissolver nor the subsequent feed adjustment tank to which solutions are transferred prior to assay are of favorable geometry. Hence, the concentrations of solutions in the dissolver must be controlled to values that are safe for the U-235 enrichment of the fuel prior to irradiation. The concentrations specified in Figure 4.4.1 are 70% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. To take into account variance in analytical and instrumentation data used in determining concentrations, three standard deviations in the conservative direction will be applied to the data.

Soluble neutron absorbers such as B-10 in boric acid have been extensively studied for primary criticality control as shown in ORNL-3309, Soluble Neutron Poisons as a Primary Criticality Control in Shielded and Contained Radiochemical Facilities. Since the U-235 concentration limit specified in 4.4.3 would (with thorium in solution) be subcritical without the boron and excess acid, these soluble neutron absorbers are considered a secondary criticality control. Soluble neutron absorber is added, under administrative control, with the dissolvent in a concentration such that U-235 concentration of the dissolver solution is less than 70% of the critical concentration with the neutron absorber. The limits of Specification 4.4.3 are based upon a criticality evaluation performed by NFS using the most restrictive parameters for Category 3 fuels. Written permission of the shift supervisor will be required on the dissolver data sheet prior to the addition of acid-soluble solution to the dissolver.

For Category 10 fuel the concentrations of solutions in the dissolver must be controlled to values that are safe for fissile isotopes in

mixtures of fissile and fertile isotopes. The concentrations specified in Figure 4.4.2 are 60% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes.

The action to be taken in the event of exceeding this Technical Specification is to stop dissolving operations and inform the Technical Services Manager (or his designated alternate). Specific directions for recovery will be issued by the Plant Safety Committee.

(Change No. 16)

4.5 FEED SOLUTION CONCENTRATION

Applicability

This specification establishes the concentration limits to be observed in the operation of the feed adjustment and accountability tank.

Objective

To maintain a subcritical concentration of fissile material in feed solutions.

Specification

4.5.1 THE CONCENTRATION OF FISSILE ISOTOPES IN THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK SHALL NOT EXCEED, AFTER ADJUSTMENT, THE U-235 CONCENTRATION SHOWN IN FIGURE 4.5.1, BASED UPON FUEL ENRICHMENT PRIOR TO IRRADIATION, EXCEPT THAT

4.5.2 FOR CATEGORY 3 FUELS, THE U-235 CONCENTRATION MAY BE INCREASED ABOVE THAT SPECIFIED IN 4.5.1 ABOVE BY THE PRIOR ADDITION OF A SOLUBLE NEUTRON ABSORBER PROVIDED (A) THE EXCESS NITRIC ACID EXCEEDS 4 M, (B) THE BORON CONCENTRATION IN THE SOLUTION EXCEEDS 0.3 M AND (C) THE RESULTANT U-235 CONCENTRATION IS LESS THAN 15.6 GRAMS PER LITER, BASED UPON FUEL ENRICHMENT PRIOR TO IRRADIATION.

Bases

The feed adjustment and accountability tank is not geometrically favorable; therefore, the concentration of fissile materials in the tank must be controlled to assure nuclear criticality safety. This control is provided prior to feed adjustment by Specification 4.4 but any concentration of the feed solution must be limited so that the final concentrations do not exceed the limits of Specification 4.5. For conservatism and consistency with Specification 4.4, Specification 4.5 is based upon the U-235 content of the fuel prior to irradiation.

The concentration limits defined by Figure 4.5.1 are 70% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. To take into account variance in analytical and instrumentation data used in determining concentrations, three standard deviations in the conservative direction will be applied to the data.

Soluble neutron absorbers such as B-10 in boric acid have been extensively studied for primary criticality control as shown in ORNL-3309, Soluble Neutron Poisons as a Primary Criticality Control in Shielded and Contained Radiochemical Facilities. Since the U-235 concentration limit specified in 4.5.2 would (with thorium in the solution) be subcritical without the boron and excess acid, these soluble neutron absorbers are considered a secondary criticality control.

(Change No. 8)

4.5 FEED SOLUTION CONCENTRATION

Applicability

This specification establishes the concentration limits to be observed in the operation of the feed adjustment and accountability tank.

Objective

To maintain a subcritical concentration of fissile material in feed solutions.

Specification

4.5.1 THE CONCENTRATION OF FISSILE ISOTOPES IN THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK SHALL NOT EXCEED, AFTER ADJUSTMENT, THE U-235 CONCENTRATION SHOWN IN FIGURE 4.5.1, BASED UPON FUEL ENRICHMENT PRIOR TO IRRADIATION, EXCEPT THAT

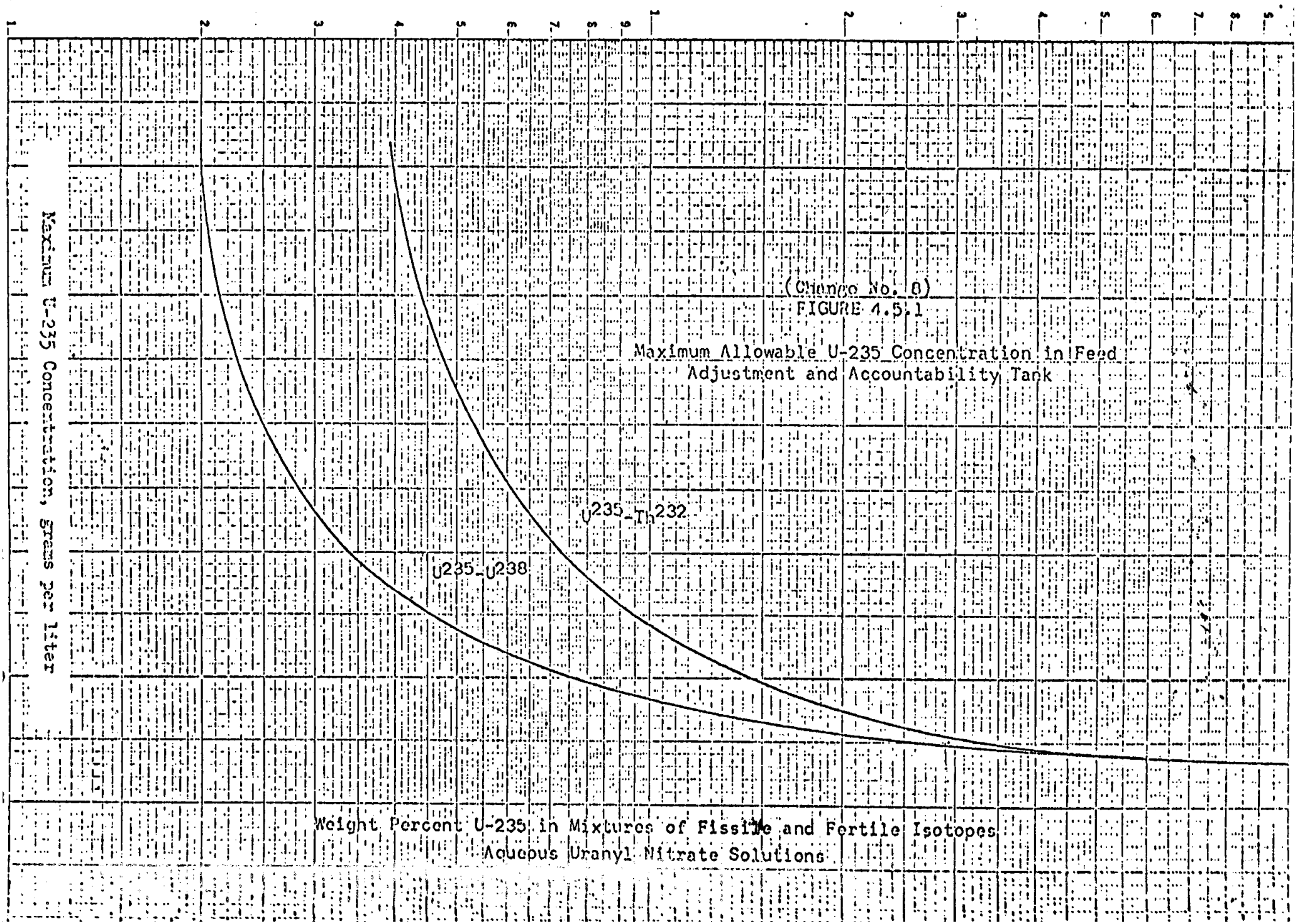
4.5.2 FOR CATEGORY 3 FUELS, THE U-235 CONCENTRATION MAY BE INCREASED ABOVE THAT SPECIFIED IN 4.5.1 ABOVE BY THE PRIOR ADDITION OF A SOLUBLE NEUTRON ABSORBER PROVIDED (A) THE EXCESS NITRIC ACID EXCEEDS 4 M, (B) THE BORON CONCENTRATION IN THE SOLUTION EXCEEDS .03 M AND (C) THE RESULTANT U-235 CONCENTRATION IS LESS THAN 15.6 GRAMS PER LITER, BASED UPON FUEL ENRICHMENT PRIOR TO IRRADIATION.

4.5.3 FOR CATEGORY 10 FUELS THE CONCENTRATION OF FISSILE ISOTOPES IN THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK SHALL NOT EXCEED, AFTER ADJUSTMENT, THE U-235 EQUIVALENT CONCENTRATION SHOWN IN FIGURE 4.5.2 BASED UPON ANALYSIS PRIOR TO ADJUSTMENT.

Bases

The feed adjustment and accountability tank is not geometrically favorable; therefore, the concentration of fissile materials in the tank must be controlled to assure nuclear criticality safety. This control is provided prior to feed adjustment by Specification 4.4 but any concentration of the feed solution must be limited so that the final concentrations do not exceed the limits of Specification 4.5.

(Change No. 16)



(Change No. 8)

FIGURE 4.5.1

Maximum Allowable U-235 Concentration in Feed Adjustment and Accountability Tank

111740

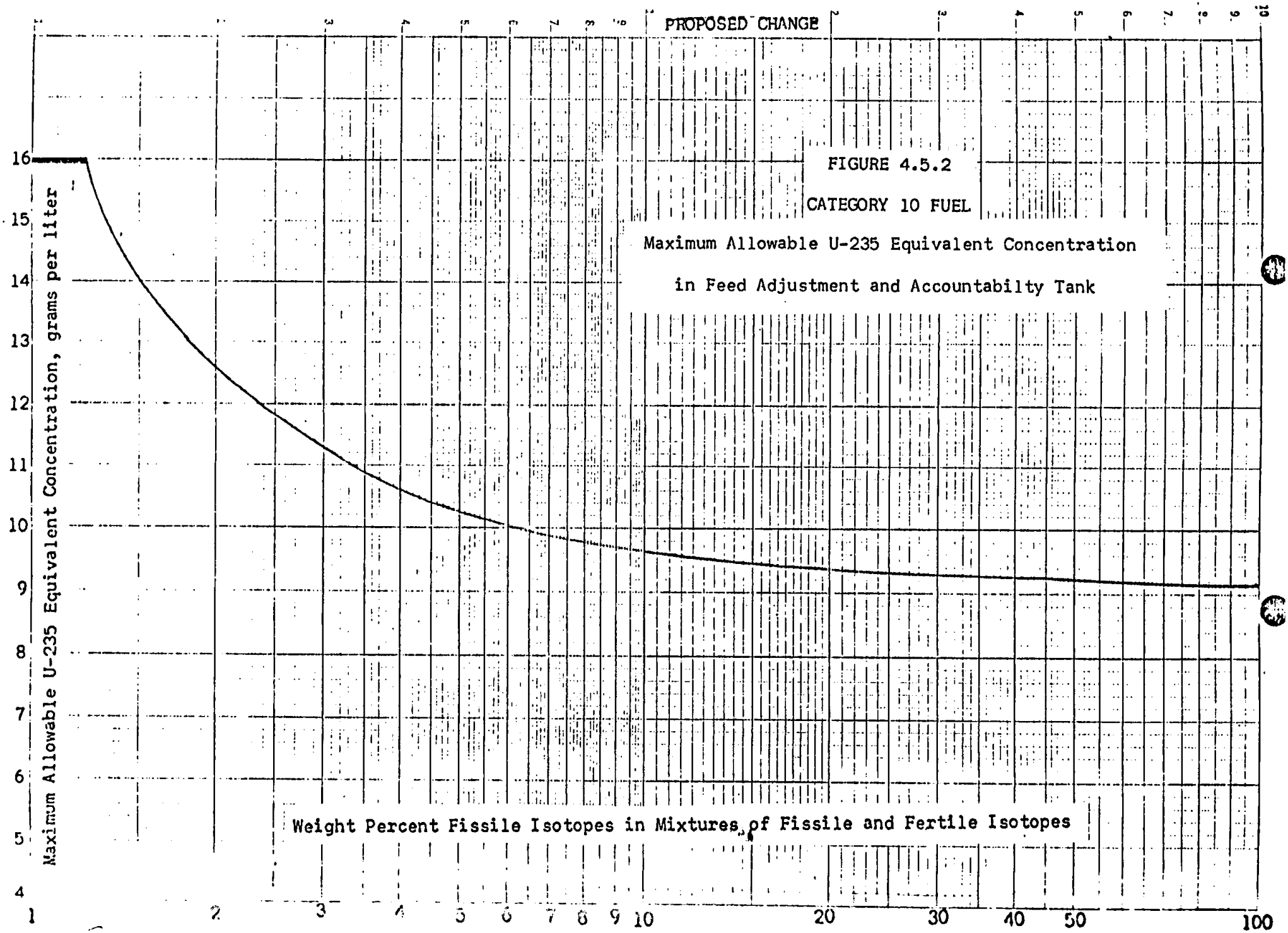
PROPOSED CHANGE

FIGURE 4.5.2

CATEGORY 10 FUEL

Maximum Allowable U-235 Equivalent Concentration

in Feed Adjustment and Accountabilty Tank



Soluble neutron absorber is present in the feed solution such that the U-235 concentration is less than 70% of the critical concentration with neutron absorber. The limits of Specification 4.5.2 are based upon a criticality evaluation performed by NFS using the most restrictive parameters of Category 3 fuels.

A criticality excursion in a heavily shielded cell is a possible consequence of exceeding this specification. In paragraphs 7.30 - 7.32 and 8.24 - 8.28 of the Safety Analysis, it has been shown that even if a nuclear criticality were to occur, the dose through the 6-foot thick concrete walls of the Chemical Processing Cell would not be likely to exceed 0.1 rem, and under highly unlikely recycling of radioiodine into the plant by a downdraft from the stack, thyroid doses to personnel would not exceed 75 rem.

If this specification is exceeded, no concentration or transfer of solution in the feed adjustment tank may be performed and the Technical Services Manager or his alternate must be notified. The Plant Safety Committee will issue specific directions for recovery.

(Change No. 8)

For conservatism and consistency with Specification 4.4, Specifications 4.5.1 and 4.5.2 are based upon the U-235 content of the fuel prior to irradiation. The concentration limits defined by Figure 4.5.1 are 70% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. To take into account variance in analytical and instrumentation data used in determining concentrations, three standard deviations in the conservative direction will be applied to the data.

Soluble neutron absorbers such as B-10 in boric acid have been extensively studied for primary criticality control as shown in ORNL-3309, Soluble Neutron Poisons as a Primary Criticality Control in Shielded and Contained Radiochemical Facilities. Since the U-235 concentration limit specified in 4.5.2 would (with thorium in the solution) be subcritical without the boron and excess acid, these soluble neutron absorbers are considered a secondary criticality control.

Soluble neutron absorber is present in the feed solution such that the U-235 concentration is less than 70% of the critical concentration with neutron absorber. The limits of Specification 4.5.2 are based upon a criticality evaluation performed by NFS using the most restrictive parameters of Category 3 fuels.

For Category 10 fuel the concentrations of solutions in the dissolver must be controlled to values that are safe for fissile isotopes in mixtures of fissile and fertile isotopes. The concentrations specified in Figure 4.5.2 are 60% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes.

If this specification is exceeded, no concentration or transfer of solution in the feed adjustment tank may be performed and the Technical Services Manager or his alternate must be notified. The Plant Safety Committee will issue specific directions for recovery.

4.6 FISSIONABLE ISOTOPE CONCENTRATION IN SOLVENT EXTRACTION

APPLICABILITY

This specification establishes limits for the operation of the solvent extraction columns in the plant.

OBJECTIVE

To assure subcritical operation of the solvent extraction columns.

SPECIFICATION

4.6.1 EVEN UNDER CONDITIONS WHERE CONTROL OF ANY SINGLE VARIABLE IS LOST THE MAXIMUM CONCENTRATIONS OF FISSIONABLE ISOTOPES WITHIN THE COLUMNS SHALL NOT EXCEED VALUES CORRESPONDING TO A k_{eff} OF 0.95.

BASES

Throughout the solvent extraction system the primary control of criticality is provided by controlling the concentration of fissionable material. This Technical Specification is designed to provide a concentration of fissionable material less than that required to achieve criticality with a margin of safety of 0.05 k_{eff} units.

The flooding velocity of the limiting column determines the maximum flow of aqueous and organic through a series of columns. Table 4.21, as amended, of the Final Safety Analysis Report shows the nominal processing flow rates--the lower values, and the flooding rates--the higher values. The streams given in this table are numbered and are identified by this number on Drawing No. 15R-A-5.

Concentrations in the column terminal streams are controlled by: (1) limiting the fissionable isotope concentration in the feed (HAF) (see Spec. 4.5.1); (2) limiting the TBP content in the extractant to a value which cannot contain a critical concentration of fissionable isotopes within the solvent extraction columns, (see Spec. 4.7.1); and (3) maintaining stream ratios as shown in Table 4.21 as amended to $\pm$ 30% of the values shown.

The most critical factors for control of fissionable isotope concentration within the columns are, omission of nitric acid in the scrub streams on the extraction columns, or stoppage of the strip stream flow for appreciable periods of time on the stripping columns. Occurrence of these events under the most extreme conditions present no criticality hazards as shown by the data given in Table 6.143 of the Final Safety Analysis Report as amended. In determining the k_{eff} of 0.95 for the partition and uranium solvent extraction columns which contain U-233 or Pu, the reactivity based upon the analytically determined fissionable isotope concentrations will be taken into account.

The consequence of exceeding this Technical Specification is to reduce the margin of safety in preventing criticality and in the ultimate sense would result in a critical incident. Although such an event would be detected by the plant monitoring system, no personnel exposure in excess of the guidelines of Title 10 Code of Federal Regulations Part 100 would be received from neutron irradiation from such an event since no part of the solvent extraction equipment is shielded with less than 3 feet of concrete. Gaseous activity might well be discharged from the stack in excess of Paragraph 4.1. This possibility has been analyzed in paragraphs 7.30-7.32 and 8.24-8.28 of the Safety Analysis and it has been shown that even in the event such a critical incident were to occur there would not be injury to either plant personnel or the general public.

If this specification is found to be exceeded and if immediate operating steps cannot be taken to correct the fact, the solvent extraction system must be shut down until the error can be corrected.

4.7 EXTRACTANT CONCENTRATION

Applicability

This specification applies to the concentrations of extractant that may be used in the extraction process for various fuel enrichments.

Objective

To limit the concentrations of fissile isotopes in the solvent to prevent nuclear criticality.

Specification

4.7.1 CONCENTRATION OF THE EXTRACTANT FOR THE VARIOUS FUEL CATEGORIES LISTED IN SPECIFICATION 3.1.1 SHALL NOT EXCEED THE FOLLOWING:

MAXIMUM UNIRRADIATED FUEL ENRICHMENT WEIGHT % U-235	MAXIMUM EXTRACTANT CONCENTRATION VOLUME % TBP
10.0	33.0
26.5	11.0
100	6.0

Basis

The geometry of uranium extraction, partition and uranium stripping columns is such that nuclear criticality must be prevented by controlling the concentrations of fissile isotopes in these units.

The maximum concentration of U-235 in the aqueous feed to the solvent extraction system is specified in technical specification 4.5 and is limited to 70% of the concentration which would become critical with an unlimited volume. The concentration of uranium in the organic extractant phase in the columns is limited by the tributylphosphate (TBP) concentration in the phase. By limiting the concentration of TBP in the extractant phase to the levels given above, the maximum theoretical U-235 concentration in the solvent phase is limited to less than 50% of the minimum critical concentration. Details of these limits are discussed in paragraphs 6.142 to 6.155 of the NFS Final Safety Analysis.

Requirements for analysis of the solvent phase for TBP content are given in technical specification 6.11.

The consequence of exceeding this specification is to reduce the margin of safety in preventing accidental criticality.

(Change No. 18)

4.8 URANIUM PRODUCT SOLUTION STORAGE

Applicability

This specification establishes the concentration limits for the storage of uranium product solutions.

Objective

To assure that the uranium product solutions will be stored under nuclearly safe conditions.

Specification

4.8.1 URANYL NITRATE SOLUTIONS SHALL NOT BE STORED EXCEPT AS FOLLOWS:

4.8.1.1 URANYL NITRATE SOLUTION MAY BE STORED IN ANY VESSEL IF THE U-235 CONCENTRATION IS NO GREATER THAN THE VALUES SHOWN IN FIGURE 4.8.1 AND PROVIDED THE U-233 PLUS PU CONTENT IS NOT GREATER THAN 1% OF THE U-235 CONTENT.

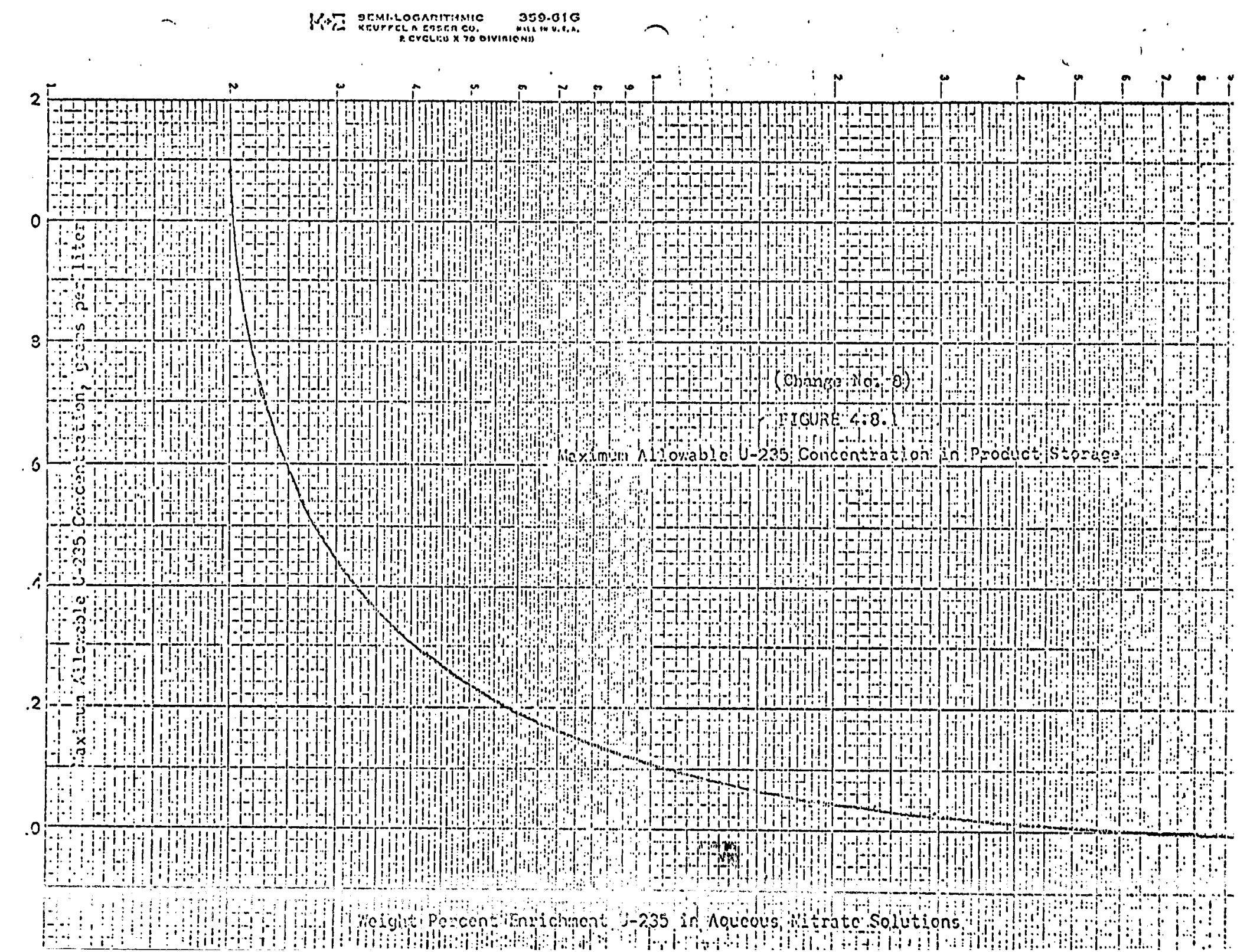
4.8.1.2 URANYL NITRATE SOLUTION CONTAINING U-233 MAY BE STORED IN ANY VESSEL IF THE COMBINED U-233 AND U-235 CONCENTRATION DOES NOT EXCEED 10.0 GRAMS PER LITER AND PROVIDED THAT THE PU CONTENT IS NOT GREATER THAN 1% OF THE COMBINED U-233 AND U-235 CONTENT.

4.8.1.3 URANYL NITRATE SOLUTION MAY BE STORED IN FIXED POISON TANKS 5D-13A AND 5D-13B AT A CONCENTRATION NOT EXCEEDING 350 GRAMS U-235 PER LITER PROVIDED THE U-233 AND PU CONTENT IS NOT GREATER THAN 1% OF THE U-235 CONTENT.

4.8.1.4 URANYL NITRATE SOLUTION CONTAINING U-233 MAY BE STORED IN FIXED POISON TANKS 5D-13A AND 5D-13B IF THE CONCENTRATION OF U-233 AND U-235 COMBINED DOES NOT EXCEED 250 GRAMS PER LITER, PROVIDED (A) THE U-233 CONTENT IS NOT GREATER THAN 20% OF THE COMBINED U-233 AND U-235 CONTENT AND (B) THE PU CONTENT IS NOT GREATER THAN 1% OF THE COMBINED U-233 AND U-235 CONTENT.

4.8.1.5 SOLUTIONS STORED IN ACCORDANCE WITH 4.8.1.3 AND 4.8.1.4 ABOVE MAY BE PACKAGED IN CONTAINERS WHICH SHALL BE PLACED IN A RIGID STAINLESS STEEL CONTAINER WITH AN INSIDE DIAMETER NOT EXCEEDING 5.1 INCHES AND A LENGTH NOT EXCEEDING 53 INCHES. THIS STAINLESS STEEL CONTAINER SHALL BE SECURELY CENTERED AND TOTALLY ENCLOSED IN A RIGID STRUCTURE, THE MINIMUM OUTER DIMENSIONS OF WHICH ARE AT LEAST 22.5 INCHES.

4.8.1.6 UNITS PACKAGED IN ACCORDANCE WITH 4.8.1.5 SHALL BE STORED IN EITHER THE PRODUCT PACKAGING AND STORAGE (PPS) AREA OR, ON AN INTERIM BASIS, IN THE NORTH AISLE OF THE FUEL RECEIVING AND STORAGE (FRS) AREA. A UNIT SHALL NOT BE STORED ON TOP OF ANOTHER.



(Change No. 8)

FIGURE 4.8.1

Maximum Allowable U-235 Concentration in Product Storage

Bases

The limiting concentrations for U-235 specified in 4.8.1.1 are 80% of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. The calculations in ORNL-TM-686, which were made with the IBM 7090 MODRIC neutron diffusion code, overestimate the experimentally determined critical concentration of fully enriched uranium by 3 percent and underestimate the experimentally determined critical concentration of 3.04 percent enriched uranium by 10 percent. An 80% of calculated critical concentrations is justifiable for such operations because these are product solutions and the analysis of the constituents is known within an accuracy of ± 3 percent.

The limiting concentration of combined U-233 and U-235 specified in 4.8.1.2 is based on the recommendations contained in TID-7016, Revision 1, Table 1.

The limiting concentrations of U-235 specified in 4.8.1.3 and combined U-233 and U-235 specified in 4.8.1.4 are based on the recommendations of Work Group 3 of Subcommittee 8 of the Standards Committee of the American Nuclear Society. The concentration limit in 4.8.1.4 also takes into account subsequent storage in the containers specified in 4.8.1.5. Before the final product solution is measured out for shipping, close administrative controls are maintained to assure that concentrations are known.

Geometrically favorable vessels are used throughout the measurement and shipping operations to prevent criticality. Normally, the uranium product will be stored in shipping containers; however, it may be desirable to use temporary storage. Provisions have been made for the storage (in a 15 x 4 planar array) of 60 storage containers in the PPS and the storage (in a 30 x 2 planar array) of 60 storage containers in the north aisle of the FRS. Such storage arrays are safe, as indicated by the USAEC approval for the shipment of up to 68 birdcages in a Fissile Class III shipment.

In the event these specifications are exceeded, the corrective measures to be taken pursuant to Specification 7.1.7.1 shall require the approval of the Technical Services Manager (or his designated alternate) prior to implementation.

4.9 PLUTONIUM ION EXCHANGE OPERATION

Applicability

This specification applies to operation of the plutonium ion exchange columns.

Objective

To prevent uncontrolled exothermic reactions in the ion exchange columns.

Specification

4.9.1 ION EXCHANGE RESIN, WHEN LOADED WITH PLUTONIUM, SHALL NOT BE PERMITTED TO REMAIN IN CONTACT WITH NON-FLOWING NITRIC ACID SOLUTION FOR MORE THAN 24 HOURS.

4.9.2 THE TEMPERATURE OF ANY PROCESS SOLUTION FED TO THE ION EXCHANGE COLUMNS SHALL NOT EXCEED 176°F (80°C). THE NITRIC ACID CONCENTRATION OF ANY PROCESS SOLUTION FED TO THE ION EXCHANGE COLUMNS SHALL NOT EXCEED 8 MOLAR.

4.9.3 ION EXCHANGE RESIN SHALL BE CONTINUOUSLY SUBMERGED IN LIQUID EXCEPT DURING RESIN REPLACEMENT.

4.9.4 ION EXCHANGE COLUMNS SHALL BE CONTINUOUSLY VENTED.

Basis

Anion exchange resins, such as those used for the purification of plutonium in nitric acid solutions, can undergo rapid exothermic decomposition under certain conditions of pressure, temperature and nitric acid concentrations. The results of anion exchange resin compatability studies[1] show that rapid exothermic decomposition reactions can be prevented if:

a. Degradation of the resin is prevented by limiting the time the resin is in contact with oxidizing solutions.

b. The system temperature is maintained below 100°C and the molarity of the nitric acid is not more than 8 molar.

c. The system pressure is kept below 200 psig.

(Change No. 18)

In addition, the above referenced studies show that dry loaded resin has a lower ignition temperature than damp resin. On this basis, specification 4.9.3 has been included as an additional safeguard to prevent resin combustion.

1. BNWL - 114
Reactor Fuel Reprocessing Vol 7 Fall 1964. Pg. 297-304
Reactor Fuel Reprocessing Vol 9 Spring 1966, Pg. 132-135

4.10 PLUTONIUM SOLUTION STORAGE

Applicability

This specification applies to the storage of plutonium solutions.

Objective

To assure that plutonium solutions are stored in a safe manner.

Specification

4.10.1 PLUTONIUM NITRATE PRODUCT SOLUTION SHALL BE STORED ONLY AS FOLLOWS:

4.10.1.1 PLUTONIUM NITRATE PRODUCT SOLUTION MAY BE STORED IN TANKS 5D-5A, 5D-5B and 5D-17.

4.10.1.2 OFF SPECIFICATION PLUTONIUM NITRATE PRODUCT SOLUTION MAY BE STORED IN FIXED POISON TANK 5D-13C ACCORDING TO THE CRITERIA TABULATED BELOW AND PROVIDED THAT:

1) THE U-233 PLUS U-235 CONTENT OF THE SOLUTION IS EQUAL TO OR LESS THAN 1 WT % OF THE PU CONTENT AND

2) THE PLUTONIUM IN THE SOLUTION IS AT LEAST 50 WT % PU-239 AND

3) THE PU-241 CONTENT IS EQUAL TO OR LESS THAN 15% OF THE TOTAL PLUTONIUM AND

4) THE PU-240 TO PU-241 RATIO EXCEEDS 1.

WT% OF Pu-240 IN TOTAL PLUTONIUM	MAXIMUM CONCENTRATION OF TOTAL PLUTONIUM (GRAM/LITER OF SOLUTION) IN VESSELS WITH MINIMUM BOROSILICATE GLASS CONTENT OF:	
	28 VOL. %	32 VOL. %
≤5	140	180
>5	170	220

(Change No. 14)

4.10.1.3 PLUTONIUM NITRATE PRODUCT SOLUTION OR PLUTONIUM NITRATE SOLUTION AUTHORIZED UNDER CATEGORY NO. 10 TECHNICAL SPECIFICATION 3.1.1 AND CONTAINING LESS THAN 250 GRAMS PER LITER TOTAL FISSILE PLUTONIUM MAY BE STORED IN AEC APPROVED SHIPPING CONTAINERS. THESE CONTAINERS CONSIST OF AN INNER CONTAINER HELD IN A RIGID STAINLESS STEEL VESSEL WHICH IN TURN IS SECURELY CENTERED AND TOTALLY INCLOSED IN A RIGID OUTER STRUCTURE. THE STAINLESS STEEL CONTAINER SHALL HAVE AN INSIDE DIAMETER NOT EXCEEDING 5.1 INCHES AND A LENGTH NOT EXCEEDING 53 INCHES. THE OUTER RIGID STRUCTURE SHALL HAVE A MINIMUM CENTER TO OUTER SURFACE DIMENSION OF 22.5 INCHES. LOADED SHIPPING CONTAINERS SHALL BE STORED IN THE PRODUCT PACKAGING AND STORAGE AREA (PPS). NO MORE THAN 100 LOADED CONTAINERS SHALL BE STORED AT ONE TIME AND END-TO-END STACKING IS NOT PERMITTED.

Basis

Vessels 5D-5A and 5D-5B are slab tanks 2.5-inches thick and are provided with 1/8-inch thick Boral plates. Because of their configuration and the use of Boral plates, nuclear criticality cannot occur in these vessels with any concentration of plutonium nitrate in solution even if fully reflected. Vessel 5D-17 is a 4-inch diameter cylindrical vessel which due to its configuration is nuclearly safe for any concentration of plutonium in nitrate solution.

Vessel 5D-13C is used for storage of plutonium solutions which do not meet product quality specifications. Nuclear criticality safety of this vessel is provided by controlling the fissile isotope concentration and by using borosilicate-glass Raschig rings as fixed neutron absorbers. The limitations on plutonium concentration and isotopic composition are taken from the proposed ANS Standard Use of Borosilicate-Glass Raschig Rings as a Fixed Neutron Absorber in Solutions of Fissile Materials, June 1970. Surveillance requirements for vessels containing fixed poisons are given in technical specification 6.1.

Individual shipping containers are nuclearly safe for up to 500 gram/liter concentrations of plutonium solutions when fully reflected. The containers are fissile Class III shipping packages. Up to 68 containers may be transported together, and 136 such undamaged containers would be subcritical in any arrangement if closely reflected by water. These provisions are in accordance with the requirements of 10 CFR 71.40.

(Change No. 14)

The consequence of using other than nuclearly safe systems for the storage of plutonium solutions is to provide a possibility for the occurrance of nuclear criticality in an unshielded area.

4.11 REWORK SOLUTION CONCENTRATION

Applicability

This specification establishes concentration limits to be observed in operations involving the Rework Evaporator and the Rework Evaporator Feed Tank.

Objective

To assure that the solution containing special nuclear material will remain subcritical in both the Rework Evaporator and the Rework Evaporator Feed Tank.

Specification

4.11.1 THE CONCENTRATION OF FISSIONABLE ISOTOPES IN THE REWORK EVAPORATOR AND THE REWORK EVAPORATOR FEED TANK SHALL NOT EXCEED THE U-235 EQUIVALENT CONCENTRATIONS SHOWN IN THE ACCOMPANYING CURVE.

Bases

The Rework Evaporator is not geometrically favorable hence concentration control of the fissionable isotopic content of the tank must be maintained in order to ensure nuclear safety. Any solutions entering the rework system will be sampled to determine the actual fissionable isotope concentrations. From this sample the U-235 equivalent concentration will be determined.

The safe concentrations defined by the accompanying curve are limited to 50 percent of the calculated critical concentrations reported in ORNL-TM-686, Limiting Critical Concentrations of Aqueous Nitrate Solutions of Fissile and Fertile Isotopes. The calculations in ORNL-TM-686, which were made with the IBM 7090 MODRIC neutron diffusion code, overestimate the experimentally determined critical concentration of fully enriched uranium by 3 percent and underestimate the experimentally determined critical concentration of 3.04 percent enriched uranium by 10 percent. These experimental determinations indicate that by setting the maximum concentration at 50% of the calculated critical concentrations there is an adequate margin of safety to provide for computational, analytical and gauging errors.

(Change No. 16)

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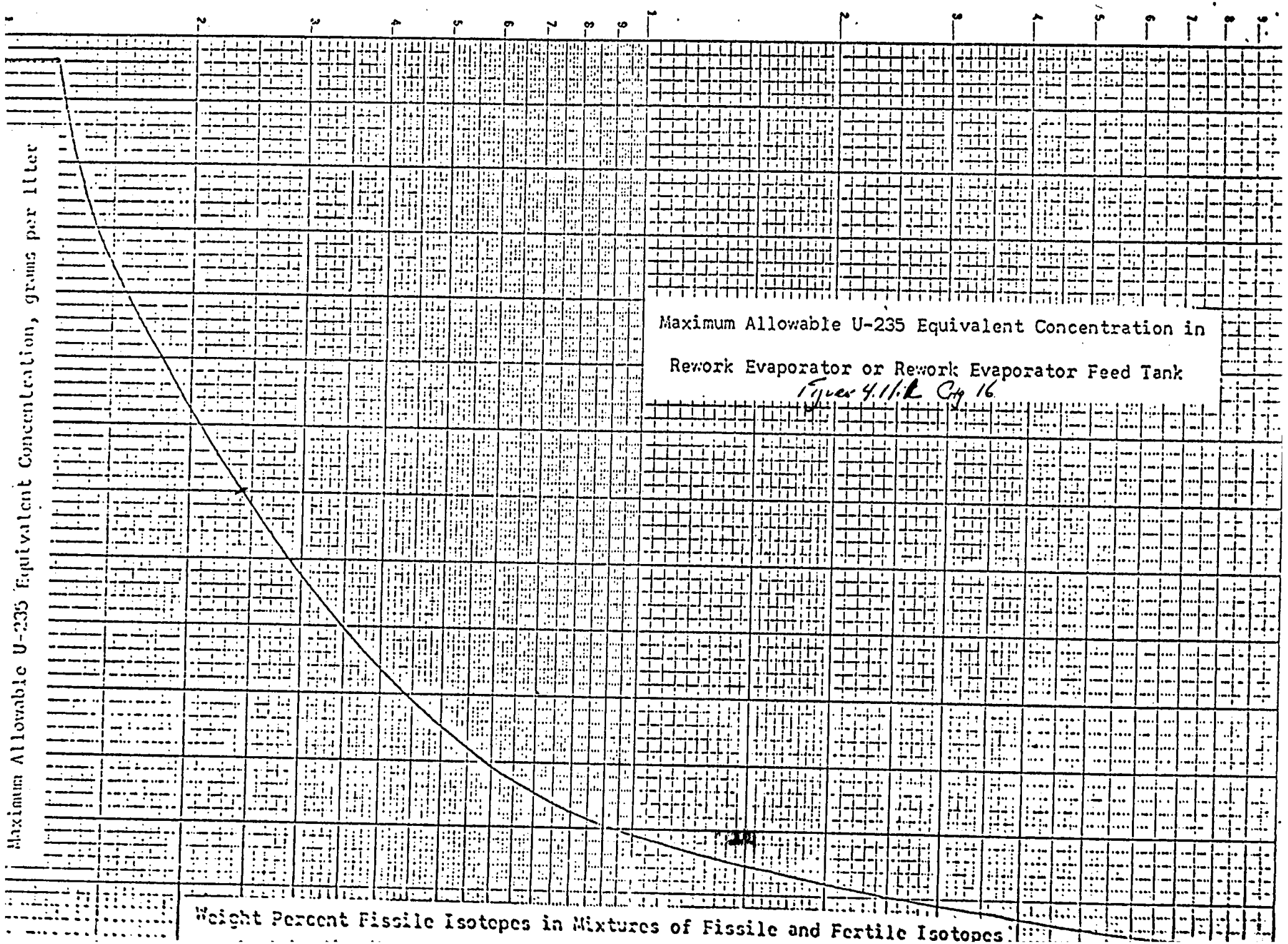

PROPOSED CHANGE

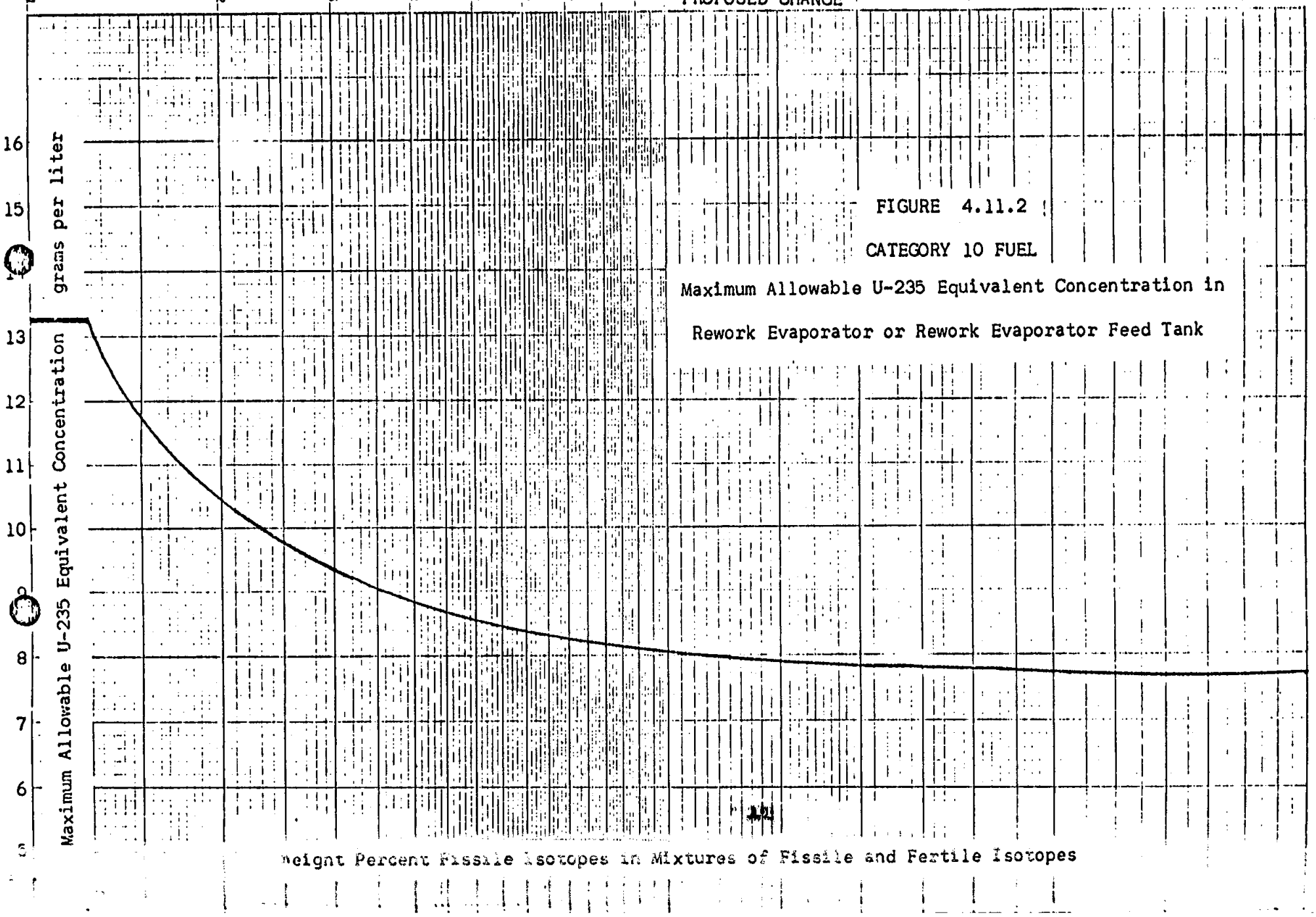

FIGURE 4.11.2

CATEGORY 10 FUEL

Maximum Allowable U-235 Equivalent Concentration in

Rework Evaporator or Rework Evaporator Feed Tank

If this specification is found to be exceeded, no further fissionable material will be added to the rework system until the situation is corrected; and the remedial action must be taken immediately.

(Change No. 16)

4.12 CAUSTIC CONCENTRATION IN CARBON STEEL WASTE STORAGE TANKS

Applicability

This specification applies to the concentration of caustic in the carbon steel waste storage tanks.

Objective

To assure that the liquid waste in carbon steel waste storage tanks shall be maintained in alkaline condition at all times to prevent excessive corrosion of the tanks.

Specification

4.12.1 EXCESS CAUSTIC (BASED ON THE STOICHIOMETRIC AMOUNT REQUIRED TO NEUTRALIZE ACIDIC WASTE) IN THE CARBON STEEL HIGH LEVEL WASTE STORAGE TANKS SHALL BE PRESENT IN CONCENTRATION OF (A) AT LEAST 10% BASED ON THE WASTE VOLUME INTRODUCED THEREIN UNTIL THE TOTAL VOLUME OF INTRODUCED WASTE EXCEEDS 10,000 GALLONS, (B) AT LEAST 5% ON THE SAME BASIS UNTIL THE TOTAL VOLUME OF INTRODUCED WASTE EXCEEDS 100,000 GALLONS AND (C) AT LEAST 1% ON THE SAME BASIS AFTER THE VOLUME OF INTRODUCED WASTE EXCEEDS 100,000 GALLONS.

Basis

The carbon steel high level waste storage tanks are not suitable, from a corrosion viewpoint, for storage of acidic wastes. To prevent introduction of acidic wastes, the normally acidic wastes are neutralized prior to transfer into the storage tank. As an additional safety precaution, the solution in the storage tank will always contain excess caustic so that inadvertent addition of unneutralized waste would not result in accelerated tank corrosion.

(Change No. 18)

4.13 SOLID RADIOACTIVE WASTE BURIAL

Applicability

This specification applies to the transfer and storage of solid radioactive waste material resulting from the separation, in the reprocessing plant, of nuclear material from nuclear fuel. This specification also applies to the burial of contaminated plant equipment if buried in the same area as separation waste.

Objective

To assure that activity associated with buried waste does not migrate from the burial area.

Specification

4.13.1 SOLID RADIOACTIVE WASTE GENERATED BY THE OPERATION OF THE PLANT SHALL BE BURIED COMPLETELY WITHIN SILTY TILL. BEFORE A NEW EXCAVATION IS USED, IT WILL BE INSPECTED TO ASSURE THAT IT IS FULLY WITHIN THE SILTY TILL FORMATION. BURIAL SHALL BE RESTRICTED TO THE PLANT AREA DRAINED BY QUARRY CREEK AND ERDMAN BROOK. NO BURIAL OF WASTE SHALL BE NEARER THAN 100 FEET TO THE CREST OF THE DEFILES IN WHICH QUARRY CREEK AND ERDMAN BROOK FLOW. THE MINIMUM COVER OF SILTY TILL OVER THE WASTE SHALL BE FOUR FEET AS MEASURED DOWN FROM THE TOP OF THE UNDISTURBED SILTY TILL STRATUM. EROSION IN THE DEFILES, BETWEEN THESE DEFILES AND BURIAL AREAS AND OF THE EARTH COVER AFTER THE EXCAVATIONS HAVE BEEN FINALLY BACKFILLED SHALL BE MINIMIZED.

4.13.2 THE LOCATION AT WHICH RADIOACTIVE SOLID WASTES ARE BURIED IN ACCORDANCE WITH SPECIFICATION 4.13.1 SHALL BE MARKED WITH CONCRETE CAIRNS. A PLOT SHOWING THE APPROXIMATE LOCATION OF ALL WASTE BURIED SHALL BE MAINTAINED ACCOMPANIED BY AN INDEX DESCRIBING THE GENERAL TYPES OF WASTE BURIED AT EACH LOCATION INCLUDING THE DATES OF BURIAL AND CLOSURE. DUPLICATE RECORDS OF BURIALS SHALL BE MAINTAINED IN SEPARATE LOCATIONS.

4.13.3 SOLID RADIOACTIVE WASTE TO BE BURIED SHALL BE PLACED IN PACKAGES WHICH PREVENT DISPERSION OF CONTENTS AND PREVENT CONTAMINATION OF HANDLERS. IF A PACKAGE IS RUPTURED WHEN PLACED IN THE TRENCH, EARTH OVERFILL SHALL BE IMMEDIATELY PLACED OVER THE RUPTURED PACKAGE.

(Change No. 18)

4.13.4 FUEL ELEMENTS SHALL NOT BE BURIED.

Basis

Nuclear Fuel Services operates two waste burial areas at the West Valley site. One area is for plant generated waste and is licensed under the regulations of the U.S. Atomic Energy Commission. The other area is primarily for waste generated at facilities other than the processing plant and is licensed under the regulations of the State of New York. This specification applies to the burial area subject to USAEC licensing and regulations.

As discussed in paragraphs 4.90, 7.14, 7.15, 7.16, and 7.17 of the Safety Analysis, the ion exchange and permeability data for the soil in which the radioactive waste is to be buried indicate that the radioactivity will be retained in the immediate vicinity of the source. Further, the low permeability of the silty till will delay any possible seepage so that the longest lived ruthenium isotope, an element which has relatively poor ion exchange properties with the soil, would undergo nearly complete radioactive decay before it could traverse 100 feet of this soil to an adjacent water course.

Erosion of the stream defiles, the banks between the streams and the burial area and the burial area itself shall be minimized by grading, planting or liquid flow control.

Buried wastes are covered with four feet of silty till to provide shielding, to prevent water flow into the burial holes and, through ion-exchange action, to prevent activity from moving to the surface.

The provision of markers and records of burial on state owned property serves to facilitate perpetual care and precludes inadvertent excavation of radioactive material. Records are maintained at the plant site and by the New York State Atomic and Space Development Authority so that no single accident or act of nature would destroy both sets of records.

See proposed Change

4.14 EXHAUST FILTER DIFFERENTIAL PRESSURE

Applicability

This specification applies to the maximum differential pressures that may be maintained across the absolute filters in the exhaust ventilation systems.

Objective

To minimize the probability of filter failure in exhaust ventilation systems.

Specification

Final

4.14.1 THE SUSTAINED OPERATING PRESSURE DIFFERENTIAL ACROSS ANY ABSOLUTE FILTER IN ANY OF THE EXHAUST VENTILATION SYSTEMS SHALL NOT EXCEED 85% OF THE GREATEST PRESSURE DIFFERENTIAL AT WHICH THAT FILTER HAS BEEN ~~TESTED~~. THE QUALIFIED IN ACCORDANCE WITH Military Spec MIL-F-51

Basis

High Efficiency (absolute) filters are used in the plant's ventilation systems (Dissolver Off-Gas, Vessel Off-Gas, Main Building, Head End, Waste Tank Farm, and DOG-VOG Backup). The absolute filters act as the final containment of radioactivity prior to discharge to the plant stack. The service of the absolute filters is limited by this specification to minimize the probability of filter failure. Specification 4.14.1 pertains to sustained service of the absolute filter; it is recognized that transient flow variations may cause differential pressure excursions exceeding the 85% limits as end of service life approaches.

NFS PURCHASES ABSOLUTE FILTERS TO BE IN COMPLIANCE WITH MIL SPEC MIL-F-51068C WH

~~The specifications for all absolute filters used at NFS~~ includes the common strength requirement that the absolute filter withstand a pressure drop of at least 10 inches W. G. without tearing or deforming. ~~All~~ absolute filters used at NFS ~~are tested~~ by the manufacturer ~~at a pressure differential of 10 inches W. G.~~

(Change No. 12)
October, 1970

IN ACCORDANCE TO MIL SPEC. MIL-F-51068 C. THESE QUALIFICATION TESTS INCLUDE A PRESSURE DIFFERENTIAL TEST OF 10 INCHES W.G.

We CAN NOT MEET THIS SPEC AS WRITTEN THAT IS REASON FOR CHANGE.

PROPOSED - 11/74

SUBMITTED TO NRC 11/25/74
NO RESPONSE AS YET

4.14 EXHAUST FILTER DIFFERENTIAL PRESSURE

Applicability

This specification applies to the maximum differential pressure that may be maintained across the absolute filters in the exhaust ventilation systems.

Objective

To minimize the probability of filter failure in exhaust ventilation systems.

Specification

4.14.1 THE SUSTAINED OPERATING PRESSURE DIFFERENTIAL ACROSS ANY ABSOLUTE FILTER IN ANY OF THE EXHAUST VENTILATION SYSTEMS SHALL NOT EXCEED 85% OF THE GREATEST PRESSURE DIFFERENTIAL FOR WHICH THAT FILTER DESIGN HAS BEEN FABRICATED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS OF SPECIFICATION MIL-F-51068C.

Basis

High Efficiency (absolute) filters are used in the plant's ventilation systems (Dissolver Off-Gas, Vessel Off-Gas, Main Building, Head End, Waste Tank Farm, DOG-VOG Backup and Low Level Waste Treatment Plant). The absolute filters act as the final containment of radioactivity prior to discharge to the plant stacks. The service of the absolute filters is limited by this specification to minimize the probability of filter failure. Specification 4.14.1 pertains to sustained service of the absolute filter; it is recognized that transient flow variations may cause differential pressure excursions exceeding the 85% limits as end of service life approaches.

Table II, "Test Conditions & Requirements" of MIL-F-51068C Specification, defines test conditions which include the test requirements for a negative 10.0 ± 0.2 inches of water pressure differential across the filter. All absolute filters used will be procurred from manufacturers who fabricated the absolute filters to the requirements of this Specification MIL-F-51068C.

(Change No.)

4.14 EXHAUST FILTER DIFFERENTIAL PRESSURE

Applicability

This specification establishes the maximum differential pressures that may be maintained across the absolute filters in the exhaust ventilation systems.

Objective

To minimize the probability of failing final filters in exhaust ventilation systems.

Specification

4.14.1 THE SUSTAINED OPERATING PRESSURE DIFFERENTIAL ACROSS ANY FINAL ABSOLUTE FILTER IN ANY OF THE EXHAUST VENTILATION SYSTEMS SHALL NOT EXCEED 85% OF THE GREATEST PRESSURE DIFFERENTIAL AT WHICH THAT FILTER HAS BEEN TESTED.

Bases

High efficiency (absolute) filters serve as the final filters in the plant's ventilation systems (Dissolver Off-Gas, Vessel Off-Gas, Main Building, Waste Tank Farm and DOG-VOG Backup). The Main Building, Waste Tank Farm and the DOG-VOG Backup absolute filters act as the final containment of radioactivity prior to discharge to the plant stack. The service of the absolute filters is limited by this Specification to minimize the probability of failing a filter. Specification 4.14.1 pertains to sustained service of the absolute filter; it is recognized that transient flow variations may cause differential pressure excursions exceeding the 85% limit as end of service life approaches.

The specifications for all absolute filters used at NFS include the common strength requirement that the absolute filter withstand a pressure drop of at least 10 inches W.G. without tearing or deforming. All absolute filters used at NFS are tested by the manufacturer to a pressure differential of at least 10 inches W.G.

4.14 EXHAUST FILTER DIFFERENTIAL PRESSURE

Applicability

This specification applies to the maximum differential pressures that may be maintained across the absolute filters in the exhaust ventilation systems.

Objective

To minimize the probability of filter failure in exhaust ventilation systems.

Specification

4.14.1 THE SUSTAINED OPERATING PRESSURE DIFFERENTIAL ACROSS ANY ABSOLUTE FILTER IN ANY OF THE EXHAUST VENTILATION SYSTEMS SHALL NOT EXCEED 85% OF THE GREATEST PRESSURE DIFFERENTIAL AT WHICH THAT FILTER HAS BEEN TESTED.

Basis

High Efficiency (absolute) filters are used in the plant's ventilation systems (Dissolver Off-Gas, Vessel Off-Gas, Main Building, Head End, Waste Tank Farm, DOG-VOG Backup and Low Level Waste Treatment Plant). The absolute filters act as the final containment of radioactivity prior to discharge to the plant stacks. The service of the absolute filters is limited by this specification to minimize the probability of filter failure. Specification 4.14.1 pertains to sustained service of the absolute filter; it is recognized that transient flow variations may cause differential pressure excursions exceeding the 85% limits as end of service life approaches.

The specifications for all absolute filters used at NFS include the common strength requirement that the absolute filter withstand a pressure drop of at least 10 inches W. G. without tearing or deforming. All absolute filters used at NFS are tested by the manufacturer to a pressure differential of at least 10 inches W. G.

4.15 EVAPORATOR STEAM PRESSURE

Applicability

This specification establishes a limit to the pressure of steam that may be used in the evaporation of process solutions.

Objective

To prevent attainment of autoignition temperature of organic degradation products that may be entrained in process solutions.

Specification

4.15.1 THE STEAM APPLIED TO ANY EVAPORATOR, OTHER THAN THE GENERAL PURPOSE EVAPORATOR, FOR HEATING PROCESS SOLUTIONS SHALL NOT BE ADMITTED AT A PRESSURE EXCEEDING 25 PSIG.

Bases

"Red Oil", an organic phase mixture of uranyl nitrate, tributyl phosphate, dibutyl phosphate, and other organic decomposition products can be formed under certain conditions if organic products are carried over into an evaporator and allowed to concentrate. Red oil has been found to be temperature sensitive and can explode at temperatures exceeding approximately 274° F. While this material can be formed only under a series of unusual maloperations of the process, protection from an explosion is provided by limiting the pressure of the steam supplied to the evaporators to that corresponding to a condensing temperature limit of 267°F.

The General Purpose Evaporator is excluded from this specification because it is not possible for "red oil" to be formed from any of the streams that are concentrated in this evaporator.

The consequence of failing to meet the requirement of this specification is to reduce or possibly remove the margin of safety provided to prevent a possible "red oil" explosion by limiting the temperature to below that required to initiate the reaction. Such an explosion would not necessarily occur if the 274°F temperature were exceeded but it is a possibility which is to be avoided.

4.15 EVAPORATOR STEAM PRESSURE

Applicability

This specification applies to the steam pressure which may be used in process and waste evaporators.

Objective

To prevent rapid exothermic degradation reactions of organic materials that could be present in process or waste evaporators.

Specification

4.15.1 THE STEAM APPLIED TO PROCESS AND WASTE EVAPORATORS, OTHER THAN THE FOLLOWING, FOR HEATING SOLUTIONS SHALL NOT BE ADMITTED AT A PRESSURE EXCEEDING 25 PSIG.

EVAPORATOR	IDENTIFICATION
GENERAL PURPOSE	7C-5
ACID FRACTIONATOR FEED VAPORIZER	7E-1
ACID FRACTIONATOR FEED REBOILER	7E-2

Basis

"Red Oil" an organic phase mixture of uranyl nitrate, tributyl phosphate, dibutyl phosphate, and other organic decomposition products can be formed under certain conditions if organic products are carried over into an evaporator and allowed to concentrate. "Red Oil" has been found to be temperature sensitive and can explode at temperatures exceeding approximately 274°F. While this material can be formed only under a series of unusual maloperations of the process, absolute protection from the possibility of explosion is provided by limiting the pressure of the steam supplied to the evaporators to that corresponding to a temperature below 267°F.

The General Purpose Evaporator, the Acid Fractionator Feed Vaporizer and the Acid Fractionator Feed Reboiler are excluded from the steam pressure limitation because feed streams to these units do not come in contact with organic solvents and therefore no "red oil" will form in the units and no explosion hazard exists.

The consequence of failing to meet the requirements of this specification is to reduce or remove the margin of safety provided to prevent a possible "red oil" explosion.

(Change No. 18)

4.16 RESPIRATORY PROTECTION EQUIPMENT

Applicability

This specification applies to protection of plant personnel from airborne concentrations of radioactive material exceeding the maximum permissible concentrations given in 10 CFR 20 for restricted areas.

Objective

To assure that plant personnel, utilizing respiratory protection equipment, will not inhale excessive quantities of radioactive material.

Specification

4.16.1 FULL FACE RESPIRATORS APPROVED FOR RADIOACTIVE MATERIALS UNDER BUREAU OF MINES SCHEDULE 21B, SHALL BE USED WHEN THE CONCENTRATION OF AIRBORNE RADIOACTIVITY IN THE AREA TO BE OCCUPIED IS EXPECTED TO EXCEED THE CONCENTRATIONS SHOWN IN TABLE I, APPENDIX B OF 10 CFR 20, BUT IS EXPECTED TO BE LESS THAN 100 TIMES SUCH CONCENTRATIONS.

4.16.2 SELF-CONTAINED BREATHING APPARATUS SATISFYING THE BUREAU OF MINES SCHEDULE 13E REQUIREMENTS OR SUPPLIED AIR RESPIRATORS SATISFYING THE BUREAU OF MINES SCHEDULE 19B SHALL BE USED WHEN THE CONCENTRATION OF AIRBORNE RADIOACTIVITY IN THE AREA TO BE OCCUPIED IS EXPECTED TO EXCEED 100 TIMES, BUT IS EXPECTED TO BE LESS THAN 10,000 TIMES, THE CONCENTRATIONS SHOWN IN TABLE I, APPENDIX B OF 10 CFR 20.

4.16.3 PRIOR TO EACH ENTRY INTO A CONTAMINATED ATMOSPHERE, INDIVIDUALS WEARING RESPIRATORY PROTECTION SHALL CHECK THE MASKS FOR FIT AND LEAKAGE.

4.16.4 FOLLOWING EACH USE, RESPIRATORY PROTECTION MASKS SHALL BE RETURNED FOR DECONTAMINATION UNDER APPROVED HEALTH AND SAFETY PROCEDURES. WHEN THE CLEANING AND REPAIR HAS BEEN APPROVED BY HEALTH AND SAFETY PERSONNEL, MASKS SHALL BE PACKAGED INDIVIDUALLY IN PLASTIC BAGS AND DELIVERED FOR REUSE WITH CLEAN CLOTHING SUPPLIES.

4.16.4.1 MASKS SHALL NOT BE RELEASED FOR REUSE IF FIXED RADIOACTIVE CONTAMINATION EXCEEDS 100 CPM BETA/PROBE AREA OR 100 CPM

ALPHA/PROBE AREA ON SURFACES EXPOSED TO THE PERSON, OR 500 CPM BETA/PROBE AREA AND 100 CPM ALPHA/PROBE AREA ON EXTERNAL SURFACES NOT IN CONTACT WITH THE PERSON.

4.16.4.2 FILTER CANISTERS FOR MASKS SHALL NOT BE RELEASED IF RADIOACTIVE CONTAMINATION EXCEEDS EITHER 100 CPM ALPHA/PROBE AREA OR 500 BETA/PROBE AREA AT CONTACT.

Basis

The Maximum Permissible Concentrations (MPC) shown in Table I Appendix B of 10 CFR 20 are the concentrations of airborne radioactivity that a worker could breathe throughout his forty hour work week and not inhale excessive radioactivity. As a routine procedure, NFS requires that if plant personnel may be exposed to such concentrations, no matter how short the exposure time, appropriate respiratory protection must be worn. As additional protection, NFS limits the use of filter masks to use in airborne concentrations which are expected to be less than 100 times the MPC concentration even though the high efficiency filters used provide a protection factor of at least 100.

For use in airborne concentrations exceeding 100 times MPC (or a lower concentration identified in the NFS Health and Safety Manual), NFS requires the use of continuous flow supplied air equipment which is approved by the Bureau of Mines, a recognized authority in respiratory protection. Additional protection is afforded by an in-line filter, which would be used during an emergency exit in the unlikely loss of supplied air.

The protection factors of 100 for filter masks and 10,000 for supplied air or self contained breathing apparatus correspond to those given in proposed Appendix E to 10 CFR Part 20.

The contamination limits for reuse of masks and mask canisters are consistent with the limitations for uncontaminated plant areas (Zone II) and are expressed in radiation units used at the plant. Specifications 4.16.4.1 and 4.16.4.2 are based upon (1) a 20% counting efficiency and 50 cm^2 probe area for beta monitoring and (2) a 50% counting efficiency and 75 cm^2 probe area for alpha monitoring.

SECTION 5.0

MINIMUM CONDITIONS FOR OPERATION

5.0 MINIMUM CONDITIONS FOR OPERATION

The specification included in this section set forth minimum conditions for safe plant operation. If specifications 5.1.1 through 5.1.3 cannot be fulfilled, the operations which could cause a release of radioactive effluence must be shutdown with the exception of the ventilation system which is kept on until the problems are corrected. The other specification in this section provide primary and alternate conditions which may be fulfilled. If the alternate condition is in use, the operations shall be considered to be continuing in a "ready condition." If neither primary not alternate conditions for a particular operation can be fulfilled the particular operation shall be shutdown with the exception of the waste tank off-gas system which has to remain on stream while appropriate repairs are made.

5.1 EFFLUENT AND ENVIRONMENTAL MONITORING

Applicability

This specification applies to the sampling and analysis of gaseous and liquid plant effluents and to environmental monitoring.

Objective

To establish sampling points, sampling frequency and sample analytical requirements for gaseous and liquid plant effluents and to establish an environmental monitoring program and reporting requirement.

Specification

5.1.1 WHENEVER LIQUID IS DISCHARGED FROM THE STORAGE LAGOONS, A REPRESENTATIVE SAMPLE SHALL BE WITHDRAWN BY THE CATTARAUGUS CREEK CONTINUOUS SAMPLER. AT LEAST EVERY SEVEN DAYS, A COMPOSITE OF THIS SAMPLE SHALL BE ANALYZED FOR TRITIUM, GROSS ALPHA AND GROSS BETA RADIOACTIVITY.

IF THE CONTINUOUS SAMPLER BECOMES INOPERATIVE, UP TO 2,000,000 GALLONS MAY BE DISCHARGED FROM THE LAGOONS IN ANY ONE-YEAR PERIOD PROVIDED CATTARAUGUS CREEK SAMPLES ARE COLLECTED NEAR THE CONTINUOUS SAMPLER LOCATION FOR EACH LAGOON DISCHARGE OR FOR EACH 100,000 GALLONS OF DISCHARGE, WHICHEVER RESULTS IN THE GREATER SAMPLING FREQUENCY. SAMPLES SO COLLECTED SHALL BE INDIVIDUALLY ANALYZED FOR TRITIUM, GROSS ALPHA AND GROSS BETA RADIOACTIVITY.

5.1.2 A CONTINUOUS STACK SAMPLER SHALL BE USED TO COLLECT SAMPLES OF STACK GAS. THE SAMPLES SHALL BE ANALYZED AT LEAST EVERY SEVEN DAYS FOR IODINE 131 AND PARTICULATE RADIOACTIVITY. IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE SAMPLER TO SERVICE.

IN ADDITION TO THE WEEKLY SAMPLES OBTAINED FROM THE STACK SAMPLE, THE I-131, Kr-85 AND PARTICULATE RADIOACTIVITY IN THE STACK GAS SHALL BE CONTINUOUSLY MEASURED BY A STACK MONITOR.

DELETE PER CHANGE #20

(Change No. 13)

5.1 EFFLUENT AND ENVIRONMENTAL MONITORING

Applicability

This specification applies to the sampling and analysis of gaseous and liquid plant effluents and to environmental monitoring.

Objective

To establish sampling points, sampling frequency and sample analytical requirements for gaseous and liquid plant effluents and to establish an environmental monitoring program and reporting requirement.

Specification

5.1.1 WHENEVER LIQUID IS DISCHARGED FROM THE STORAGE LAGOONS, A REPRESENTATIVE SAMPLE SHALL BE WITHDRAWN BY THE CATTARAUGUS CREEK CONTINUOUS SAMPLER. AT LEAST EVERY SEVEN DAYS, A COMPOSITE OF THIS SAMPLE SHALL BE ANALYZED FOR TRITIUM, RUTHENIUM 106, TOTAL ALPHA AND TOTAL BETA RADIOACTIVITY.

IF THE CONTINUOUS SAMPLER BECOMES INOPERATIVE, UP TO 2,000,000 GALLONS MAY BE DISCHARGED FROM THE LAGOONS IN ANY ONE-YEAR PERIOD PROVIDED CATTARAUGUS CREEK SAMPLES ARE COLLECTED NEAR THE CONTINUOUS SAMPLER LOCATION FOR EACH LAGOON DISCHARGE OR FOR EACH 100,000 GALLONS OF DISCHARGE, WHICHEVER RESULTS IN THE GREATER SAMPLING FREQUENCY. SAMPLES SO COLLECTED SHALL BE INDIVIDUALLY ANALYZED FOR TRITIUM, RUTHENIUM 106, TOTAL ALPHA AND TOTAL BETA RADIOACTIVITY.

5.1.2 THE RADIOACTIVITY IN STACK EFFLUENTS SHALL BE CONTINUOUSLY SAMPLED. THE SAMPLES SHALL BE ANALYZED AT LEAST EVERY SEVEN DAYS FOR IODINE 131 AND PARTICULATE RADIOACTIVITY. IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE SAMPLER TO SERVICE.

IN ADDITION TO THE WEEKLY SAMPLES OBTAINED FROM THE STACK, THE I-131, KR-85 AND PARTICULATE RADIOACTIVITY IN THE STACK GAS SHALL BE CONTINUOUSLY SUBJECT TO DETECTION BY A STACK MONITOR.

* Delete per Change 20
See p. 45, 46, 46b, 46c, 46d, 46e

(Change No. 15)

Case 15 ...

[illegible] / *(Chg. 20)

5.1 EFFLUENT AND ENVIRONMENTAL MONITORING

Applicability

This specification applies to the sampling and analysis of gaseous and liquid plant effluents and to environmental monitoring.

Objective

To establish sampling points, sampling frequency and sample analytical requirements for gaseous and liquid plant effluents and to establish an environmental monitoring program and reporting requirement.

Specification

5.1.1 WHENEVER LIQUID IS DISCHARGED FROM THE STORAGE LAGOONS, A REPRESENTATIVE SAMPLE SHALL BE WITHDRAWN BY THE CATTARAUGUS CREEK CONTINUOUS SAMPLER. AT LEAST EVERY SEVEN DAYS, A COMPOSITE OF THIS SAMPLE SHALL BE ANALYZED FOR TRITIUM, RUTHENIUM 106, TOTAL ALPHA AND TOTAL BETA RADIOACTIVITY.

IF THE CONTINUOUS SAMPLER BECOMES INOPERATIVE, UP TO 2,000,000 GALLONS MAY BE DISCHARGED FROM THE LAGOONS IN ANY ONE-YEAR PERIOD PROVIDED CATTARAUGUS CREEK SAMPLES ARE COLLECTED NEAR THE CONTINUOUS SAMPLER LOCATION FOR EACH LAGOON DISCHARGE OR FOR EACH 100,000 GALLONS OF DISCHARGE, WHICHEVER RESULTS IN THE GREATER SAMPLING FREQUENCY. SAMPLES SO COLLECTED SHALL BE INDIVIDUALLY ANALYZED FOR TRITIUM, RUTHENIUM 106, TOTAL ALPHA AND TOTAL BETA RADIOACTIVITY.

5.1.2 THE RADIOACTIVITY IN STACK EFFLUENTS SHALL BE CONTINUOUSLY SAMPLED. THE SAMPLES SHALL BE ANALYZED AT LEAST EVERY SEVEN DAYS FOR AND PARTICULATE RADIOACTIVITY. IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE SAMPLER TO SERVICE.

IN ADDITION TO THE WEEKLY SAMPLES OBTAINED FROM THE STACK, THE PARTICULATE RADIOACTIVITY IN THE STACK GAS SHALL BE CONTINUOUSLY SUBJECT TO DETECTION BY A STACK MONITOR.

IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE UNIT TO SERVICE, AND THE STACK MONITOR SHALL BE USED IN THE INTERIM TO DETERMINE I-131 AND PARTICULATE RELEASES.

IF THE STACK MONITOR FAILS, A REPRESENTATIVE SAMPLE OF STACK GAS SHALL BE COLLECTED EACH SHIFT AND USED TO DETERMINE I-131 AND PARTICULATE RADIOACTIVITY. THE Kr-85 CONTENT OF STACK GASES SHALL BE CALCULATED FROM FUEL BURNUP DATA DURING PERIODS WHEN THE STACK MONITOR IS INOPERATIVE.

5.1.3 THE FOLLOWING INFORMATION, DETERMINED FROM THE SAMPLES TAKEN AS REQUIRED BY 5.1.1 AND 5.1.2, SHALL BE INCLUDED IN THE QUARTERLY OPERATING REPORT:

A) GROSS CURIES OF ALPHA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

B) GROSS CURIES OF BETA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

C) CURIES OF TRITIUM DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

D) CURIES OF SR-90 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

E) CURIES OF I-129 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

F) CURIES OF PARTICULATES DISCHARGED VIA THE STACK FOR EACH MONTH.

G) THE PERCENT OF THE MONTHLY TECHNICAL SPECIFICATION LIMIT FOR DISCHARGE OF PARTICULATES VIA THE STACK.

H) THE MAXIMUM PERCENT OF THE KR-85 DAILY TECHNICAL SPECIFICATION LIMIT IN THE STACK EFFLUENT FOR EACH MONTH.

I) THE CUMULATIVE PERCENT OF THE I-131 YEARLY TECHNICAL SPECIFICATION LIMIT IN THE STACK EFFLUENT REPORTED ON A MONTHLY BASIS.

Basis

Effluent Monitoring

(Changes No. 13)

IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE UNIT TO SERVICE, AND THE STACK MONITOR SHALL BE USED IN THE INTERIM TO DETERMINE I-131 AND PARTICULATE RELEASES.

IF THE STACK MONITOR FAILS, A REPRESENTATIVE SAMPLE OF THE RADIOACTIVITY IN STACK EFFLUENTS SHALL BE COLLECTED EACH SHIFT AND USED TO DETERMINE I-131 AND DURING PERIODS AND PARTICULATE RADIOACTIVITY. THE Kr-85 CONTENT OF STACK GASES DURING PERIODS WHEN THE STACK MONITOR IS INOPERATIVE SHALL BE CALCULATED FROM FUEL BURNUP DATA.

5.1.3 THE FOLLOWING INFORMATION, DETERMINED FROM THE SAMPLES TAKEN AS REQUIRED BY 5.1.1 AND 5.1.2, (OR, FOR I-129, LAGOON SAMPLES) SHALL BE INCLUDED IN THE QUARTERLY OPERATING REPORT:

A) TOTAL CURIES OF ALPHA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

B) TOTAL CURIES OF BETA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

C) CURIES OF TRITIUM DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

D) CURIES OF RU-106 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

E) CURIES OF CS-137 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

F) CURIES OF CS-134 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

G) CURIES OF SR-89 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

H) CURIES OF SR-90 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

I) CURIES OF I-129 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

J) THE PERCENT OF 10 CFR 20.106a LIMITS FOR RADIOACTIVITY IN CATTARAUGUS CREEK AVERAGED FOR EACH RESPECTIVE MONTH OF THE REPORTING QUARTER.

(Change No. 15)

IF THE STACK SAMPLER BECOMES INOPERATIVE, IMMEDIATE REPAIR SHALL BE INSTITUTED TO RETURN THE UNIT TO SERVICE, AND THE STACK MONITOR SHALL BE USED IN THE INTERIM TO DETERMINE I-131 AND PARTICULATE RELEASES.

IF THE STACK MONITOR FAILS, A REPRESENTATIVE SAMPLE OF THE RADIOACTIVITY IN STACK EFFLUENTS SHALL BE COLLECTED EACH SHIFT AND USED TO DETERMINE I-131 AND DURING PERIODS AND PARTICULATE RADIOACTIVITY. THE Kr-85 CONTENT OF STACK GASES DURING PERIODS WHEN THE STACK MONITOR IS INOPERATIVE SHALL BE CALCULATED FROM FUEL BURNUP DATA.

5.1.3 THE FOLLOWING INFORMATION, DETERMINED FROM THE SAMPLES TAKEN AS REQUIRED BY 5.1.1 AND 5.1.2, (OR, FOR I-129, LAGOON SAMPLES) SHALL BE INCLUDED IN THE QUARTERLY OPERATING REPORT:

A) TOTAL CURIES OF ALPHA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

B) TOTAL CURIES OF BETA ACTIVITY DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

C) CURIES OF TRITIUM DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

D) CURIES OF RU-106 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

E) CURIES OF CS-137 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

F) CURIES OF CS-134 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

G) CURIES OF SR-90 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

H) CURIES OF I-129 DISCHARGED INTO CATTARAUGUS CREEK EACH MONTH.

I) THE PERCENT OF 10 CFR 20.106a LIMITS FOR RADIOACTIVITY IN CATTARAUGUS CREEK AVERAGED FOR EACH RESPECTIVE MONTH OF THE REPORTING QUARTER.

(Change No. 20)

Samples of water from Cattaraugus Creek are taken with a continuous sampler located about one-half mile downstream from the confluence of Cattaraugus and Buttermilk Creeks. Portions of each weekly sample are composited to produce a sample representative of one month's discharge. The weekly samples are analyzed for gross alpha, gross beta and tritium. The composite is analyzed for gross alpha, gross beta and strontium 90.

A stream gage located near the sampling station is used to determine total flow in Cattaraugus Creek. Flow from the lagoon is determined by a calibrated weir located on the discharge line. The flow ratio is used in conjunction with the iodine 129 analysis of lagoon water to calculate the iodine 129 content in Cattaraugus Creek.

Gaseous plant effluents are sampled in the plant stack. The stack sampler contains a filter to collect particulates and an activated charcoal filter to collect iodine 131. Samples are removed from the stack sampler at least each week and analyzed.

The stack monitor is used to continuously determine the particulate, iodine 131 and krypton 85 radioactivity in the stack air and to alert operators if pre-set limits are exceeded. The particulate sampler is changed every 8 hours and will alarm if the accumulation of particulate radioactivity over an 8-hour period exceeds that which would occur if particulates were being discharged over the same time limit at the limit set by Technical Specification 4.1. The iodine 131 monitor, a carbon filler paper absorber, is changed on a weekly cycle. The instrument is set to alarm if, over a week's period, the counting rate increases 10,000 counts/minute. This is far below the increase in count rate (about 400,000 counts/minute) which would occur if iodine were released at the technical specification limit for one week. The krypton 85 monitor is set to alarm if the counting rate exceeds five times the background rate. The alarm point is not, in this case, directly related to allowable release rates. The instrument will alarm only during periods of high krypton 85 discharge, for example during dissolution of high burn-up fuels.

5.1.4 THE LICENSEE SHALL CONDUCT THE ENVIRONMENTAL MONITORING PROGRAM GIVEN IN TABLE 5.1 AND SHALL REPORT THE RESULTS OBTAINED AT THE END OF EACH SIX-MONTH PERIOD BEGINNING FROM JANUARY 1, 1971. SUCH REPORTS WILL BE DUE WITHIN 60 DAYS AFTER THE END OF EACH REPORTING PERIOD. IF QUANTITIES OF RADIOACTIVE MATERIAL RELEASED DURING THE REPORTING PERIOD ARE UNUSUAL FOR NORMAL PLANT OPERATIONS, INCLUDING EXPECTED OPERATIONAL OCCURRENCES, THE REPORT SHALL COVER THIS SPECIFICALLY.

(Changes No. 13)

K) THE PERCENT OF 10 CFR 20.106a LIMITS FOR RADIOACTIVE STRONTIUM AND CESIUM ISOTOPES IN CATTARAUGUS CREEK AVERAGED FOR EACH RESPECTIVE MONTH OF THE REPORTING QUARTER.

L) CURIES OF PARTICULATES DISCHARGED VIA THE STACK FOR EACH MONTH.

M) THE PERCENT OF THE MONTHLY TECHNICAL SPECIFICATION LIMIT FOR DISCHARGE OF PARTICULATES VIA THE STACK.

N) THE MAXIMUM PERCENT OF THE KR-85 DAILY TECHNICAL SPECIFICATION LIMIT IN THE STACK EFFLUENT FOR EACH MONTH.

O) THE CUMULATIVE PERCENT OF THE I-131 YEARLY TECHNICAL SPECIFICATION LIMIT IN THE STACK EFFLUENT REPORTED ON A MONTHLY BASIS.

Basis

Effluent Monitoring

Samples of water from Cattaraugus Creek are taken with a continuous sampler located about one-half mile downstream from the confluence of Cattaraugus and Buttermilk Creeks. Portions of each weekly sample are composited to product a sample representative of one month's discharge. The weekly samples are analyzed for gross alpha, gross beta, tritium and ruthenium 106. The composite is analyzed for gross alpha, gross beta strontium 90, strontium 89, cesium 134, cesium 137, ruthenium 106 and tritium.

A stream gage located near the sampling station is used to determine total flow in Cattaraugus Creek. Flow from the lagoon is determined by a calibrated weir located on the discharge line. The flow ratio is used in conjunction with the iodine 129 analysis of lagoon water to calculate the iodine 129 content in Cattaraugus Creek.

Gaseous plant effluents are sampled in the plant stack. The stack sampler contains a filter to collect particulates and an activated charcoal filter to collect iodine 131. Samples are removed from the stack sampler at least each week and analyzed.

The stack monitor is used to continuously determine the particulate, iodine 131 and krypton 85 radioactivity in the stack air and to alert operators if pre-set limits are exceeded. The particulate sampler is changed every 8 hours and will alarm if the accumulation of particulate radioactivity over an 8-hour period exceeds that which

K) THE PERCENT OF 10 CFR 20.106a LIMITS FOR RADIOACTIVE STRONTIUM AND CESIUM ISOTOPES IN CATTARAUGUS CREEK AVERAGED FOR EACH RESPECTIVE MONTH OF THE REPORTING QUARTER.

L) CURIES OF PARTICULATES DISCHARGED VIA THE STACK FOR EACH MONTH.

M) THE PERCENT OF THE MONTHLY TECHNICAL SPECIFICATION LIMIT FOR DISCHARGE OF PARTICULATES VIA THE STACK.

Basis

Effluent Monitoring

Samples of water from Cattaraugus Creek are taken with a continuous sampler located about one-half mile downstream from the confluence of Cattaraugus and Buttermilk Creeks. Portions of each weekly sample are composited to product a sample representative of one month's discharge. The weekly samples are analyzed for gross alpha, gross beta, tritium and ruthenium 106. The composite is analyzed for gross alpha, gross beta strontium 90, strontium 89, cesium 134, cesium 137, ruthenium 106 and tritium.

A stream gage located near the sampling station is used to determine total flow in Cattaraugus Creek. Flow from the lagoon is determined by a calibrated weir located on the discharge line. The flow ratio is used in conjunction with the iodine 129 analysis of lagoon water to calculate the iodine 129 content in Cattaraugus Creek.

Gaseous plant effluents are sampled in the plant stack. The stack sampler contains a filter to collect particulates and an activated charcoal filter to collect iodine 131. Samples are removed from the stack sampler at least each week and analyzed.

The stack monitor is used to continuously determine the particulate, iodine 131 and krypton 85 radioactivity in the stack air and to alert operators if pre-set limits are exceeded. The particulate sampler is changed every 8 hours and will alarm if the accumulation of particulate radioactivity over an 8-hour period exceeds that which

TABLE 5.1

EFFLUENT AND ENVIRONMENTAL MONITORING PROGRAM

A. The licensee shall determine for each month, based on samples taken at the indicated location and other information collected during the month, the following:

i Gross curies of beta radioactivity other than tritium released at effluent weir.

ii Gross curies of alpha radioactivity released at the effluent weir.

iii Curies of tritium released at effluent weir.

iv Curies of strontium 90 released at effluent weir.

v Curies of cesium 134 released at effluent weir.

vi Curies of cesium 137 released at effluent weir.

vii Curies of ruthenium 106 and rhodium 106 released at effluent weir.

viii Volume of water released at effluent weir.

ix Volume of water flow through site in Cattaraugus Creek.

x Curies of beta emitting particulates released via the stack.

xi Curies of alpha emitting particulates released via the stack.

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xii Curies of iodine 131 released via the stack. EXC. 69

xiii Curies per cubic meter gross beta radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.

xiv Curies per cubic meter gross alpha radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.

(Change No. 13)

would occur if particulates were being discharged over the same time period at the limit set by Technical Specification 4.1. The iodine 131 monitor, a carbon filter paper absorber, is changed on a weekly cycle. The instrument is set to alarm if, over a week's period, the counting rate increases 10,000 counts/minute. This is far below the increase in count rate (about 400,000 counts/minute) which would occur if iodine were released for one week at a rate of 1/52 of the yearly technical specification limit. The krypton 85 monitor is set to alarm if the counting rate exceeds five times the background rate. The alarm point is not, in this case, directly related to allowable release rates. The instrument will alarm only during periods of high krypton 85 discharge, for example during dissolution of high burn-up fuels.

5.1.4 THE LICENSEE SHALL CONDUCT THE ENVIRONMENTAL MONITORING PROGRAM GIVEN IN TABLE 5.1 AND SHALL REPORT THE RESULTS OBTAINED AT THE END OF EACH SIX-MONTH PERIOD BEGINNING FROM JANUARY 1, 1971. SUCH REPORTS WILL BE DUE WITHIN 60 DAYS AFTER THE END OF EACH REPORTING PERIOD. IF QUANTITIES OF RADIOACTIVE MATERIAL RELEASED DURING THE REPORTING PERIOD ARE UNUSUAL FOR NORMAL PLANT OPERATIONS, INCLUDING EXPECTED OPERATIONAL OCCURRENCES, THE REPORT SHALL COVER THIS SPECIFICALLY.

B. The licensee shall determine each quarter, based on samples and other information collected during the quarter, the following:

i Identity of principal radionuclides whose presence can be determined by gamma spectroscopy of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

ii Microcuries per gram gross beta radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iii Microcuries per gram gross alpha radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iv Microcuries tritium per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

v Microcuries gross beta radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

vi Microcuries gross alpha radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal effluent release from the plant.

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vii Curies of strontium 89 released at the effluent weir based on an analysis of a composite of the liquid released during the last month of the quarter.

viii Curies of zirconium 95 and niobium 95 released at the effluent weir based on an analysis of a composite of the liquid released during the last month of the quarter.

ix Curies of iodine 129 released at effluent weir.

x A quantitative analysis of alpha emitting components in a quarterly composite collected at the effluent weir.

TABLE 5.1

EFFLUENT AND ENVIRONMENTAL MONITORING PROGRAM

A. The licensee shall determine for each month, based on samples taken at the indicated location and other information collected during the month, the following:

i	Total curies of beta radioactivity other than tritium released at effluent weir.
ii	Total curies of alpha radioactivity released at the effluent weir.
iii	Curies of tritium released at effluent weir.
iv	Curies of strontium 90 released at effluent weir.
v	Curies of cesium 134 released at effluent weir.
vi	Curies of cesium 137 released at effluent weir.
vii	Curies of ruthenium 106 and rhodium 106 released at effluent weir.
viii	Volume of water released at effluent weir.
ix	Volume of water flow through site in Cattaraugus Creek.
x	Curies of beta emitting particulates released via the stack.
xi	Curies of alpha emitting particulates released via the stack.
* xii	Curies of iodine 131 released via the stack.
xiii	Curies per cubic meter gross beta radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.
xiv	Curies per cubic meter gross alpha radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.

(Change No. 15)

Second * (Change No. 20)

TABLE 5.1

EFFLUENT AND ENVIRONMENTAL MONITORING PROGRAM

A. The licensee shall determine for each month, based on samples taken at the indicated location and other information collected during the month, the following:

i Total curies of beta radioactivity other than tritium released at effluent weir.

ii Total curies of alpha radioactivity released at the effluent weir.

iii Curies of tritium released at effluent weir.

iv Curies of strontium 90 released at effluent weir.

v Curies of cesium 134 released at effluent weir.

vi Curies of cesium 137 released at effluent weir.

vii Curies of ruthenium 106 and rhodium 106 released at effluent weir.

viii Volume of water released at effluent weir.

ix Volume of water flow through site in Cattaraugus Creek.

x Curies of beta emitting particulates released via the stack.

xi Curies of alpha emitting particulates released via the stack.

xii Curies per cubic meter gross beta radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.

xiii Curies per cubic meter gross alpha radioactivity of particulates (average and maximum) collected by each of the 3 site perimeter samplers on filter paper.

(Change No. 20)

xi The exposure, in megawatts days, of fuel dissolved during the quarter.

xii The curies of Krypton 85 released via the stack as determined using the stack monitor.

xiii Curies of tritium released via the stack.

xiv Curies of iodine 129 released via the stack.

xv Curies of strontium 89 released via the stack.

xvi Curies of strontium 90 released via the stack.

xvii Curies off ruthenium 106 released via the stack.

xviii Curies of cesium 134 released via the stack.

xix Curies of cesium 137 released via the stack.

xx Microcuries per milliliter tritium (average) in precipitation collected at each of the 3 site perimeter sampling stations.

xxi Milliroentgen of radiation (including background) accrued each quarter at each of the 3 site perimeter sampling stations.

xxii The maximum value at ground level offsite in each $\pi/8$ sector about the stack of the X/Q integrated for each seasonal quarter from hourly averages of continuously recorded meteorological data. The X/Q shall be determined using equation 3.144 given on page 113 of Meteorology and Atomic Energy (1968). Seasonal quarters are defined as:

Spring	March through May
Summer	June through August
Fall	September through November
Winter	December through February

xxiii The curie seconds per cubic meter maximum exposure of Kr-85 integrated for the reported quarter at ground level offsite in each $\pi/8$ sector about the stack, computed from meteorological data recorded during emission of the respective increments of Kr-85 that register above background on the Kr-85 stack gas monitor.

B. The licensee shall determine each quarter, based on samples and other information collected during the quarter, the following:

i Identity of principal radionuclides whose presence can be determined by gamma spectroscopy of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

ii Microcuries per gram total beta radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iii Microcuries per gram total alpha radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iv Microcuries tritium per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

v Microcuries total beta radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

vi Microcuries total alpha radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal effluent release from the plant.

vii Curies of strontium 89 released at the effluent weir based on an analysis of a composite of the liquid released during the last month of the quarter.

viii Curies of zirconium 95 and niobium 95 released at the effluent weir based on an analysis of a composite of the liquid released during the last month of the quarter.

ix Curies of iodine 129 released at effluent weir.

x A quantitative analysis of alpha emitting components in a quarterly composite collected at the effluent weir.

(Change No. 15)

B. The licensee shall determine each quarter, based on samples and other information collected during the quarter, the following:

i Identity of principal radionuclides whose presence can be determined by gamma spectroscopy of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

ii Microcuries per gram total beta radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iii Microcuries per gram total alpha radioactivity of a sample (one per calendar quarter) of Buttermilk Creek bottom silt collected at the Thomas Corner Road bridge.

iv Microcuries tritium per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

v Microcuries total beta radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal liquid effluent release from the plant.

vi Microcuries total alpha radioactivity per milliliter of water collected once per quarter at the Buttermilk Creek silt sampling location during a normal effluent release from the plant.

vii Curies of iodine 129 released at effluent weir.

viii A quantitative analysis of alpha emitting components in a quarterly composite collected at the effluent weir.

xi The exposure, in megawatts days, of fuel dissolved during the quarter.

xii Curies of iodine 129 released via the stack.

xiii Curies of strontium 90 released via the stack.

xiv Curies of ruthenium 106 released via the stack.

(Change No. 20)

C. The licensee shall determine the following information according to the schedule given:

i If, during any week from April to October, inclusive, the release of iodine 131 from the stack exceeds 30 millicuries, the licensee shall determine the microcuries per milliliter of iodine 131 in samples of milk from farms within 2-1/2 miles of the plant in each direction expected to receive the release. One sample shall be collected each week for the four weeks following the release. Each sample shall be a composite of one day's production from cows which are on pasture.

ii During August of each year the licensee shall collect a milk sample from a farm within 2-1/2 miles of the plant in the north-west sector and a milk sample from a farm within 2-1/2 miles of the plant in the north-east sector. The samples shall be composites of one day's production from cows which are on pasture. Each sample shall be analyzed separately to determine:

a) Microcuries iodine 129 per milliliter

b) Microcuries strontium 90 per milliliter

c) Microcuries cesium 134 per milliliter

d) Microcuries cesium 137 per milliliter

iii During the second and third quarters of each year, licensee shall take fish samples from Cattaraugus Creek between the Springville hydroelectric dam and the Cattaraugus Creek-Buttermilk Creek confluence. One sample shall be taken during each of the two quarters. A sample shall consist of at least 9 fish, each at least six inches long. Each fish in each sample shall be analyzed to determine:

a) Median and geometric deviation of cesium 134 microcuries per kilogram of flesh.

b) Median and geometric deviation of cesium 137 microcuries per kilogram of flesh.

c) Median and geometric deviation of strontium 90 microcuries per kilogram of flesh.

xi The exposure, in megawatts days, of fuel dissolved during the quarter.

xii The curies of krypton 85 released via the stack as determined using the stack monitor.

xiii Curies of tritium released via the stack.

xiv Curies of iodine 129 released via the stack.

xv Curies of strontium 89 released via the stack.

xvi Curies of strontium 90 released via the stack.

xvii Curies of ruthenium 106 released via the stack.

xviii Curies of cesium 134 released via the stack.

xix Curies of cesium 137 released via the stack.

xx Microcuries per milliliter tritium (average) in precipitation collected at each of the 3 site perimeter sampling stations.

xxi Millirocntgen of radiation (including background) accrued each quarter at each of the 3 site perimeter sampling stations.

xxii The maximum value at ground level offsite in each $\pi/8$ sector about the stack of the X/Q integrated for each seasonal quarter from hourly averages of continuously recorded meteorological data. The X/Q shall be determined using equation 3.144 given on page 113 of Meteorology and Atomic Energy (1968). Seasonal quarters are defined as:

Spring	March through May
Summer	June through August
Fall	September through November
Winter	December through February

xxiii The curie seconds per cubic meter maximum exposure of Kr-85 integrated for the reported quarter at ground level offsite in each $\pi/8$ sector about the stack, computed from meteorological data recorded during emission of the respective increments of Kr-85 that register above background on the Kr-85 stack gas monitor.

(Change No. 15)

xv Curies of cesium 134 released via the stack.

xvi Curies of cesium 137 released via the stack.

xx Milliroentgen of radiation (including background) accrued each quarter at each of the 3 site perimeter sampling stations.

d) Median and geometric deviation of strontium 90 microcuries per kilogram of skeleton.

iv Once per year the licensee shall determine the following from a deer taken onsite during the hunting season and taken, preferably, north of the plant:

a) Microcuries cesium 134 per kilogram of flesh.

b) Microcuries cesium 137 per kilogram of flesh.

c) Microcuries strontium 90 per kilogram of flesh.

d) Microcuries strontium 89 per kilogram of skeleton.

e) Microcuries strontium 90 per kilogram of skeleton.

D. The environmental reports to be prepared by the licensee shall contain descriptive material covering the environmental surveys performed during the reporting period including information on:

i The number and types of samples taken; e.g., air, surface water, soil, fish.

ii The number and types of measurements made.

iii Locations of the sample points and monitoring stations.

iv The frequency of the surveys.

v A summary of survey results.

E. If levels of radioactive materials in environmental media indicate the likelihood of public intakes in excess of 3% of those that could result from continuous exposure to the concentration values listed in Appendix B, Table II, Part 20, estimates of the likely resultant exposure to individuals and to population groups, and assumptions upon which estimates are based should be provided.

F. If statistically significant variations in offsite environmental concentrations with time are observed, correlation of these results with effluent releases should be provided.

C. The licensee shall determine the following information according to the schedule given:

i If, during any week from April to October, inclusive, the release of iodine 131 from the stack exceeds 30 millicuries, the licensee shall determine the microcuries per milliliter of iodine 131 in samples of milk from farms within 2-1/2 miles of the plant in each direction expected to receive the release. One sample shall be collected each week for the four weeks following the release. Each sample shall be a composite of one day's production from cows which are on pasture.

ii During August of each year the licensee shall collect a milk sample from a farm within 2-1/2 miles of the plant in the north-west sector and a milk sample from a farm within 2-1/2 miles of the plant in the north-east sector. The samples shall be composites of one day's production from cows which are on pasture. Each sample shall be analyzed separately to determine:

a) Microcuries iodine 129 per milliliter

b) Microcuries strontium 90 per milliliter

c) Microcuries cesium 134 per milliliter

d) Microcuries cesium 137 per milliliter

iii During the second and third quarters of each year, licensee shall take fish samples from Cattaraugus Creek between the Springville hydroelectric dam and the Cattaraugus Creek-Buttermilk Creek confluence. One sample shall be taken during each of the two quarters. A sample shall consist of at least 9 fish, each at least six inches long. Each fish in each sample shall be analyzed to determine:

a) Median and geometric deviation of cesium 134 microcuries per kilogram of flesh.

b) Median and geometric deviation of cesium 137 microcuries per kilogram of flesh.

c) Median and geometric deviation of strontium 90 microcuries per kilogram of flesh.

(Change No. 15)

C. The licensee shall determine the following information according to the schedule given:

i During August of each year the licensee shall collect a milk sample from a farm within 2-1/2 miles of the plant in the north-west sector and a milk sample from a farm within 2-1/2 miles of the plant in the north-east sector. The samples shall be composites of one day's production from cows which are on pasture. Each sample shall be analyzed separately to determine:

a) Microcuries iodine 129 per milliliter

b) Microcuries strontium 90 per milliliter

c) Microcuries cesium 134 per milliliter

d) Microcuries cesium 137 per milliliter

ii During the second and third quarters of each year, licensee shall take fish samples from Cattaraugus Creek between the Springville hydroelectric dam and the Cattaraugus Creek-Buttermilk Creek confluence. One sample shall be taken during each of the two quarters. A sample shall consist of at least 9 fish, each at least six inches long. Each fish in each sample shall be analyzed to determine:

a) Median and geometric deviation of cesium 134 microcuries per kilogram of flesh.

b) Median and geometric deviation of cesium 137 microcuries per kilogram of flesh.

c) Median and geometric deviation of strontium 90 microcuries per kilogram of flesh.

iii During the second and third quarters of each year, licensee shall take fish samples from Cattaraugus Creek between the Springville hydroelectric dam and the Cattaraugus Creek-Buttermilk Creek confluence. One sample shall be taken during each of the two quarters. A sample shall consist of at least 9 fish, each at least six inches long. Each fish in each sample shall be analyzed to determine:

a) Median and geometric deviation of cesium 134 microcuries per kilogram of flesh.

b) Median and geometric deviation of cesium 137 microcuries per kilogram of flesh.

c) Median and geometric deviation of strontium 90 microcuries per kilogram of flesh.

Basis

Environmental Monitoring

The environmental survey incorporates measurements to provide background data and measure possible plant effects. Samples collected at points where concentrations of effluents in the environment are expected to be greatest will be compared with samples collected concurrently at points expected to be essentially unaffected by station effluents. The latter samples will provide background measurements as a basis for distinguishing significant radioactivity introduced into the environment by the operation of the plant from that due to other sources such as nuclear detonations.

This schedule will assure that significant changes in the environmental radioactivity are sampled most frequently. Those which are less affected by transient changes but show long-term accumulations are sampled less frequently.

The monitoring program will be reviewed and re-evaluated periodically after data such as composition, quantity and frequency of releases, dilution factors and measured concentrations in food and other organisms (if any are observed) are obtained.

d) Median and geometric deviation of strontium 90 microcuries per kilogram of skeleton.

iv Once per year the licensee shall determine the following from a deer taken onsite during the hunting season and taken, preferably, north of the plant:

a) Microcuries cesium 134 per kilogram of flesh.

b) Microcuries cesium 137 per kilogram of flesh.

c) Microcuries strontium 90 per kilogram of flesh.

d) Microcuries strontium 89 per kilogram of skeleton.

e) Microcuries strontium 90 per kilogram of skeleton.

D. The environmental reports to be prepared by the licensee shall contain descriptive material covering the environmental surveys performed during the reporting period including information on:

i The number and types of samples taken; e.g., air, surface water, soil, fish.

ii The number and types of measurements made.

iii Locations of the sample points and monitoring stations.

iv The frequency of the surveys.

v A summary of survey results.

E. If levels of radioactive materials in environmental media indicate the likelihood of public intakes in excess of 3% of those that could result from continuous exposure to the concentration values listed in Appendix B, Table II, Part 20, estimates of the likely resultant exposure to individuals and to population groups, and assumptions upon which estimates are based should be provided.

F. If statistically significant variations in offsite environmental concentrations with time are observed, correlation of these results with effluent releases should be provided.

Basis

Environmental Monitoring

The environmental survey incorporates measurements to provide background data and measure possible plant effects. Samples collected at points where concentrations of effluents in the environment are expected to be greatest will be compared with samples collected concurrently at points expected to be essentially unaffected by station effluents. The latter samples will provide background measurements as a basis for distinguishing significant radioactivity introduced into the environment by the operation of the plant from that due to other sources such as nuclear detonations.

This schedule will assure that significant changes in the environmental radioactivity are sampled most frequently. Those which are less affected by transient changes but show long-term accumulations are sampled less frequently.

The monitoring program will be reviewed and re-evaluated periodically after data such as composition, quantity and frequency of releases, dilution factors and measured concentrations in food and other organisms (if any are observed) are obtained.

5.2 PROCESS INSTRUMENTATION

Applicability

This specification applies to instrumentation necessary to assure nuclear criticality safety.

Objective

To assure that process instrumentation necessary to prevent nuclear criticality incidents is in operating condition at all times.

Specification

5.2.1 PRIOR TO OPERATION OF EITHER OF THE DISSOLVERS, THE PRIMARY INSTRUMENTS SHOWN BELOW SHALL BE IN OPERATING CONDITION. IF ANY OF THE PRIMARY INSTRUMENTS FAIL DURING OPERATION, THE DISSOLVER MAY BE OPERATED WITH THE LISTED ALTERNATES. IF ALL THE ALTERNATES FOR ANY PARTICULAR PRIMARY ALSO FAIL, THE DISSOLVER SHALL BE SHUT DOWN.

DISSOLVER 3C-1

PRIMARY INSTRUMENT	ACCEPTABLE ALTERNATE
3EC-2, 3LCL-4	3LR-3, 3DR-2
3EC-2, 3PCH-6	3PRC-5

DISSOLVER 3C-2

PRIMARY INSTRUMENT	ACCEPTABLE ALTERNATE
3EC-1, 3LCL-2	3LR-1, 3DR-1
3EC-1, 3PCH-3	3PRC-2

5.2.2 WHENEVER OPERATION OF THE SOLVENT EXTRACTION SYSTEM IS INITIATED, THE PRIMARY INSTRUMENTS LISTED BELOW SHALL BE IN OPERATING CONDITION. IF ANY OF THE LISTED PRIMARY INSTRUMENTS FAIL DURING OPERATION OF THE SYSTEM THE APPROPRIATE ALTERNATE LISTED BELOW MAY BE USED TO CONTINUE OPERATION UNDER A READY CONDITION. IF ANY ALTERNATE BECOMES INOPERABLE WHILE BEING USED IN LIEU OF A FAILED PRIMARY INSTRUMENT, THE SOLVENT EXTRACTION SYSTEM SHALL BE SHUT DOWN. ALARM INSTRUMENTS IDENTIFIED BELOW SHALL BE SET TO ALARM WHEN THE MONITORED STREAM FLOW RATE DECREASES TO 80% OF THE FLOW SPECIFIED BY THE RUN PLAN GOVERNING CURRENT OPERATIONS.

(Change No. 18)

PRIMARY INSTRUMENT	ASSOCIATED STREAM	ACCEPTABLE ALTERNATIVE
A. Uranium Enriched Below 5% U-235		
14FAL-10 or 14FAL-12	HCX	14FRC-3, 14FAL-12 or 14FAL-10
5FAL-28 or 5FAL-23	ICX	5FRC-9, 5FAL-23 or 5FAL-28
14FAL-36 or 14FAL-35	IEX	14FRC-20, 14FAL-35 or 14FAL-36
B. Uranium Enriched Above 5% U-235		
14FAL-10 and 14FAL-12	HCX	14FRC-3 and either 14FAL-10 or 14FAL-12
5FAL-28 and 5FAL-23	ICX	5FRC-9 and either 5FAL-28 or 5FAL-23
14FAL-36 and 14FAL-35	IEX	14FRC-20 and either 14FAL-36 or 14FAL-35

5.2.3 EITHER ONE OF THE FOLLOWING INSTRUMENTS IS NECESSARY FOR OPERATION OF THE PU ION EXCHANGE COLUMNS AT ELEVATED TEMPERATURES. IF BOTH INSTRUMENTS FAIL, THE ION EXCHANGE COLUMNS SHALL BE OPERATED AT CELL AMBIENT TEMPERATURE.

INSTRUMENT	ASSOCIATED EQUIPMENT/STREAM
5TRC-4	Column hot water heating system
5TIC-3	Column feed

5.2.4 AT THE COMMENCEMENT OF OPERATION OF EITHER THE REWORK OR THE LOW ENRICHED URANIUM EVAPORATORS, THE RESPECTIVE PRIMARY INSTRUMENTATION SPECIFIED BELOW SHALL BE IN OPERATING CONDITION. IF A PRIMARY INSTRUMENT FAILS DURING OPERATION, THE EVAPORATOR MAY BE OPERATED WITH THE ALTERNATE INSTRUMENTATION. IF ALL THE ALTERNATES FOR A FAILED PRIMARY ALSO FAIL, THE EVAPORATOR SHALL BE SHUT DOWN.

LOW ENRICHED URANIUM PRODUCT EVAPORATOR

PRIMARY INSTRUMENT	ACCEPTABLE ALTERNATE
5DRC-20	5DRC-20 (manual)
	5DRC-23 on 5D-9
	5DRC-23 (manual)

REWORK EVAPORATOR

PRIMARY INSTRUMENT	ACCEPTABLE ALTERNATE
7LCL-5	7LCL-5 (Manual) or
	7DR-4 and
	TRI-5 and
	Volume and concentration of batch from 7D-8

5.2.5 PRIOR TO BOILDOWN OPERATION OF THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK, THE PRIMARY INSTRUMENT SHOWN BELOW SHALL BE IN OPERATING CONDITION. IF THE PRIMARY INSTRUMENTS FAIL DURING OPERATION, THE TANK MAY BE OPERATED WITH THE LISTED ALTERNATES. IF THE ALTERNATES ALSO FAIL, IMMEDIATE ACTION WILL BE TAKEN TO SHUT DOWN THE FEED ADJUSTMENT AND ACCOUNTABILITY BOILDOWN.

PRIMARY INSTRUMENT	ACCEPTABLE ALTERNATE
3EC-3, 3LCL-8	3DR-4, 3LR-6

5.2.6 WHEN ANY OF THE ALTERNATE INSTRUMENTATION LISTED UNDER 5.2.1, 5.2.2, 5.2.4 or 5.2.5 IS BEING USED IN PLACE OF PRIMARY INSTRUMENTATION, THE PLANT SHALL BE CONSIDERED TO BE OPERATING IN A READY CONDITION, AND CLOSE AND CONTINUOUS ATTENTION SHALL BE GIVEN TO THE ALTERNATE INSTRUMENTATION TO ASSURE THAT PLANT OPERATION REMAINS UNDER CONTROL.

(Change No. 18)

Basis

The operations in this plant, as in any chemical plant, are controlled by a variety of process instruments.

Because of the need to maintain close control of many process variables, a multiplicity of instruments has been included. Important instruments are provided in duplicate or alternate ways of determining the desired information have been provided. For the process steps important to nuclear safety, this specification identifies the instrumentation that shall be in operating condition at the start of operations and that instrumentation which shall be in operating condition in order to continue operations.

Selection of primary and secondary instruments on the dissolvers 3C-1 and 3C-2 is based upon two safety considerations, (1) the dissolver off-gas must be routed through the proper treating equipment (i.e. the DOG system) and (2) the dissolver solution must not be overconcentrated.

Nuclear safety in the dissolver operation is based on fissile isotope concentration control as specified in Technical Specification 4.4. For fuel enriched above 5% U-235 and for thorium containing fuels, fixed or soluble neutron absorbers are used in addition to concentration control. Concentration control is achieved by specifying, in the approved run plan, the quantities of fuel, acid and water charged to the dissolvers. The dissolver solution, however, could be overconcentrated by boiling off a portion of the contained solution. Selection of primary and secondary instruments for dissolver operation is, therefore, based on the need to prevent overconcentration. In addition, instrumentation necessary to prevent dissolver pressurization and miss-routing of the dissolver off-gas is also specified. An electrical control (EC) system is provided for each dissolver which terminates steam to the dissolver and initiates cooling water whenever either a low level or high pressure occurs during dissolution. The control systems are activated by 3LCL-4 or 3PCH-6 for dissolver 3C-1 and by 3LCL-2 or 3PCH-3 for dissolver 3C-2. Acceptable alternates for operation in a ready condition are: (1) the dissolver's level and density instruments in lieu of the low-level control and (2) the recording pressure controller in lieu of the high-pressure instrument.

A nuclear criticality incident in solvent extraction, under normal operating conditions, is precluded by (1) design of the solvent extraction system (2) limitations on the fissile concentrations of the feed and (3) limitations on the extractant concentration in the solvent. The latter two restrictions are included in specifications 4.5, 4.6 and 4.7. Loss of strip flow during processing could result in

an increase in the uranium concentration in the strip column, and in time could lead to nuclear criticality, if highly enriched fuels were being processed. Specification 5.2.2 requires that duplicate flow alarms or alternate instrumentation be in operation during processing of highly enriched fuels to alert operators to a major reduction in strip flow. The alarms are set at 80% of the normal strip flow as given on the run plan. At this flow rate, the concentration of uranium in the aqueous phase from the column would be about 7 g/l U-235, well below the minimum critical concentration of 12.5 g/l U-235 given in ORNL-686. Single alarms or alternate flow recorders are specified for strip flow control during processing of uranium enriched below 5% U-235. In this case nuclear criticality will not occur if flow of strip is completely lost, however it would be a serious and undesirable process upset.

The maximum operating temperature for the Pu ion exchange columns, as given in Specification 4.9, is 176°F, well below the minimum temperature of 212°F required for initiation of the exothermic resin degradation reaction. There are two temperature controllers in this system and either one may be used to control the temperature. If neither control is in operating condition, the ion exchange unit will be operated at cell ambient temperature which will not exceed about 100°F.

The low-enriched uranium product is concentrated in the low-enriched evaporator to produce a solution containing no more than 10 g/l U-235, well below the minimum critical concentration of 15.5 g/l U-235 given in ONRL-TM-686. Final product sampling and storage tanks for low enriched uranium product are not geometrically safe. It is necessary, therefore, to limit the concentration of U-235 in the product stream leaving the evaporator.

The concentration of material in the evaporator is controlled by a density recorder-controller (5DRC-20) which is the primary instrument. Alternates to the controller are to use manual control based on the density reading or to use density instrumentation on the concentrate receiver vessel 5D-9, which is a poisoned tank.

Nuclear safety in the rework system is based on concentration control of fissile isotopes within limits given in Specification 4.11. To prevent inadvertent overconcentration, the evaporator is equipped with a low liquid level control which shuts off the steam supply to the evaporator if the liquid level drops below a predetermined point selected so that allowable concentration limits will not be exceeded. Acceptable alternate instrumentation includes the use of the level instrument and manual control of the steam supply or determination of fissile isotope concentration in the evaporator through density and

temperature measurements coupled with the volume and concentration of material fed to the evaporator.

Nuclear safety in the feed adjustment and accountability tank is based on concentration control. This vessel may be used to concentrate feed solutions through evaporation. Allowable maximum feed solution concentrations are given in Specification 4.5. To prevent overconcentration, the vessel is equipped with an electrical control which will shut off steam to the heating coil if (1) the vessel liquid level drops below a pre-selected point (2) pressure in the steam coil drops indicating a steam leak or (3) a pre-set evaporation time period is passed. Alternate instrumentation which may be used to prevent over concentration are the vessel density and level recorders.

The terminology used for instrument designations is as follows:

A - Alarm
C - Controller
D - Density
E - Electrical
F - Flow
H - High
I - Indicator
L - Level, when shown as the first letter
L - Low, when shown as the last letter
P - Pressure
R - Recorder
T - Temperature

The consequence of losing any single instrument is to reduce the margin of safety in operations, or more properly to reduce the defense in depth. This specification represents a definition of the minimum acceptable defense in depth.

5.3 VENTILATION

Applicability

This specification establishes the operability requirements of the ventilation systems.

Objective

To minimize escape of airborne radioactive contaminants from process equipment and cells.

Specification

5.3.1 DISSOLVER OFF-GAS SYSTEM (DOG)--DURING DISSOLUTION OR SHEAR OPERATIONS, THE EQUIPMENT THAT SHALL BE MAINTAINED IN OPERATION INCLUDES AS A MINIMUM A CHEMICAL SCRUBBER AND ONE DISSOLVER OFF-GAS FILTER AND ITS ASSOCIATED BLOWER. IF THE FUEL BATCH CONTAINS IN EXCESS OF 0.6 CURIE OF IODINE-131, THE OPERATING EQUIPMENT SHALL ALSO INCLUDE ONE OFF-GAS HEATER FOLLOWED BY AN OFF-GAS SILVER NITRATE REACTOR. IF THIS REQUIREMENT IS NOT MET, THE DISSOLVER SHALL BE IMMEDIATELY COOLED AND SHEARING OPERATIONS SHALL BE IMMEDIATELY DISCONTINUED.

5.3.2 VESSEL OFF-GAS SYSTEM (VOG)--BOTH OFF-GAS FILTERS AND ASSOCIATED BLOWERS SHALL BE OPERABLE AT THE START OF A CAMPAIGN OPERATION INVOLVING THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK. THE EQUIPMENT SHALL BE OPERABLE THROUGHOUT A CAMPAIGN EXCEPT OPERATIONS MAY BE CONTINUED FOR 24 HOURS IF BOTH FILTERS AND/OR THEIR ASSOCIATED BLOWERS FAIL.

5.3.3 MAIN VENTILATION SYSTEM--BOTH SYSTEM FILTERS AND ASSOCIATED BLOWERS SHALL BE OPERABLE AT THE START OF A CAMPAIGN. EACH FILTER BANK SHALL BE MAINTAINED IN AN OPERABLE CONDITION EXCEPT FOR SERVICING PERIODS NOT EXCEEDING TEN CONSECUTIVE DAYS. SHOULD AN EXHAUSTER BECOME INOPERABLE, IMMEDIATE AND CONTINUING ATTENTION SHALL BE DIRECTED TO ITS REPLACEMENT WHILE EXERCISING MEASURES TO MAINTAIN SYSTEM CONTAINMENT. IF BOTH MAIN EXHAUST FILTER SYSTEMS BECOME INOPERABLE SIMULTANEOUSLY, IMMEDIATE AND CONTINUING ATTENTION SHALL BE DIRECTED TOWARD ORDERLY PLANT SHUTDOWN.

THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE OPERATING ABSOLUTE FILTER IN THE MAIN VENTILATION SYSTEM SHALL BE OPERABLE DURING OPERATION OF THE FILTER. IF THIS INSTRUMENTATION SHOULD BECOME INOPERABLE, OPERATION OF THE FILTER MAY CONTINUE FOR 10 DAYS, PROVIDED THAT THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE ABSOLUTE FILTER PLUS ROUGHING FILTER IS OPERABLE.

FILTER	PRIMARY INSTRUMENTS	ACCEPTABLE ALTERNATES
15T-49	15PDR-11	15PDR-10
	15PDAH-11	15PDAH-5
15T-49A	15PDR-6	15PDR-5
	15PDAH-6	15PDAH-4

(Change No. 8)

5.3 VENTILATION

Applicability

This specification applies to the operability requirements of the ventilation systems.

Objective

To assure that ventilation equipment necessary for safety is operable during plant operation.

Specification

5.3.1 DISSOLVER OFF-GAS SYSTEM (DOG)--DURING DISSOLUTION OR SHEAR OPERATIONS, THE EQUIPMENT THAT SHALL BE MAINTAINED IN OPERATION INCLUDES AS A MINIMUM A CHEMICAL SCRUBBER AND ONE DISSOLVER OFF-GAS FILTER AND ITS ASSOCIATED BLOWER. IF THE FUEL BATCH CONTAINS IN EXCESS OF 0.6 CURIE OF IODINE-131, THE OPERATING EQUIPMENT SHALL ALSO INCLUDE ONE OFF-GAS HEATER FOLLOWED BY AN OFF-GAS SILVER NITRATE REACTOR. IF THIS REQUIREMENT IS NOT MET, THE DISSOLVER SHALL BE IMMEDIATELY COOLED AND SHEARING OPERATIONS SHALL BE IMMEDIATELY DISCONTINUED.

5.3.2 VESSEL OFF-GAS SYSTEM (VOG)--BOTH OFF-GAS FILTERS AND ASSOCIATED BLOWERS SHALL BE OPERABLE AT THE START OF A CAMPAIGN OPERATION INVOLVING THE FEED ADJUSTMENT AND ACCOUNTABILITY TANK. THE EQUIPMENT SHALL BE OPERABLE THROUGHOUT A CAMPAIGN EXCEPT OPERATIONS MAY BE CONTINUED FOR 24 HOURS IF BOTH FILTERS AND/OR THEIR ASSOCIATED BLOWERS FAIL.

5.3.3 AT THE START OF A PROCESSING CAMPAIGN IN THE PROCESS MECHANICAL CELL, THE FOLLOWING EQUIPMENT SHALL BE OPERATIVE:

HEAD-END VENTILATION SYSTEM

1. BOTH ELECTRICALLY-DRIVEN EXHAUST BLOWERS.
2. THE SPARE PROPANE GAS ENGINE-DRIVEN EXHAUST BLOWER.
3. ALL FILTER STAGES IN BOTH FILTER BANKS.

MAIN PLANT VENTILATION SYSTEM

1. ONE EXHAUST BLOWER AND ITS ASSOCIATED ROUGHING AND ABSOLUTE FILTERS.

5.3.4 WASTE TANK OFF-GAS SYSTEM—IF A FILTER, BLOWER, OR A WASTE TANK OFF-GAS CONDENSER FAILS, THE WASTE TANK VENT SYSTEM SHALL BE SWITCHED TO THE APPROPRIATE OPERABLE STANDBY EQUIPMENT AND IMMEDIATE REPAIR SHALL BE INSTITUTED TO EXPEDITE THE RETURN OF THE FAILED EQUIPMENT TO SERVICE.

5.3.5 DOG-VOG BACKUP FILTERS—A DOG-VOG BACKUP FILTER SHALL BE OPERABLE AT ALL TIMES.

Bases

The primary control of airborne radioactivity in the plant is provided by four ventilation systems. This specification has been designed to assure the availability of sufficient ventilation capacity to provide the proper pressure differentials between operating equipment and occupied areas so that plant personnel are protected from airborne activity, and to maintain in operation essential treatment systems for the removal of radioactivity from the ventilation streams prior to their release to the atmosphere.

The DOG system treats gaseous effluents from the dissolver, the bundle [illegible]ar and the pin shear. The off-gas from the shearing operations is connected to the DOG system upstream from the chemical scrubber and the combined dissolver and shear off-gasses pass through the scrubber, reheater, a silver nitrate reactor, a cooler, and a filter prior to blower discharge into the stack. The chemical scrubber removes about 90 percent of the iodine 131 and, if necessary, the chemical scrubber in combination with a silver nitrate reactor removes about 99.5 percent of the iodine 131. If the minimum operable equipment requirements are not met, the evolution of radioactivity is reduced by discontinuing the shearing operation and by cooling the dissolver, thereby slowing the reaction. This will reduce the fraction of the annual release limit (Technical Specification 4.1.1b) expended during equipment inoperability.

The VOG system provides equipment for the treatment of the gaseous effluents from radioactivity-containing process vessels throughout the plant. These gases are condensed, scrubbed, heated and filtered prior to blower discharge to the stack. If both VOG filter-blower units fail, operations may continue for a 24-hour period because confinement is afforded by the DOG-VOG backup filter and the Main Ventilation System, which exhausts the spaces where the vessels on the VOG system are located.

An absolute filter and a parallel alternate are installed in the common discharge line from the DOG and VOG exhausters to the stack. These filters provide in-depth protection against releases from a failed filter in either the DOG or VOG systems. Technical Specification 5.3.5 requires that one of [illegible] backup filters must be operable. Hence, the spare must be maintained in readiness.

(Change No. 8)

5.3.4 AT THE START OF A PROCESSING CAMPAIGN IN THE SOLVENT EXTRACTION AREA, THE FOLLOWING EQUIPMENT SHALL BE OPERATIVE:

MAIN PLANT VENTILATION SYSTEM

1. BOTH EXHAUST BLOWERS AND THEIR ASSOCIATED ROUGHING AND ABSOLUTE FILTERS

HEAD END VENTILATION SYSTEM

1. ALL FILTER STAGES IN ONE FILTER BANK.

2. EITHER BOTH ELECTRICALLY-DRIVEN EXHAUST BLOWERS OR THE SPARE PROPANE GAS ENGINE-DRIVEN EXHAUST BLOWER.

5.3.5 IF, FOR ANY REASON, THE REDUNDANCY IN FILTRATION CAPABILITY OR EXHAUST BLOWER AVAILABILITY OF EITHER THE HEAD-END OR MAIN PLANT VENTILATION SYSTEM IS LOST FOR A PERIOD OF TIME EXCEEDING 10 DAYS, ALL PLANT OPERATIONS EXCEPT THE AVAILABLE VENTILATION SYSTEM SHALL BE SHUT DOWN IN AN ORDERLY FASHION. PLANT OPERATIONS MAY BE CONTINUED BEYOND THE 10 DAY PERIOD ONLY IF THE FAILED EQUIPMENT INVOLVES A MAJOR COMPONENT SUCH AS A BLOWER OR A DRIVE UNIT PROVIDED (1) THE SAFETY COMMITTEE HAS APPROVED A PLAN FOR EXPEDIENT REPAIR OR REPLACEMENT OF THE FAILED UNIT AND (2) WITHIN 20 DAYS A REPORT HAS BEEN FILED WITH THE COMMISSION OUTLINING THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS OF THE SAFETY COMMITTEE.

5.3.6 IF EITHER THE HEAD-END OR MAIN PLANT EXHAUST VENTILATION SYSTEM FAILS TO SUCH AN EXTENT THAT NORMAL FLOW OF FILTERED AIR IS NOT AVAILABLE IN THE PARTICULAR SYSTEM, ALL PLANT OPERATIONS EXCEPT VENTILATION SYSTEM OPERATION SHALL BE SHUT DOWN IN AN ORDERLY MANNER.

5.3.7 THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE OPERATING FINAL ABSOLUTE FILTER IN THE HEAD-END VENTILATION SYSTEM SHALL BE OPERABLE DURING OPERATION OF THE FILTER. IF THIS INSTRUMENTATION SHOULD BECOME INOPERABLE, OPERATION OF THE FILTER CAN CONTINUE FOR 10 DAYS, PROVIDED THAT THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE FILTER BANK IS OPERABLE.

(Change No. 12)
October, 1970

The Main Ventilation System controls the passage of air through the process building from clean areas to successively more contaminated areas and filters exhausted air prior to discharge up the stack. To provide for continuous operation a stand by filter-exhauster unit is provided. If one of the filter banks becomes inoperable, plant operations may continue for a 10-day period without a spare while the filter bank is being returned to service. Ten days permits filter replacement without upsetting maintenance program, yet entails minimal risk of being without spare. If an exhauster becomes inoperative, plant operations may continue while immediate and continuing attention is given to repair or replacement of the exhauster; however, the discharge through the failed exhauster must be prevented. If both exhauster-filter systems are inoperative at the same time, an orderly plant shutdown must be initiated.

Because of the potentially large inventory of radioactivity on the Main Ventilation filters, redundant instrumentation is provided. In addition to the stack monitor, performance of the operating filter is monitored by dual differential pressure recorders and high differential pressure alarms. The primary set of instruments monitors the absolute filters which are the final barrier to radioactivity release and the alternate set monitors the filter stage (absolute plus roughing).

The waste tank off-gas system condenses and filters gaseous effluents from the storage tanks. In this system dual equipment (i.e. condensers, filters and blowers) is provided. Failure of an inline component will require a switch to the alternate standby component. Since a failure would decrease the defense in depth, high priority is given to the repair of a failed component.

The consequence of violating this specification would be to risk the exposure of operating personnel and the general public to levels of airborne contamination in excess of the normally expected acceptable levels as defined in paragraphs 7.6 through 7.9 of the Safety Analysis. In showing that the consequences of events discussed in paragraphs 7.30 - 7.36 are acceptable within the guidelines of 10 CFR Part 100, reliance was placed on the absolute filters being effective.

FILTER	PRIMARY INSTRUMENTS	ACCEPTABLE ALTERNATES
15T-73	15PDR-45 15PDAH-34	15PDR-44 15PDAH-32
15T-73A	15PDR-45A 15PDAH-34A	15PDR-44A 15PDAH-32A

THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE OPERATING ABSOLUTE FILTERS IN THE MAIN VENTILATION SYSTEM SHALL BE OPERABLE DURING OPERATION OF THE FILTER. IF THIS INSTRUMENTATION SHOULD BECOME INOPERABLE, OPERATION OF THE FILTER MAY CONTINUE FOR 10 DAYS, PROVIDED THAT THE INSTRUMENTATION MONITORING THE DIFFERENTIAL PRESSURE ACROSS THE ABSOLUTE FILTER PLUS ROUGHING FILTER IS OPERABLE.

FILTER	PRIMARY INSTRUMENTS	ALTERNATES
15T-49	15PDR-11 15PDAH-11	15PDR-16 15PDAH- 5
15T-49A	15PDR- 6 15PDAH- 6	15PDR- 5 15PDAH- 4

5.3.8 WASTE TANK OFF-GAS SYSTEM--IF A FILTER, BLOWER, OR A WASTE TANK OFF-GAS CONDENSER FAILS, THE WASTE TANK VENT SYSTEM SHALL BE SWITCHED TO THE APPROPRIATE OPERABLE STANDBY EQUIPMENT AND IMMEDIATE REPAIR SHALL BE INSTITUTED TO EXPEDITE THE RETURN OF THE FAILED EQUIPMENT TO SERVICE.

5.3.9 DOG-VOG BACKUP FILTERS--A DOG-VOG BACKUP FILTER SHALL BE OPERABLE AT ALL TIMES.

Basis

The primary control of airborne radioactivity in the plant is provided by four ventilation systems. This specification has been designed to assure the availability of sufficient ventilation capacity to provide

the proper pressure differentials between operating equipment and occupied areas so that plant personnel are protected from airborne activity, and to maintain in operation essential treatment systems for the removal of radioactivity from the ventilation streams prior to their release to the atmosphere.

The DOG system treats gaseous effluents from the dissolver, the bundle shear and the pin shear. The off-gas from the shearing operations is connected to the DOG system upstream from the chemical scrubber and the combined dissolver and shear off-gases pass through the scrubber, reheater, a silver nitrate reactor, a cooler and a filter prior to blower discharge into the stack. The chemical scrubber removes about 90 percent of the iodine 131 and, if necessary, the chemical scrubber in combination with a silver nitrate reactor removes about 99.5 percent of the iodine 131. If the minimum operable equipment requirements are not met, the evolution of radioactivity is reduced by discontinuing the shearing operation and by cooling the dissolver, thereby slowing the reaction. This will reduce the fraction of the annual release limit (Technical Specification 4.1.1) expended during equipment inoperability.

The VOG system provides equipment for the treatment of the gaseous effluents from radioactive-containing process vessels throughout the plant. These gases are condensed, scrubbed, heated and filtered prior to blower discharge to the stack. If both VOG filter-blower units fail, operations may continue for a 24-hour period because confinement is afforded by the DOG-VOG backup filter and the Main Ventilation System, which exhausts the spaces where the vessels on the VOG system are located.

An absolute filter and a parallel aternate are installed in the common discharge line from the DOG and VOG exhausters to the stack. These filters provide in-depth protection against releases from a failed filter in either the DOG-VOG systems. Technical Specification 5.3.9 requires that one of the backup filters must be operable. Hence, the spare must be maintained in readiness.

The exhaust system for the plant includes two major systems. Each system must be fully operable before operations are begun at the start of a campaign in the areas served by each system. Thus the HEV system must be fully operable before fuel is moved into the PMC at the start

of a new campaign and the Main Ventilation System must be fully operable before commencement of solvent extraction at the start of a campaign.

Partial failure of either system will not result in undue risk provided that prompt repair of defective units is effected. Plant operations may continue without a spare in the areas served by each system for a 10-day period. If repairs cannot be made within 10 days, and if the failed equipment is a major component, operation may continue while repairs or replacement is made under the provisions of 5.3.5.

A total failure of either system will require the orderly shutdown of plant operations. Plant operations may be resumed upon the restoration to service of one full section of the failed system since the condition then is the same as would result from a partial failure during a campaign.

The Main Ventilation System controls the passage of air through the process areas beyond the Chemical Process Cell from clean areas to successively more contaminated areas and filters exhausted air prior to discharge up the stack. To provide for continuous operation a standby filter-exhauster unit is provided. If one of the filter banks becomes inoperable, plant operations may continue for a 10 day period without a spare while the filter bank is being returned to service. Ten days permit filter replacement without upsetting maintenance programs, yet entails minimal risk of being without spare. If both exhauster-filter systems are inoperative at the same time, an orderly shutdown must be initiated.

The Head End Ventilation System controls air flows for the mechanical processing areas, the Chemical Process Cell and the Manipulator Repair and Decontamination Building. Like the Main Ventilation System, the Head End Ventilation System includes independent filter systems and blowers as alternates. The HEV system has more flexibility since either filter bank can be operated with either the electric-driven or the propane-driven blower. The HEV system includes an even greater defense in depth since double absolute filtration is used. The operability requirements for HEV are similar to those established for the Main Ventilation System. Should the HEV system become totally inoperable, an orderly shutdown must be initiated.

(Change No. 12)
October, 1970

Because of the potentially large inventories of radioactivity on the Main Ventilation Filters and the Head End Ventilation filter, redundant instrumentation is provided. In addition to the stack monitor, performance of the operating filter is monitored by dual differential pressure recorders and high differential pressure alarms. The primary set of instruments monitors the absolute filters which are the final barrier to radioactivity release and the alternate set monitors the entire filter stage.

The waste tank off-gas system condenses and filters gaseous effluents from the storage tanks. In this system dual equipment (i.e. condensers, filters and blowers) is provided. Failure of an inline component will require a switch to the alternate standby component. Since a failure would decrease the defense in depth, high priority is given to the repair of a failed component.

The consequences of violating this specification would be to risk the exposure of operating personnel and the general public to levels of airborne contamination in excess of the normally expected acceptable levels as defined in paragraphs 7.6 through 7.9 of the Safety Analyses. In showing that the consequences of events discussed in paragraphs 7.30 through 7.36 are acceptable within the guidelines of 10 CFR Part 100, reliance was placed on the absolute filters being effective.

(Change No. 12)
October, 1970

5.4 SPARE WASTE STORAGE CAPACITY

Applicability

This specification establishes the minimum provisions to be maintained to accommodate stored waste liquids, in the event of failure of storage tanks that are in use.

Objective

To prevent loss of stored radioactive waste liquids to the environment.

Specification

5.4.1 SPARE TANKS OF SUITABLE CORROSION RESISTANT MATERIAL SHALL BE MAINTAINED AT ALL TIMES WITH SUFFICIENT CAPACITY AND APPROPRIATE COOLING PROVISIONS, TO ACCOMMODATE RESPECTIVELY THE CONTENTS OF THE LARGEST TANK IN WHICH RADIOACTIVE LIQUID OF EACH CORROSIVE CHARACTERISTIC IS STORED.

5.4.2 WHEN STORAGE OF RADIOACTIVE LIQUIDS HAS BEEN INITIATED IN ANY SPARE TANK REQUIRED BY SPECIFICATION 5.4.1 OR SUCH A TANK HAS BEEN FOUND TO BE UNSUITABLE FOR SPARE SERVICE, ACTION SHALL BE INITIATED IMMEDIATELY TO REPLACE THE SPARE CAPACITY AT THE EARLIEST PRACTICAL DATE.

5.4.3 EQUIPMENT (INCLUDING PIPING, SHIELDING, LIQUID MOVER AND POWER SUPPLY) FOR TRANSFERRING THE RADIOACTIVE FLUID STORED IN ANY TANK TO THE SPARE TANKAGE RESERVED TO ACCOMMODATE IT SHALL BE MAINTAINED AT THE PLANT.

Bases

Although waste tank life expectancy is half a century, the time when a tank will fail is not accurately known. Rather than exploiting the confinement provided by the vaults in which tanks are buried during the construction of replacement tanks, this specification requires the maintenance of spare tanks, to which stored wastes could be transferred without delay.

The added margin of confinement assured by the low permeability and high ion exchange capacity of the silty till in which the tank vaults are located is sufficient to protect the public. So it is safe not to require replacement of spare tanks until they no longer serve as spares.

Since equipment for transferring the contents of the waste storage tanks to spare tankage is not built in, a technical specification requires such equipment to be available at the plant, to permit taking advantage of the provision of spare tanks.

High level alarm use even if one goes.

5.5 HIGH RADIATION AREA ACCESS

Applicability

This specification applies to alternatives that may be used in lieu of the control devices specified in 10 CFR Part 20.203(c)(2).

Objective

To assure that personnel do not inadvertently enter areas where the radiation exposure potential may be significant.

Specification

5.5.1 LOCKED DOOR SHALL BE USED TO CONTROL ADMITTANCE TO HIGH RADIATION AREAS WHERE AN INDIVIDUAL MIGHT RECEIVE A DOSE IN EXCESS OF 100 MILLIREM IN ONE HOUR. POSSESSIONS OF KEYS TO THESE LOCKS SHALL BE LIMITED TO NFS SUPERVISORY PERSONNEL.

5.5.2 IN PLANT AREAS WHICH CANNOT OR SHOULD NOT BE LOCKED, A SYSTEM OF STANTIONS CONNECTED BY ROPES WITH "HIGH RADIATION AREA" SIGNS ATTACHED SHALL BE USED TO OBSTRUCT ALL ACCESSIBLE SIDES OF A HIGH RADIATION AREA.

Basis

10 CFR 20.203 requires that a means be provided to warn personnel when they enter areas where the radiation exposure potential may be significant. The above procedures conform with the intent of 10 CFR 20. Some areas of the plant such as staircases that are necessary for evacuation purposes have high radiation levels periodically. Since these areas cannot be readily locked and for safety reasons should not be locked the method described in this specification is used to alert personnel to high radiation areas so that they will not unintentionally enter these areas.

5.6 CONTAMINATION AND RADIATION CONTROL

Applicability

This specification applies to the allowable maximum radiation and removable contamination limits for routine entry areas.

Objective

To maintain adequate radiological conditions for the protection of the health and safety of plant personnel.

Specification

5.6.1 IRRESPECTIVE OF THE USE OF PROTECTIVE CLOTHING, MAINTENANCE OF CONTAMINATED ZONE BOUNDARIES, AND THE APPLICATION OF EXISTING TECHNIQUES IN ACCORDANCE WITH PLANT PROCEDURES, CONTAMINATION AND RADIATION LEVELS IN ROUTINE ENTRY AREAS SHALL BE REDUCED TO BELOW THE FOLLOWING LEVELS WITHIN SEVEN DAYS AFTER DETECTION AND THE SOURCE OF CONTAMINATION OR RADIATION SHALL BE IDENTIFIED AND CONTROLLED.

REMOVABLE CONTAMINATION

BETA, DPM/100cm^2	50,000
ALPHA, DPM/100cm^2	500

RADIATION

MAJOR PORTION OF BODY, MREM/HR	100

IF THE ABOVE REDUCTION IS NOT ACHIEVED IN THE TIME GIVEN, (A) THE PROCESSING OPERATION REQUIRING ACCESS TO THE AREA SHALL BE DISCONTINUED UNTIL THE CONTAMINATION OR RADIATION SOURCE IS IDENTIFIED AND CONTROLLED AND CONTAMINATION AND RADIATION LEVELS ARE REDUCED TO BELOW THE ABOVE LIMITS AND (B) THE USAEC DIRECTORATE OF REGULATORY OPERATIONS SHALL BE NOTIFIED WITHIN 48 HOURS.

5.6.2 THE FOLLOWING AREAS ARE EXEMPT FROM 5.6.1: CASK HANDLING AND SERVICE BRIDGE AREAS OF THE FUEL RECEIVING AND STORAGE AREA, SCRAP REMOVAL ROOM, HOT SHOP, WASTE BURIAL AREA, OFF-GAS BLOWER ROOM AND EXTRACTION CHEMICAL ROOM (RECOVERED ACID AREA).

(Change No. 18)

5.6.3 WHEN WORK INVOLVING FUEL UNLOADING OR STORAGE OR CASK DECONTAMINATION IS NOT IN PROGRESS IN THE FOLLOWING AREAS OF THE FUEL RECEIVING AND STORAGE AREA, DECONTAMINATION SHALL BE STARTED WITHIN 12 HOURS OF THE END OF WORK AND THE AREAS SHALL BE DECONTAMINATED TO BELOW THE FOLLOWING LEVELS:

AREA	MAXIMUM PERMISSIBLE CONTAMINATION LEVELS ALPHA, DPM/100 CM^2	BETA DPM/100 CM^2
Service Bridges	500	50,000
Cask Decontamination Area	500	500,000

Basis

The level of removable contamination in routine work areas is determined at least daily by operations personnel. In addition, the areas are surveyed at least weekly by health and safety personnel.

The levels of contamination given in Specification 5.6.1 reflect the removable contamination levels which if exceeded could cause the airborne radioactivity to exceed the maximum permissible concentrations for 40-hours per week exposure. The limits are based on Plutonium-239 and Strontium-90. The radiation level given distinguishes between high radiation areas (Specification 5.5) and other plant areas.

Plant areas named in Specification 5.6.2 are expected from the specified limits because the operations and work performed in these areas result in localized levels of contamination or radiation in excess of the specified limits. Personnel entering these areas wear respiratory protection equipment appropriate for the contamination level and work is done under authorized special procedures.

The pool service bridge and cask decontamination areas may become contaminated above the limits given in 5.6.1 while work is performed in the areas. The areas are separated from access areas by rope barriers and step-off pads. Personnel leaving the areas are required to survey themselves following removal of the outer work clothing. The procedures are designed to prevent the spread of contamination to other plant areas. When not in use, the areas are to be decontaminated to the limits specified in 5.6.2 to prevent spread of airborne contamination.

The program recognizes that contamination or radiation problems will periodically occur through human or mechanical failure or because of the nature of the operations to be performed yet puts due emphasis on eliminating or controlling recurring problems.

(Change No. 18)

SECTION 6.0

SURVEILLANCE REQUIREMENTS

6.0 SURVEILLANCE REQUIREMENTS

The specifications listed in this section require inspections of certain equipment or systems which, with one exception, are not primary safeguards but which are desirable for a defense in depth if a primary system or safeguard fails. The lone exception is the specification (6.1.1) requiring surveillance of the boron glass Raschig rings which are a primary safeguard in vessels 5D-13A, B and C and for which due regard is given. The other specifications in this section are primarily intended to focus attention on aspects of plant operations which, while not primary safeguards, are of sufficient importance to direct, generally, immediate and continuing action to the return to service of the failed component. If inspection required by specifications 6.2 through 6.5 reveals the inoperability of any of the specified equipment plant operation may continue under "ready conditions".

6.1 BORON RASCHIG RINGS

Applicability

This specification applies to periodic requirements for verifying the content of boron containing Raschig rings in process equipment.

Objective

To assure that adequate boron containing Raschig rings are present in equipment in which the rings are used as fixed neutron absorbers.

Specification

6.1.1 VESSELS 5D-13A, B AND C SHALL BE CALIBRATED AND INSPECTED AT LEAST ONCE DURING EACH YEAR OF USE TO DETERMINE THE VOLUME PERCENTAGE OF BORON-GLASS RASCHIG RINGS. IF THE PACKED HEIGHT HAS DECREASED, REPLACEMENT RINGS SHALL BE ADDED TO COMPLETELY FILL THE VESSEL. PRIOR TO THEIR USE, IT SHALL BE DETERMINED THAT THE BORON-GLASS RASCHIG RINGS CONTAIN A CONCENTRATION OF B-10 ISOTOPE SUCH THAT B-10/B-11 ATOM RATIO IS NOT LESS THAN 0.240 AND THAT THE GLASS CONTAINS 11.8 to 13.8 WT% B_2O_3.

6.1.2 WHEN THE VESSELS LISTED IN 6.1.1 ABOVE ARE INSPECTED, A REPRESENTATIVE SAMPLE OF THE RASCHIG RINGS SHALL BE TAKEN TO DETERMINE THAT THE WEIGHT PERCENTAGE OF B_2O_3 IN THE RASCHIG RINGS IS GREATER THAN 11.8. IF THE CONCENTRATION IS BELOW THIS VALUE, RINGS SHALL BE REPLACED.

6.1.3 CALIBRATION OF OTHER VESSELS CONTAINING BORON-GLASS OR BORON-STAINLESS STEEL RASCHIG RINGS SHALL BE PERFORMED EVERY TWO YEARS TO DETERMINE THAT THE VOLUME OF THE RINGS PER UNIT OF PACKED HEIGHT IS MAINTAINED WITHIN 20 PERCENT OF THE ORIGINAL VALUE AND TO DETERMINE THAT THE RINGS ARE ABOVE THE OVERFLOW. IF THESE CONDITIONS ARE NOT MET, RING REPLACEMENT SHALL BE MADE UNTIL THE CONDITIONS ARE SATISFIED.

(Change No. 14)

Delete per Change 20

5 yrs

S/S rings

Not in effect

6.1 BORON RASCHIG RINGS

Applicability

This specification applies to periodic requirements for verifying the content of boron containing Raschig rings in process equipment.

Objective

To assure that adequate boron containing Raschig rings are present in equipment in which the rings are used as fixed neutron absorbers.

Specification

6.1.1 VESSELS 5D-13A, B AND C SHALL BE CALIBRATED AND INSPECTED AT LEAST ONCE DURING EACH YEAR OF USE TO DETERMINE THE VOLUME PERCENTAGE OF BORON-GLASS RASCHIG RINGS. IF THE PACKED HEIGHT HAS DECREASED, REPLACEMENT RINGS SHALL BE ADDED TO COMPLETELY FILL THE VESSEL. PRIOR TO THEIR USE, IT SHALL BE DETERMINED THAT THE BORON-GLASS RASCHIG RINGS CONTAIN A CONCENTRATION OF B-10 ISOTOPE SUCH THAT B-10/B-11 ATOM RATIO IS NOT LESS THAN 0.240 AND THAT THE GLASS CONTAINS 11.8 to 13.8 WT% B_2O_3.

6.1.2 WHEN THE VESSELS LISTED IN 6.1.1 ABOVE ARE INSPECTED, A REPRESENTATIVE SAMPLE OF THE RASCHIG RINGS SHALL BE TAKEN TO DETERMINE THAT THE WEIGHT PERCENTAGE OF B_2O_3 IN THE RASCHIG RINGS IS GREATER THAN 11.8. IF THE CONCENTRATION IS BELOW THIS VALUE, RINGS SHALL BE REPLACED.

Basis

Boron-glass Raschig rings are used as a primary nuclear safety control in the high-enriched uranium product vessels (5D-13A and B) and the plutonium off-specification storage tank (5D-13C). The calibration, analysis and replacement requirements for these vessels agree with those of the proposed ANS standard Use of Borosilicate-Glass Raschig Rings as a Fixed Neutron Absorber in Solutions of Fissile Materials, June, 1970.

Specification 6.1.3 applies to equipment in which concentration limitation is used as the primary method of criticality control. Boron containing Raschig rings are used in these items of equipment only as a secondary deterrent against inadvertent nuclear criticality. Both complete loss of the Raschig rings and a process upset would have to occur before conditions leading to a potential nuclear criticality could be established. The inspection and ring replacement schedule has, therefore, been specified as a two-year period and reliance is placed on the manufacturer's analysis of the boron content of the rings.

This specification assures that equipment containing boron filled Raschig rings will be inspected on a regular basis and that any necessary corrective action will be taken promptly.

6.2 SUMP ALARMS AND EDUCTORS

Applicability

This specification applies to the surveillance requirement for sump eductors and level alarms.

Objective

To assure that liquid accumulation will be detected and can be removed.

Specification

6.2.1 THE SUMP ALARMS AND TRANSFER EDUCTORS IN THE PPC, XC-2 AND XC-3 SHALL BE CHECKED AS TO OPERABILITY ONCE A MONTH OR BETWEEN CAMPAIGNS, WHICHEVER IS LONGER. IF ANY SUMP EDUCTOR OR LEVEL ALARM IS INOPERATIVE, IT MUST BE REPAIRED AS SOON AS PRACTICAL BUT IN ANY EVENT PRIOR TO THE START OF THE NEXT CAMPAIGN OPERATIONS IN THE AREA IN WHICH SUCH DEFECTIVE COMPONENT IS LOCATED.

Basis

Vessels in the Product Purification Cell (PPC), Extraction Cell No. 2 (XC-2) and Extraction Cell No. 3 (XC-3) can contain high concentrations of fissile material. The floors and sumps in these cells have been constructed such that they can hold the total contents of the largest vessel in the cell in a subcritical condition. It would take the catastrophic rupture of two tanks in the cell to possibly result in nuclear criticality. The loss of a tank's contents would be immediately detected from process instrumentation. Since the sump alarms and detectors serve only a secondary defense against criticality, the frequency of inspection required by this specification is adequate. The consequence of failing to meet the requirements of this specification is to reduce the level of confidence in the operability of the sump alarm and eductor system and, therefore, in the defense in depth against nuclear criticality.

(Change No. 18)

6.3 WASTE STORAGE TANK PAN INSTRUMENTATION

Applicability

This specification requires periodic verification of the operability of instrumentation for detecting the presence of liquid in the pans that contain the buried waste storage tanks.

Objective

To assure that liquid accumulation will be detected.

Specification

6.3.1 THE INSTRUMENTATION FOR MONITORING THE ACCUMULATION OF LIQUID IN THE PAN CONTAINING EACH WORKING LIQUID WASTE STORAGE TANK SHALL BE CHECKED FOR OPERABILITY AT LEAST ONCE PER MONTH, AND IF FOUND TO BE INOPERABLE, IMMEDIATE AND CONTINUING EFFORT SHALL BE DIRECTED TO EFFECT REPAIR.

Bases

Pans are provided in the waste tank vaults to enhance detection of tank leakage. Vault inleakage above the rim of the pan would also be accumulated in the pan. Level indicators with a high level alarm are provided to annunciate any major leakage so that remedial measures may be promptly instituted.

Since vault leakage is not expected to develop at a high rate and the silty till in which the vaults are buried is expected to inhibit migration of liquids for many years, a monthly surveillance frequency of the functioning of leak detection alarms will assure that the public will be protected from undetected tank leakage.

Failure to fulfill this specification would reduce confidence in the operability of the liquid monitoring system.

(Change No. 8)

6.4 EMERGENCY UTILITY EQUIPMENT

Applicability

This specification applies to the surveillance requirements for the standby utility equipment.

Objective

To assure that standby equipment necessary for continued facility operations is maintained in an operative condition.

Specification

6.4.1 THE EMERGENCY GENERATOR (30T-1), AIR COMPRESSOR (31K-1A) AND THE COOLING WATER PUMP (32G-4B) SHALL BE OPERATED AT LEAST ONCE EVERY THREE MONTHS TO DETERMINE THE AUTOMATIC START CAPABILITY AND THE PERFORMANCE FOR AT LEAST ONE HOUR UNDER AN OPERATING LOAD. IF ANY OF THE ABOVE EQUIPMENT IS FOUND TO BE DEFICIENT, IMMEDIATE AND CONTINUING ACTION SHALL BE TAKEN TO RECTIFY THE CONDITION. THE NEXT CAMPAIGN SHALL NOT START UNTIL THE EQUIPMENT IS RETURNED TO SERVICE.

6.4.2 THE EQUIPMENT LISTED BELOW SHALL BE OPERATED AT LEAST ONCE EVERY THREE MONTHS TO DETERMINE PERFORMANCE FOR AT LEAST ONE HOUR UNDER AN OPERATING LOAD. ANY DEFICIENCIES WILL BE CORRECTED AS SPECIFIED IN 6.4.1.

BOILER FEED PUMPS 31G-2A and 31G-2B
BOILER DRAFT FANS 31K-2 and 31K-2A
PLANT WATER PUMPS 32G-2A and 32G-2B

6.4.3 THE QUANTITY OF DIESEL FUEL IN THE OIL STORAGE TANK (31D-2) SHALL, DURING NORMAL OPERATIONS BE MAINTAINED AT 8,000 GALLONS OR MORE OR DIESEL FUEL. IF USED DURING ABNORMAL CONDITIONS, OPERATIONS MAY CONTINUE AS LONG AS A VOLUME OF 4,000 GALLONS OR GREATER IS MAINTAINED. A VOLUME LESS THAN THIS LATTER VALUE WILL REQUIRE THE COMMENCEMENT OF PLANT SHUTDOWN WHICH SHALL CONTINUE UNLESS THE PRIMARY FUEL (NATURAL GAS) SERVICE IS RESTORED OR THE FUEL OIL SUPPLY IS REPLENISHED.

(Change No. 12)
October, 1970

6.4.4 THE AUXILIARY HEV BLOWER (15F-21) AND MAIN PLANT SPARE EXHAUST BLOWER (15K-10A) SHALL BE OPERATED AT LEAST ONCE EVERY THREE MONTHS TO DETERMINE THE AUTOMATIC START CAPABILITY AND THE PERFORMANCE FOR AT LEAST ONE HOUR UNDER AN OPERATING LOAD.

6.4.5 THE QUANTITY OF PROPANE FUEL IN THE PROPANE STORAGE TANK (15D-3) SHALL, DURING NORMAL OPERATIONS, BE MAINTAINED AT 600 GALLONS OR MORE. IF USED DURING ABNORMAL CONDITIONS, OPERATIONS MAY CONTINUE AS LONG AS A VOLUME OF 300 GALLONS OR GREATER IS MAINTAINED. A VOLUME LESS THAN 300 GALLONS WILL REQUIRE COMMENCEMENT OF SHUTDOWN OF OPERATIONS WHICH SHALL CONTINUE UNLESS THE PROPANE SUPPLY IS REPLENISHED.

Basis

Standby equipment has been provided to enhance the reliability of utilities supplied to safety equipment and devices and for building ventilation. In order to insure satisfactory performance, the standby equipment is tested on a routine basis. In the event of natural gas outage, diesel fuel has been provided in sufficient capacity to assure normal operations for at least 10 hours. A propane supply sufficient for 72 hours operation of the HEV auxiliary blower has been provided. Unless weather conditions are very severe, diesel fuel and/or propane can be replenished within 10 hours thereby permitting continued operations. The consequences of failing to meet the requirements of this specification is to reduce the level of confidence in the operability of the standby services.

(Change No. 12)
October, 1970

See Proposed Change

6.5 AIR FILTRATION EQUIPMENT

Applicability

This specification applies to surveillance requirements for the final air filters in the off-gas and ventilation systems.

Objective

To assure proper performance of the final air filters used in the plant.

Specification

6.5.1 IF ANY OF THE FILTERS SHOWN BELOW ARE CHANGED OR MODIFIED, THEY SHALL BE TESTED, PRIOR TO ROUTINE SERVICE, WITH PARTICULATES OF AN APPROPRIATE SIZE TO ESTABLISH THAT THE INSTALLED FILTERS PROVIDE A COLLECTION EFFICIENCY OF AT LEAST 99.95% FOR PARTICULATES 0.3 MICRONS IN DIAMETER OR LARGER.

SYSTEM	FILTERS
DISSOLVER OFF-GAS	6T-1, 6T-1A
VESSEL OFF-GAS	6T-2, 6T-2A
WASTE TANK OFF-GAS	8T-1, 8T-1A
MAIN BUILDING	15T-49, 15T-49A
DOG-VOG BACKUP	6T-3, 6T-3A
HEAD END	15T-72, 15T-72A, 15T-73, 15T-73A

6.5.2 THE DIFFERENTIAL PRESSURE ACROSS THE FINAL OPERATING ABSOLUTE FILTERS (OR ABSOLUTE PLUS ROUGHING WHERE THE FILTERS ARE WITHIN THE SAME FRAME) SHALL BE RECORDED BY INSTRUMENTATION.

6.5.3 ALARMS SHALL BE PROVIDED TO ANNUNCIATE HIGH DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTERS OF THE MAIN BUILDING, HEAD END, WASTE TANK FARM AND DOG-VOG BACKUP SYSTEMS. THESE ALARMS SHALL BE SET TO ANNUNCIATE AT LESS THAN 75% OF THE GREATEST DIFFERENTIAL PRESSURE AT WHICH THAT FILTER HAS BEEN TESTED.

6.5.4 AN ALARM SHALL BE PROVIDED TO ANNUNCIATE LOW DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTER IN THE MAIN BUILDING

(Change No. 12)
October, 1970

Cannot meet this requirement that is reason for change in 1974.

Submitted 11/25/74 No Response

6.5 AIR FILTRATION EQUIPMENT

Applicability

This specification applies to surveillance requirements for the final air filters in the off-gas and ventilation systems.

Objective

To assure proper performance of the final air filters used in the plant.

Specification

6.5.1 IF ANY OF THE FILTERS SHOWN BELOW ARE CHANGED OR MODIFIED, THEY SHALL BE TESTED, PRIOR TO ROUTINE SERVICE, WITH PARTICULATES OF AN APPROPRIATE SIZE TO ESTABLISH THAT THE INSTALLED FILTERS PROVIDE A COLLECTION EFFICIENCY OF AT LEAST 99.95% FOR PARTICULATES 0.3 MICRONS IN DIAMETER OR LARGER.

SYSTEM	FILTERS
DISSOLVER OFF-GAS	6T-1, 6T-1A
VESSEL OFF-GAS	6T-2, 6T-2A
WASTE TANK OFF-GAS	8T-1, 8T-1A
MAIN BUILDING	15T-49, 15T-49A
DOG-VOG BACKUP	6T-3, 6T-3A
HEAD END	15T-72, 15T-72A, 15T-73, 15T-73A
LOW LEVEL WASTE TREATMENT PLANT	479-401-B, 479-402-B

6.5.2 THE DIFFERENTIAL PRESSURE ACROSS THE FINAL OPERATING ABSOLUTE FILTERS (OR ABSOLUTE PLUS ROUGHING WHERE THE FILTERS ARE WITHIN THE SAME FRAME) SHALL BE RECORDED BY INSTRUMENTATION.

6.5.3 ALARMS SHALL BE PROVIDED TO ANNUNCIATE HIGH DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTERS OF THE MAIN BUILDING, HEAD END, WASTE TANK FARM AND DOG-VOG BACKUP SYSTEMS. THESE ALARMS SHALL BE SET TO ANNUNCIATE AT LESS THAN 75% OF THE GREATEST DIFFERENTIAL PRESSURE FOR WHICH THAT FILTER DESIGN HAS BEEN FABRICATED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS OF SPECIFICATION MIL-F-51068C.

6.5.4 AN ALARM SHALL BE PROVIDED TO ANNUNCIATE LOW DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTER IN THE MAIN BUILDING

VENTILATION SYSTEM AND IN THE HEAD END VENTILATION SYSTEM. AFTER THE OPERATING DIFFERENTIAL PRESSURE EXCEEDS 5 INCHES W.G., THIS ALARM SHALL BE SET WITHIN 3 INCHES W.G. OF THE OPERATING DIFFERENTIAL PRESSURE AND SHALL BE ADJUSTED WEEKLY.

Basis

The final filters in the ventilation and off-gas systems are the primary protection against the discharge of particulate radioactivity during normal operations and particularly under accident conditions. These "absolute" filters are certified by the manufacturer to capture at least 99.97% of all particles 0.3 microns in diameter or larger. The filters are tested after installation to detect bypass leakage as well as filter damage that may have occurred during storage and handling. Subsequent tests are not necessary as installed process instruments and the stack radioactivity monitors will indicate filter integrity and performance after the filter is placed on stream.

These tests are conducted by putting the filter-blower in service, introducing a known amount of dioctylphthalate (DOP) test material upstream of the filter being tested and taking samples downstream of the filter to determine the removal efficiency.

The consequence of failing to meet the requirements of Specification 6.5.1 is to risk the introduction of a faulty filter. In such an event the stack monitor would quickly show up the existence of the fault and corrective action would be taken.

Specification 6.5.2 requires that the differential pressure (Δp) across the final filters in the off-gas and ventilation systems be recorded by instrumentation in the Plant Control Room or the Waste Tank Farm shelter. The differential pressure serves as an indicator of filter performance.

Alarms which annunciate high differential pressure are provided, per Specification 6.5.3, on the absolute filters which are the final containment of radioactivity. These alarms are set to annunciate at about 90% of the maximum operating differential pressure allowed by Specification 4.14. This should provide the operator with sufficient time to switch to the alternate filter; however, the differential pressure may exceed the maximum operating differential pressure limit as a transient condition during removal from service.

Low differential pressure alarms are provided for the Main Building Ventilation and Head End Ventilation filters. Initially the low Δp alarm is set at about 1 inch W.G., i.e. at about 50% of the Δp experienced with a clean filter. After the Δp across the operating filter reaches 5 inches W.G., the alarm is adjusted weekly to be within 3 inches W.G. of the operating differential pressure. The purpose of these alarms is to increase the potential for detecting a failed absolute filter.

6.5 AIR FILTRATION EQUIPMENT

Applicability

This specification applies to surveillance requirements for the final air filters in the off-gas and ventilation systems.

Objective

To assure proper performance of the final air filters used in the plant.

Specification

6.5.1 IF ANY OF THE FILTERS SHOWN BELOW ARE CHANGED OR MODIFIED, THEY SHALL BE TESTED, PRIOR TO ROUTINE SERVICE, WITH PARTICULATES OF AN APPROPRIATE SIZE TO ESTABLISH THAT THE INSTALLED FILTERS PROVIDE A COLLECTION EFFICIENCY OF AT LEAST 99.95% FOR PARTICULATES 0.3 MICRONS IN DIAMETER OR LARGER.

SYSTEM	FILTERS
DISSOLVER OFF-GAS	6T-1, 6T-1A
VESSEL OFF-GAS	6T-2, 6T-2A
WASTE TANK OFF GAS	8T-1, 8T-1A
MAIN BUILDING	15T-49, 15T-49A
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HEAD END	15T-72, 15T-72A, 15T-73, 15T-73A
LOW LEVEL WASTE TREATMENT PLANT	479-401-B, 479-402-B

6.5.2 THE DIFFERENTIAL PRESSURE ACROSS THE FINAL OPERATING ABSOLUTE FILTERS (OR ABSOLUTE PLUS ROUGHING WHERE THE FILTERS ARE WITHIN THE SAME FRAME) SHALL BE RECORDED BY INSTRUMENTATION.

6.5.3 ALARMS SHALL BE PROVIDED TO ANNUNCIATE HIGH DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTERS OF THE MAIN BUILDING, HEAD END, WASTE TANK FARM AND DOG-VOG BACKUP SYSTEMS. THESE ALARMS SHALL BE SET TO ANNUNCIATE AT LESS THAN 75% OF THE GREATEST DIFFERENTIAL PRESSURE AT WHICH THAT FILTER HAS BEEN TESTED.

6.5.4 AN ALARM SHALL BE PROVIDED TO ANNUNICATE LOW DIFFERENTIAL PRESSURE ON THE FINAL OPERATING ABSOLUTE FILTER IN THE MAIN BUILDING.

(Change No. 15)

VENTILATION SYSTEM AND IN THE HEAD END VENTILATION SYSTEM. AFTER THE OPERATING DIFFERENTIAL PRESSURE EXCEEDS 5 INCHES W. G., THIS ALARM SHALL BE SET WITHIN 3 INCHES W. G. OF THE OPERATING DIFFERENTIAL PRESSURE AND SHALL BE ADJUSTED WEEKLY.

Basis

The final filters in the ventilation and off-gas systems are the primary protection against the discharge of particulate radioactivity during normal operations and particularly under accident conditions. These "absolute" filters are certified by the manufacturer to capture at least 99.97% of all particles 0.3 microns in diameter or larger. The filters are tested after installation to detect bypass leakage as well as filter damage that may have occurred during storage and handling. Subsequent tests are not necessary as installed process instruments and the stack radioactivity monitors will indicate filter integrity and performance after the filter is placed on stream.

These tests are conducted by putting the filter-blower in service, introducing a known amount of dioctylphthalate (DOP) test material upstream of the filter being tested and taking samples downstream of the filter to determine the removal efficiency.

The consequence of failing to meet the requirements of Specification 6.5.1 is to risk the introduction of a faulty filter. In such an event, the stack monitor would quickly show up the existence of the fault and corrective action would be taken.

Specification 6.5.2 requires that the differential pressure (Δp) across the final filters in the off-gas and ventilation systems be recorded by instrumentation in the Plant Control Room or the Waste Tank Farm Shelter. The differential pressure serves as an indicator of filter performance.

Alarms which annunciate high differential pressure are provided, per Specification 6.5.3, on the absolute filters which are the final containment of radioactivity. These alarms are set to annunciate at about 90% of the maximum operating differential pressure allowed by Specification 4.14. This should provide the operator with sufficient time to switch to the alternate filter; however, the differential pressure may exceed the maximum operating differential pressure limit as a transient condition during removal from service.

Low differential pressure alarms are provided for the Main Building Ventilation and Head End Ventilation filters. Initially the low Δp alarm is set at about 1 inch W.G., i.e. at about 50% of the Δp experienced with a clean filter. After the Δp across the operating filter reaches 5 inches W.G., the alarm is adjusted weekly to be within 3 inches W.G. of the operating differential pressure. The purpose of these alarms is to increase the potential for detecting a failed absolute filter.

6.6 DISSOLVER DILUTION AIR

Applicability

This specification applies to the surveillance requirements for the air sparging systems for the dissolvers.

Objective

To assure that the concentration of hydrogen gas in the dissolver off-gas is below its lower explosive limit.

Specification

6.6.1 PRIOR TO THE DISSOLUTION OF ZIRCONIUM ALLOY FUELS THE AIR SPARGING SYSTEM SHALL BE TESTED TO ASSURE THAT SUFFICIENT AIR SHALL BE ADDED DURING DISSOLUTION TO MAINTAIN THE HYDROGEN GAS CONCENTRATION BELOW TWO VOLUME PERCENT IN THE DISSOLVER.

Basis

During the dissolution of zirconium alloy fuels, hydrogen gas is generated from the chemical reaction of the metal and the acid. To assure that an explosive concentration of hydrogen in air is not formed, the addition rates for the dilution air and the dissolvent are controlled so that the maximum hydrogen concentration will be no more than 50% of the lower flammability limit of hydrogen in dry air. This specification requires a test of this dilution air rate prior to processing of zirconium alloy fuels.

He consequence of failing to make the check required by this specification is to reduce the level of confidence that sufficient air is available to assure that an explosive mixture of hydrogen and air cannot form during dissolution of uranium-zirconium alloy fuels.

6.7 BORIC ACID

Applicability

This specification applies to the surveillance requirements for the boric acid in tank 14D-32.

Objective

To assure that boric acid will be available to terminate a nuclear reaction should accidental nuclear criticality occur in either the dissolver or the rework evaporator.

Specification

6.7.1 TANK 14D-32 SHALL BE INSPECTED PRIOR TO EACH CAMPAIGN TO DETERMINE THAT THE TANK CONTAINS AT LEAST 2,000 LITERS OF SOLUTION WITH A H_3BO_3 CONCENTRATION OF AT LEAST 22 G/L. SUCH SOLUTION SHALL BE AVAILABLE FOR USE THROUGHOUT THE CAMPAIGN.

6.7.2 PRIOR TO EACH CAMPAIGN, THE SYSTEM FOR TRANSFERRING BORIC ACID FROM TANK 14D-32 TO THE DISSOLVERS AND TO THE REWORK EVAPORATOR SHALL BE TESTED TO DETERMINE THAT IT IS FUNCTIONAL.

Basis

Concentration control is used to prevent nuclear criticality in the dissolvers and the rework evaporator. The allowable concentrations are defined in Specifications 4.4 and 4.11. The process instrumentation required for operation of the dissolvers and the rework evaporator is defined in Specification 5.2.

A boron solution addition system consisting of a 2000 liter vessel, lines and control valves has been provided as a second line of defense to prevent or stop criticality incidents in the dissolvers or rework evaporator. The volume and concentration of boron solution has been based on data in ORNL-3309 Soluble Neutron Poisons as a Primary Criticality Control in Shielded and Contained Radiochemical Facilities. Data in this report also indicated that the addition of specified concentration of boric acid to the nitric acid-uranyl nitrate solutions will not cause a precipitate in the equipment.

The solubility of H_3BO_3, as given in WCAP-1750, is approximately 27 grams per liter of solution at 0°C. The poison tank, 14D-32, the

addition lines and valves are all located inside the heated process building. Separate provisions for heating the poison tank are not necessary.

Failures to comply with the requirements of this specification would reduce the plant's capability to cope with an inadvertant nuclear criticality.

6.8 BLANKING-OFF AND LOCKING-OUT

Applicability

This specification establishes the surveillance requirements of equipment which must be blanked-off or locked-out during processing operations.

Objective

To assure that flows are properly routed during a campaign thereby avoiding criticality through precipitation or overconcentration of fissile material.

Specification

6.8.1 CONFORMANCE WITH THE FOLLOWING SPECIFICATIONS SHALL BE DETERMINED BY INSPECTION OF A SHIFT SUPERVISOR OR HIGHER SUPERVISION.

6.8.1.1 IMMEDIATELY PRIOR TO EACH HIGH ENRICHED URANIUM CAMPAIGN, PRODUCT CONNECTIONS TO VESSELS INTENDED FOR USE ONLY DURING LOW ENRICHED URANIUM CAMPAIGNS SHALL BE ISOLATED BY BLANKING-OFF THE TRANSFER EQUIPMENT THAT SERVICE THESE CONNECTIONS.

6.8.1.2 DECONTAMINATION LINES SHALL BE BLANKED OFF OR DISCONNECTED BEFORE ANY PROCESS OPERATION OF THE VESSEL TO WHICH IT IS CONNECTED.

6.8.1.3 ALL PIPING LINES THROUGH WHICH PRECIPITANTS MIGHT BE INTRODUCED INTO VESSELS CONTAINING SOLUTIONS OF FISSILE MATERIAL SHALL BE BLANKED-OFF OR LOCKED-OUT AFTER EACH USE.

Bases

Specification 6.8.1.1 has been established to prevent the concentration of high-enriched uranium in the low enriched uranium evaporator because concentrated high-enriched uranium would not be nuclearly safe in the geometrically unfavorable silica gel columns which are downstream from the low enriched uranium evaporator. The transfer of high-enriched uranium solution to the low-enriched uranium product systems is prevented by disconnecting the airlifts that could be used to make such a transfer. The design of these systems precludes siphoning through the lines.

Plutonium and uranium can be precipitated from process solutions by the addition of caustic, sodium carbonate or other precipitants and thus possibly result in criticality. Accordingly, the specifications requiring blanking-off or locking-out of systems, through which such an inadvertent addition could be made, have been established.

The consequence of failing to meet the requirements of Specification 6.8.1.1 is to risk the introduction of highly enriched uranium solution into equipment which is designed for handling low enriched fuel. The possibility of a criticality incident is thus significantly increased. Similarly Specification 6.8.1.2 and 6.8.1.3 prevent the precipitation of uranium which in turn would increase the chance of a criticality incident.

6.9 WATER ACTIVITY ALARMS

Applicability

This specification requires periodic verification of the operability of the alarms used to detect excessive radioactivity in cooling water or steam condensate returned from the coils or jackets used to control temperature of vessels containing radioactivity.

Objective

To provide added assurance of prompt detection of excessive radioactivity in steam condensate and cooling water.

Specification

6.9.1 THE OPERABILITY OF EACH RADIATION ALARM SYSTEM MONITORING RETURNED CONDENSATE OR COOLING WATER SHALL BE TESTED AT LEAST ONCE EVERY THIRTY DAYS BY THE APPLICATION OF A RADIATION SOURCE. IMMEDIATE AND CONTINUING EFFORT SHALL BE DIRECTED TO REPAIR ANY SYSTEM FOUND INOPERABLE.

Bases

Steam and cooling water are used for heating and cooling of process solutions. The pressures of these heat transfer fluids are higher than those of the process solution in order to minimize leakage of radioactivity if a passage should develop between a process solution and a heat transfer fluid. In addition, radiation monitors are incorporated into the piping where the steam condensate and cooling water returns to the utility room. These monitors alarm in occupied areas when excessive radioactivity is detected. Further assurance is provided by the batchwise collection and analysis of returned condensate and a radiation monitor at the outlet from the cooling coils of high level, stainless steel waste storage tanks.

Since the radiation instruments are read at least once per shift testing of the radiation alarms once per month is sufficient to verify alarm functionability.

6.9 WATER ACTIVITY ALARMS

Applicability

This specification requires periodic verification of the operability of the alarms used to detect excessive radioactivity in cooling water or steam condensate returned from the coils or jackets used to control temperature of vessels containing radioactivity.

Objective

To provide added assurance of prompt detection of excessive radioactivity in steam condensate and cooling water.

Specification

6.9.1 THE OPERABILITY OF EACH RADIATION ALARM SYSTEM MONITORING RETURNED CONDENSATE OR COOLING WATER SHALL BE TESTED AT LEAST SEMIANNUALLY BY THE APPLICATION OF A RADIATION SOURCE. IMMEDIATE AND CONTINUING EFFORT SHALL BE DIRECTED TO REPAIR ANY SYSTEM FOUND INOPERABLE.

Bases

Steam and cooling water are used for heating and cooling of process solutions. The pressures of these heat transfer fluids are higher than those of the process solution in order to minimize leakage of radioactivity if a passage should develop between a process solution and a heat transfer fluid. In addition, radiation monitors are incorporated into the piping where the steam condensate and cooling water returns to the utility room. These monitors alarm in occupied areas when excessive radioactivity is detected. Further assurance is provided by the batchwise collection and analysis of returned condensate and a radiation monitor at the outlet from the cooling coils of high level, stainless steel waste storage tanks.

Since the radiation instruments are read at least once per shift testing of the radiation alarms once per month is sufficient to verify alarm functionability.

6.10 POISONED DISSOLVER BASKETS

Applicability

This specification requires surveillance of the presence of fixed neutron absorber in dissolver baskets used for fuels exceeding 5% U-235 enrichment.

Objective

To provide assurance that sufficient neutron absorber is fixed within a dissolver basket.

Specification

6.10.1 PRIOR TO INITIAL USE OF ANY DISSOLVER BASKET CONTAINING FIXED NEUTRON ABSORBER (A) REPRESENTATIVE SAMPLES OF THE METAL FROM WHICH THE FIXED NEUTRON ABSORBER WAS MADE SHALL BE ANALYZED TO DETERMINE THAT SUFFICIENT ABSORBER CONCENTRATION IS PRESENT, (B) THE METAL OF EACH FIXED NEUTRON ABSORBER SHALL BE MEASURED AND A RECORD MADE TO ESTABLISH THAT A SUFFICIENT AMOUNT OF FIXED ABSORBER IS PRESENT AND (C) BASKETS CONTAINING FIXED NEUTRON ABSORBERS SHALL BE INTRODUCED INTO PROCESSING AREAS UNDER THE SURVEILLANCE OF A SHIFT SUPERVISOR OR HIGHER SUPERVISION.

6.10.2 AFTER EVERY TENTH DISSOLUTION IN WHICH A GIVEN DISSOLVER BASKET CONTAINING FIXED NEUTRON ABSORBER IS USED, THE BASKET WILL BE INSPECTED TO DETERMINE THAT THE AMOUNT OF FIXED NEUTRON ABSORBER IS STILL SUFFICIENT AND THE RESULTS SHALL BE LOGGED.

Bases

The requirements of Specification 4.4.1 can be satisfied by either dissolver baskets made of boronated stainless steel or boronated stainless steel sleeves fitting inside the normal stainless steel baskets. Specification 6.10.1 requires that the melt from which the baskets or sleeves are fabricated be analyzed before use of the poisoned baskets to determine that the Boron-10 content is sufficient to prevent criticality during dissolution of highly enriched fuels. The poisoned metal is also measured after fabrication but prior to use. The amount of Boron-10, determined by the melt analysis and the material measurement, is compared with the requirements determined by the NFS criticality study to assure sufficient neutron absorber is present.

The poisoned baskets are put into process areas under strict administrative control so that only poisoned baskets will be used during processing of highly enriched fuels.

Corrosion will gradually decrease the amount of neutron absorber, therefore, the baskets are routinely inspected. The requirement for weighing the baskets after every tenth dissolution has been selected based upon anticipated corrosion rates and will be more frequent if higher corrosion rates are experienced.

6.11 SOLVENT ANALYSIS

Applicability

This specification applies to the frequency of analysis of process solvent.

Objective

To assure that the solvent used in the extraction systems contains no more tributyl phosphate (TBP) than allowed for the fuel enrichment being processed.

Specification

6.11.1 SOLVENT IN EACH EXTRACTION SYSTEM SHALL BE SAMPLED AND ANALYZED FOR TRIBUTYL PHOSPHATE CONTENT AT THE START OF EACH CAMPAIGN OF SOLVENT EXTRACTION AND AT LEAST ONCE PER WEEK DURING THE CAMPAIGN.

Basis

The maximum fissile isotope concentration in the solvent phase in the extraction system is fixed by the content of TBP in the solvent and must be limited (as required in Specification 4.7) to prevent nuclear criticality. The solvent is sampled and analyzed at the start of each campaign to ensure that the correct concentration is present. Weekly samples of solvent are taken and analyzed to ensure that the TBP concentration has not increased.

There are three independent solvent systems in the extraction system. Each system is to be sampled according to the given schedule.

Degradation products such as dibutyl phosphate are formed during the extraction process and can act as extractants. The quantity formed per pass through the extraction system is small and the products are effectively removed in the carbonate and nitric acid wash columns which are downstream of each extraction system. On this basis, analysis of solvent for extractants other than TBP is not required.

The result of noncompliance with this specification would be a reduction in the defense in depth against accidental nuclear criticality.

(Change No. 18)

ADMINISTRATIVE REQUIREMENTS

7.0 ADMINISTRATIVE REQUIREMENTS

In this section there are specified requirements which are essential to the maintenance of safety in operations, but which by their nature are not readily expressed in quantitative terms. These are identified as administrative specifications, governing both administrative procedures and certain operating procedures.

From SAR for Tech Spec. 7.1.1.7

~~Three of the four members or their alternatives must be present for the Plant Safety Committee to do business. The Committee usually communicates by conference; however, if no member objects, a meeting may be conducted by conference call or circulation of the written proposal. A Safety Committee meeting is held routinely when material is scheduled for discussion; however, a meeting may be called at any time. The Safety Committee reviews submittals pertinent to radiological and nuclear criticality safety. Technical details may be reviewed by a subcommittee or a supervisor appointed by the Chairman. At the conclusion of the review, the Chairman designates the individual responsible for modifying, if required, the submittal and preparing it for sign-off. Copies of the approved document are distributed to Committee members and staff personnel responsible for implementation.~~

~~For any investigations of abnormal occurrences conducted by or for the Safety Committee, the Chairman designates the investigator(s) who report to the Committee the results of the investigations and recommendations. A summary of the investigation and recommendations is recorded in the Safety Committee log.~~

~~All SOPs and Emergency Procedures are reviewed by the Safety Committee at least annually. TOPs are effective for three months from date of issue or for the duration of the applicable processing campaign, whichever is longer; LOAs are effective for the duration of the applicable processing campaign or fuel unloading sequence.~~

1.5 Position Qualifications

Guidelines are established to provide minimum qualifications necessary for key management positions where safety considerations are a part of the responsibility. These requirements are documented within NFS job descriptions and are summarized below for West Valley operations and construction staffs.

~~1.5.1 General Manager~~

~~Must have a B.S. degree in engineering or related physical science, or equivalent experience. He must have demonstrated knowledge and competence in administrative and business procedures and a thorough knowledge of~~

~~nuclear technology and work with radioactive materials. A minimum of 10 years of management experience, preferably in nuclear facilities, is required.~~

~~1.5.2 Manager, Engineer and Construction~~

~~Must have a B.S. degree in nuclear, chemical, or mechanical engineering or equivalent experience. He must have demonstrated knowledge and competence in the requirements for systems in a nuclear facility that provide the necessary services and radiological protection. A minimum of 5 years of experience in nuclear facility design, construction and operation is required.~~

1.5.3 Plant Manager

The Plant Manager must have as a minimum a B.S. degree in chemical engineering, chemistry, or related physical science or equivalent in chemical-nuclear experience. He must also have demonstrated competence in the technical aspects of nuclear energy, knowledge of administrative and business procedures and a thorough knowledge of the hazard potentials of radioactive materials. A minimum of 5 years of management experience, preferably in the nuclear facility, is required.

1.5.4 Operations Manager and Staff

- The Operations Manager must have a B.S. in chemical engineering or related physical science, or equivalent nuclear or chemical experience. He must have demonstrated experience in chemical processing and production management and at least 3 years experience in nuclear fuel processing.
- ~~An Assistant Operations Manager must have at least a high school education and preferably a B.S. degree. He must have knowledge of NFS operations, 2 years experience in nuclear material processing.~~
- ~~A Shift Supervisor must have at least a high school education and preferably a B.S. degree. He must have 1 year NFS experience and hold applicable USAEC-issued operating licenses.~~

1.5.5 Technical Services Manager and Staff

The Technical Services Manager must have a B.S. in chemical engineering, nuclear engineering or related physical science with an advanced degree preferred or equivalent nuclear experience. He must have experience with nuclear material processing and at least 3 years experience in the nuclear industry.

- ~~The Plant Surveillance Supervisor and Process Engineers must have a B.S. degree or equivalent experience in chemical, mechanical or nuclear engineering or related physical science, with an advanced degree preferred.~~

- ~~The Analytical Services Manager and his Staff Supervisors must have B.S. degrees in chemistry or chemical engineering or equivalent chemistry experience.~~

- ~~The Safeguards and Accountability Supervisor must have a college degree in mathematics, engineering or related physical science.~~

1.5.6 Manager, Health and Safety, and Staff

- The Manager and Assistant Manager of Health and Safety must have a college degree and/or technical competence to establish and administer the Health and Safety Programs for the plant. They must have substantial experience at a nuclear facility, where radiation safety and contamination control were significant considerations of the operation (preferably at least 2 years experience with NFS for the Manager). Certification as a health physicist is preferred.

- ~~The Health and Safety supervisors and technicians must have high school educations and preferably advanced technical training. NFS training and experience is required for specialized functions.~~

~~1.5.7 Manager, Maintenance and Engineering and Staff~~

- ~~The Manager Maintenance and Engineering must have a college degree or equivalent experience in nuclear and/or mechanical engineering or related sciences. He must have experience in maintenance particularly in the problems of chemical or nuclear plants.~~

7.1 ADMINISTRATIVE REQUIREMENTS

APPLICABILITY

This specification establishes administrative standards for governing the operation of the facility.

OBJECTIVE

To assure that a management system responsive to the safety needs of the operation is established and maintained.

SPECIFICATION

7.1.1 ORGANIZATION. FOR PURPOSES OF MAINTAINING SAFE OPERATION AND CONTROL OF THE FACILITY AND OF ATTENDANT ACTIVITIES, NUCLEAR FUEL SERVICES, INC., SHALL PROVIDE MANAGEMENT OF THE PLANT THROUGH AN ADMINISTRATIVE FRAMEWORK INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

7.1.1.1 A GENERAL MANAGER, HAVING OVERALL RESPONSIBILITIES FOR ALL ACTIVITIES AT THE PLANT SITE.

7.1.1.2 A PLANT MANAGER, REPORTING TO THE GENERAL MANAGER, DIRECTLY RESPONSIBLE FOR ALL ACTIVITIES AT THE PLANT INVOLVING PRODUCTION, HEALTH AND SAFETY, NUCLEAR SAFETY AND ADHERENCE TO THE LIMITS AND CONDITIONS SET FORTH IN THIS LICENSE.

7.1.1.3 AN OPERATIONS MANAGER, REPORTING TO THE PLANT MANAGER, RESPONSIBLE FOR CARRYING OUT PRODUCTION ACTIVITIES IN ACCORDANCE WITH APPROVED PROCEDURES AND ACCEPTED HEALTH AND SAFETY STANDARDS.

7.1.1.4 A HEALTH AND SAFETY MANAGER, REPORTING TO THE PLANT MANAGER, RESPONSIBLE FOR MONITORING THE RADIOLOGICAL SAFETY OF ALL PLANT ACTIVITIES AND FOR ADVISING ALL DEPARTMENTS ON RADIOLOGICAL SAFETY MATTERS.

7.1.1.5 A TECHNICAL SERVICES MANAGER, REPORTING TO THE PLANT MANAGER, RESPONSIBLE FOR A CONTINUOUS REVIEW OF OPERATIONS TO ASSURE NUCLEAR SAFETY.

7.1.1.6 A PLANT SAFETY COMMITTEE RESPONSIBLE FOR: REVIEW AND APPROVAL OF ALL STANDARD OPERATING PROCEDURES AND LETTERS OF AUTHORIZATION; REVIEW AND APPROVAL OF ALL CHANGES IN THE PROCESS, THE PROCESS SYSTEM, AND STANDARD OPERATING PROCEDURES; INVESTIGATION OF ABNORMAL OCCURRENCES WHICH MAY AFFECT RADIOLOGICAL SAFETY OR CRITICALITY PREVENTION; AND RECOMMENDATION OF MEASURES WHICH WILL PREVENT REPETITION OF SUCH ABNORMAL OCCURRENCES. THE COMMITTEE SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE PLANT MANAGER, THE TECHNICAL SERVICES MANAGER, THE HEALTH AND SAFETY MANAGER AND THE OPERATIONS MANAGER.

"7.1.1.7 THE MINIMUM QUALIFICATIONS OF THE PLANT SAFETY COMMITTEE POSITIONS SHALL BE AS PRESENTED IN SECTION VIII - 1.5 OF THE SAFETY ANALYSIS REPORT AS REVISED SEPTEMBER 19, 1974."

7.1.2 PROCEDURES SHALL BE MAINTAINED UNDER THE OVERALL DIRECTION OF THE GENERAL MANAGER COVERING THE:

7.1.2.1 PREPARATION, APPROVAL, AND ISSUANCE OF ALL OPERATING INSTRUCTIONS AND CHANGES THERETO, INCLUDING, BUT NOT BE LIMITED TO: STANDARD OPERATING PROCEDURES, LETTERS OF AUTHORIZATION, RUNSHEETS, SPECIAL WORK PROCEDURES, AND EXTENDED WORK PROCEDURES, WHERE NUCLEAR CRITICALITY OF RADIATION SAFETY ARE CONSIDERATIONS.

7.1.2.2 INVESTIGATION OF ABNORMAL CONDITIONS WHICH INVOLVE THE PROCESSING, HANDLING OR STORAGE OF RADIOACTIVE MATERIALS, AND WHICH AFFECT NUCLEAR CRITICALITY OR RADIATION SAFETY.

7.1.2.3 ACTIONS TO BE TAKEN IN EVENT OF AN EMERGENCY INVOLVING RADIOACTIVE MATERIAL. SUCH ACTIONS TO INCLUDE, BUT NOT BE LIMITED TO: SHUTDOWN OF SPECIFIC EQUIPMENT, ACTIVATION OF THE EMERGENCY PLAN, SUMMONING OF OUTSIDE SUPPORT, AND REENTRY TO THE ACCIDENT AREA.

7.1.2.4 PERFORMANCE OF PERIODIC REVIEWS OF OPERATING PRACTICES, RECORDS AND AUDITS.

7.1.3 PLANT OPERATION. MEMBERS OF THE PRODUCTION OPERATING STAFF SHALL HAVE A THROUGH KNOWLEDGE OF THE PROCEDURES GOVERNING THE WORK FOR WHICH THEY ARE RESPONSIBLE. DRILLS SHALL BE HELD AT SUFFICIENT FREQUENCY TO ENSURE PROFICIENCY IN EMERGENCY PROCEDURES. A COMPLETE AND CURRENT SET OF OPERATIONAL PROCEDURES SHALL BE PROVIDED IN THE CONTROL ROOM AND IN OTHER APPROPRIATE AREAS WHERE CONTROL FUNCTIONS ARE PERFORMED.

7.1.4 DETAILED WRITTEN PROCEDURES, RUN SHEETS, LETTERS OF AUTHORIZATION AND EXTENDED WORK PROCEDURES SHALL BE PROVIDED FOR OPERATION OF THE PLANT. IN ADDITION, PROCEDURES FOR HANDLING ABNORMAL OPERATING CONDITIONS AND FOR RADIATION PROTECTION SHALL BE PROVIDED.

7.1.5 LOGS AND RECORDS. LOGS AND RECORDS SHALL BE MAINTAINED AS REQUIRED BY THE PROVISIONAL LICENSE AND SHALL INCLUDE MINUTES OF MEETINGS OF THE PLANT SAFETY COMMITTEE AS WELL AS DETAILS OF INVESTIGATIONS AND RECOMMENDATIONS IN REGARD TO ABNORMAL OCCURRENCES AND ACTIONS TAKEN THEREON.

7.1.6 AUDIT OF OPERATIONS. MANAGEMENT SHALL PROVIDE FOR PERIODIC AUDITS OF THE OPERATIONS THROUGHOUT THE ENTIRE FACILITY WITH REGARD TO RADIOLOGICAL AND NUCLEAR SAFETY. THESE AUDITS SHALL BE PERFORMED BY COMPETENT COMPANY OR OTHER TECHNICAL PERSONNEL NOT DIRECTLY RESPONSIBLE FOR THE OPERATION AUDITED.

7.1.7 IF ANY TECHNICAL SPECIFICATION LIMIT IS EXCEEDED, THE FOLLOWING PROCEDURES WILL BE OBSERVED:

7.1.7.1 IMMEDIATE STEPS SHALL BE TAKEN IN THE OPERATION OF THE SYSTEM INVOLVED TO REMOVE THE CAUSE OF EXCEEDING THE SPECIFICATION OR TO RELIEVE ITS EFFECT, AS APPROPRIATE. OPERATION MAY CONTINUE IN A "READY CONDITION" TEMPORARILY UNLESS THERE IS ANOTHER OCCURRENCE OR INDICATION OF AN OCCURRENCE THAT WOULD FURTHER REDUCE THE MARGIN OF SAFETY IN WHICH EVENT IMMEDIATE SHUTDOWN IS REQUIRED.

7.1.7.2 IMMEDIATE STEPS SHALL BE TAKEN TO ESTABLISH THE CAUSE OF THE OCCURRENCE IN 7.1.7.1 BY RESPONSIBLE MANAGEMENT REVIEW.

7.1.7.3 NOTWITHSTANDING ANY OTHER PROVISION OF THIS LICENSE THE PLANT SHALL BE SHUTDOWN AND NORMAL PROCESSING OPERATIONS MAY NOT BE RESUMED PRIOR TO AEC REGULATORY CONCURRENCE WHEN SPECIFICATION 4.1.1 OR 4.2.2 HAS BEEN EXCEEDED.

(Change No. 4 Revision)

7.1.4 DETAILED WRITTEN PROCEDURES, RUN SHEETS, LETTERS OF AUTHORIZATION AND EXTENDED WORK PROCEDURES SHALL BE PROVIDED FOR OPERATION OF THE PLANT. IN ADDITION, PROCEDURES FOR HANDLING ABNORMAL OPERATING CONDITIONS AND FOR RADIATION PROTECTION SHALL BE PROVIDED.

7.1.5 LOGS AND RECORDS SHALL BE MAINTAINED AS REQUIRED BY THE PROVISIONAL LICENSE AND SHALL INCLUDE MINUTES OF MEETINGS OF THE PLANT SAFETY COMMITTEE AS WELL AS DETAILS OF INVESTIGATIONS AND RECOMMENDATIONS IN REGARD TO ABNORMAL OCCURRENCES AND ACTIONS TAKEN THEREON.

7.1.6 AUDIT OF OPERATIONS. MANAGEMENT SHALL PROVIDE FOR PERIODIC AUDITS OF THE OPERATIONS THROUGHOUT THE ENTIRE FACILITY WITH REGARD TO RADIOLOGICAL AND NUCLEAR SAFETY. THESE AUDITS SHALL BE PERFORMED BY COMPETENT COMPANY OR OTHER TECHNICAL PERSONNEL NOT DIRECTLY RESPONSIBLE FOR THE OPERATION AUDITED.

7.1.7 IF ANY TECHNICAL SPECIFICATION LIMIT IS EXCEEDED, THE FOLLOWING PROCEDURES WILL BE OBSERVED:

7.1.7.1 IMMEDIATE STEPS SHALL BE TAKEN IN THE OPERATION OF THE SYSTEM INVOLVED TO REMOVE THE CAUSE OF EXCEEDING THE SPECIFICATION OR TO RELIEVE ITS EFFECT, AS APPROPRIATE. OPERATION MAY CONTINUE IN A "READY CONDITION" TEMPORARILY UNLESS THERE IS ANOTHER OCCURRENCE OR INDICATION OF AN OCCURRENCE THAT WOULD FURTHER REDUCE THE MARGIN OF SAFETY IN WHICH EVENT IMMEDIATE SHUTDOWN IS REQUIRED.

7.1.7.2 IMMEDIATE STEPS SHALL BE TAKEN TO ESTABLISH THE CAUSE OF THE OCCURRENCE IN 7.1.7.1 BY RESPONSIBLE MANAGEMENT REVIEW.

7.1.7.3 NOTWITHSTANDING ANY OTHER PROVISION OF THIS LICENSE THE PLANT SHALL BE SHUTDOWN AND NORMAL PROCESSING OPERATIONS MAY NOT BE RESUMED PRIOR TO AEC REGULATORY CONCURRENCE WHEN SPECIFICATION 4.1.1 HAS BEEN EXCEEDED.

Nonetheless

(Change No. 15)

Technical Specification 7.2

of License No. CSF-1

7.2 In addition to the other requirements and limitations of this license, processing of Category 10 fuels is limited as follows:

a. Category 10 fuel compounds of less than 35 weight percent plutonium nitrate in depleted uranyl nitrate.

b. Operations shall be conducted in accordance with the provisions of NFS letters to the Commission dated August 13, 1971, October 15, 1971, and October 29, 1971.

7.2 PROCEDURES FOR UTILIZING RESPIRATORY PROTECTION EQUIPMENT

APPLICABILITY

This specification establishes the administrative requirements necessary to protect plant personnel during exposure to atmospheric concentrations of radioactive material exceeding the limits specified in Table I, Appendix B, 10 CFR 20.

OBJECTIVE

To assure, pursuant to 10 CFR 20.103(c)(3), that individuals utilizing respiratory protection equipment will not inhale excessive quantities of radioactive material.

SPECIFICATION

7.2.1 MSA CONSTANT FLOW AIR LINE RESPIRATORS WITH FULL CLEAR-VIEW FACEPIECE OR SCOTT AIR-PAK II FULL FACE PIECE AIR SUPPLIED MASKS SHALL BE USED IN ATMOSPHERES WHERE THE CONCENTRATION ANTICIPATED DURING OCCUPANCY MAY EXCEED 800 DIVIDED BY THE HOURS OF OCCUPANCY TIMES THE CONCENTRATION DETERMINED IN ACCORDANCE WITH NOTE 1 WITH RESPECT TO THE VALUES IN TABLE I, APPENDIX B, OF 10 CFR 20. FULL FACEPIECE RESPIRATORS EQUIPPED WITH FILTERS HAVING RATED EFFICIENCIES EXCEEDING 99.95% FOR 0.3 MICRON DIAMETER PARTICLES MAY BE USED IN ATMOSPHERES WHERE THE CONCENTRATIONS ARE BELOW THE VALUES SET FORTH ABOVE.

7.2.2 PRIOR TO EACH ENTRY INTO A CONTAMINATED ATMOSPHERE, INDIVIDUALS WEARING RESPIRATORY PROTECTION MASKS SHALL CHECK FOR FIT AND LEAKAGE BY BLOCKING THE FILTER AND/OR THE AIR SUPPLY LINE WHILE ATTEMPTING TO INHALE.

7.2.3 FOLLOWING EACH USE, RESPIRATORY PROTECTION MASKS SHALL BE RETURNED BY THE WEARER FOR DECONTAMINATION AND SANITIZING UNDER THE DIRECTION OF HEALTH AND SAFETY PERSONNEL. WHEN CLEANING AND REPAIR HAS BEEN APPROVED BY HEALTH AND SAFETY PERSONNEL, MASKS SHALL BE PACKAGED INDIVIDUALLY IN PLASTIC BAGS AND DELIVERED FOR ISSUE WITH CLEAN CLOTHING SUPPLIES. MASKS WILL NOT BE ASSIGNED TO INDIVIDUALS.

7.2.3.1 MASKS SHALL NOT BE RELEASED FOR RE-USE IF RADIOACTIVE CONTAMINATION EXCEEDS 200 PICOCURIES/100 CM^2 ALPHA OR 500 PICOCURIES/100 CM^2 BETA.

7.2.3.2 FILTER CANISTERS FOR MASKS SHALL NOT BE RELEASED IF THEY BEAR MORE THAN 40 PICOCURIES SMEARABLE ALPHA ACTIVITY OR RADIOACTIVE CONTAMINATION RADIATING MORE THAN 0.2 MRAD/HR AT 1 INCH AS MEASURED WITH A β-γ GM METER.

BASES

Specific criteria are called for in 10 CFR 20.103(a)(3) to establish that adequate types of respiratory protection equipment will be used in a safe manner to protect personnel when

7.3 HIGH RADIATION AREA ACCESS

APPLICABILITY

This specification establishes the administrative procedures which are acceptable for governing entrance to a high radiation area in lieu of the alarm required by 10 CFR 20.

OBJECTIVE

To assure that each individual as well as a supervisor is aware that there is going to be an entry into a High Radiation Area.

SPECIFICATION

7.3.1 ADMITTANCE TO HIGH RADIATION AREAS DESIGNATED ZONE IV IN THE FINAL SAFETY ANALYSIS REPORT SHALL BE CONTROLLED BY LOCKED DOORS WITH THE POSSESSION OF KEYS TO THESE DOORS LIMITED TO NFS MANAGEMENT PERSONNEL.

BASES

10 CFR 20.203(c)(2) requires that a means be provided to warn personnel when they enter areas where the radiation exposure potential may be significant. This procedural specification is provided in lieu of the alarm signal device prescribed in 10 CFR 20.203(c)(2).

Technical Specification 7.4
of License No. CSF-1
As Authorized by Change No. 6

7.4 In addition to the other requirements and limitations of this license, NFS shall conduct operations of the plant in accordance with the provisions of its letters to the Commission dated January 13 and 15, 1968.

Technical Specification ~~7.5~~ 7.2

of License No. CSF-1

As Authorized by Change No. 16

7.5 In addition to the other requirements and limitations of this license, processing of Category 10 fuels is limited as follows:

a. Category 10 fuel compounds of less than 35 weight percent plutonium nitrate in depleted uranyl nitrate.

b. Operations shall be conducted in accordance with the provisions of NFS letters to the Commission dated August 13, 1971, October 15, 1971, and October 29, 1971.

(Change No. 16)

AMMENT. 1 TO PART B
OF APPLICATION

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October 15, 1962

Re: Docket 50-201

Mr. Robert Lowenstein, Director
Division of Licensing & Regulations
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Lowenstein:

We are herewith submitting three originals and 49 copies of Amendment #1 dated October 12, 1962, to Part B of the application in the above matter.

This Amendment consists primarily of answers to questions submitted by the Division of Licensing & Regulations in a letter dated September 5, 1962. It cannot readily be incorporated into the two loose leaf volumes comprising Part B--The Safety Analysis--which were filed in July.

This Amendment involves changes in the Safety Analysis which will be included in a further amendment which can be incorporated into the original loose leaf volumes. We anticipate that this will be furnished within the next two weeks.

Very truly yours,

Bernhard G. Bechhoefer
Attorney for

Nuclear Fuel Services, Inc.

BGB:djt

AMEND. 3 12/10/62
TO PART B

120696

Before The

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

In the Matter of the Application of

NUCLEAR FUEL SERVICES, INC.
For Construction Permit and Licenses for
a Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104 (b), and 185
of the Atomic Energy Act

AEC Docket No. 50-201

Part B -- Safety Analysis

Amendment No. I

October 12, 1962

On July 26, 1962, Nuclear Fuel Services filed with the Division of Licensing and Regulation an application to build and operate a fuel reprocessing plant for spent reactor fuel. A two-volume Safety Analysis was submitted as Part B of this application. During the past two months there have been several design changes. These will be reflected in a series of amended pages to the Safety Analysis. The amended pages will be submitted as soon as they can be prepared and the required copies printed. These changes are summarized as follows:

1) Elimination of Thorex Equipment

The expected load of ThO_2-UO_2 fuel is less than originally contemplated so that it does not now appear appropriate to include the expensive facilities needed to provide a processing capability for this type of fuel equivalent to that of the UO_2 fuels. Therefore, the plant capacity for ThO_2-UO_2 fuels will be 500 kg/day in place of the 1000 kg/day described in the Safety Analysis. Also, the facilities for decontamination of the recovered thorium have been eliminated. Thorium will be permitted to go into the high level waste stream and will be stored in stainless steel tankage along with the fission products from this particular fuel. Stainless steel tankage will be provided for this purpose as required.

2) Reduced Capacity for Stainless Steel-Cermet Fuels

The Safety Analysis indicates the inclusion of a Darex facility capable of handling 225 kg/day of stainless steel. The capacity of this unit has been reduced to 125 kg/day and the capital allowances include the cost of this capability. If development work on electrolytic dissolution at SRP continues to look favorable prior to freezing of design, NFS may change the design to provide for electrolytic dissolution at a processing rate of 125 kg/day

of stainless steel. Allowance has been made in cost estimates to permit the inclusion of either (not both) sets of equipment.

3) Waste Storage Facilities

Facilities for storing neutralized wastes which will be installed at the outset will include two 750,000-gallon carbon steel and concrete tanks. One of the tanks to be installed will be used for storage of the neutralized wastes from the entire processing sequence. The second will be held as a spare. Other waste storage shown in the Safety Analysis will not be built at the outset. Stainless steel tankage will be provided by NFS as required, but funds will not be committed until receipt of firm commitments for the processing of fuels whose wastes require this type of storage (e.g., stainless steel-UO_2 cermets, ThO_2-UO_2, depleted uranium-molybdenum, uranium-aluminum, or uranium-zirconium alloys). The depreciation schedules for waste storage are sufficient to provide a revolving fund for new mild steel waste storage as required and contractual commitments will permit additional capital as needed.

4) Removal of One Dissolver

As a result of the reduced requirements on the plant for the ThO_2-UO_2 fuels, one of the three dissolvers was removed.

The remaining plant facilities including fuel receiving and storage, mechanical cell, extraction equipment, acid recovery, solvent handling, prod-

uct packaging and handling, utilities, maintenance, and analytical facilities remain essentially unchanged as described in the Safety Analysis.

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These changes have already been communicated to the USAEC in a letter to Mr. R. C. Blair, dated September 21, 1962.

By letter dated September 5, 1962, the Division of Licensing and Regulation of the USAEC raised eleven questions formal answers to which are hereby submitted.

1) Question: The application does not give the types and maximum quantities of radioactive material that will be present in each processing step and in the storage areas during normal operation of the plant. This information is necessary to determine the probable releases that could be anticipated in the event of an accident.

Answer: In Table A-I-1 there is given a tabulation of the quantities of radioactive materials expected in each process stream. Data are given for fissionable materials, fertile materials, total fission products and specific fission products. The data presented are representative of the most radioactive fuel which we expect to process in the plant. These data are for a fuel burned to 20,000 mwd/ton, 27.5 mw/ton, irradiated two years at 85% load factor and cooled 150 days.

The maximum quantity of fuel which can be stored in the storage pool is about 1000 fuel elements. It is expected that normally no more than 25% of the pool will be full. The amount of activity stored therein can only be estimated since it will depend upon the past history of the particular fuels delivered to the plant. An estimate of the amount of fuel normally in storage is given in Table A-I-2.

The amount and type of activity in waste storage will change with time, increasing as the tank is filled and at the same time decreasing due

to decay. The maximum amount of activity in storage in a given tank will be present just at the completion of the filling period. An estimate of the total quantity of waste and the major specific fission product contributors at the time the first waste tank is filled is given in Table A-I-3.

2) Question: It does not appear that a "mock-up" shop will be included in the plant. Existing Commission facilities which utilize "remote maintenance" have "mock-up" shops and these shops have reduced exposure considerably during maintenance. How does NFS plan to minimize employee exposure during maintenance operations without such a shop?

Answer: The NFS plant does not have a full-scale "mock-up" shop complete with crane of the same type as that used at Hanford and Savannah River. However, the plant does have the capability for carrying out the function of the "mock-up" shop, viz, to check out the exact dimensions of a piece of equipment to be installed in the chemical processing cell. Jigs are provided in the maintenance shop to set up an equipment piece going into the CPC and to check all of the pertinent dimensions against the known requirements.

The need for this type of facility is less in the NFS plant than in the AEC production plants since there are only 15 pieces of equipment in the CPC which are handled in this manner and the proposed procedures will adequately allow the checking of such a small number of equipment pieces.

Further, it is felt that this is not a safety problem at all but rather an economic one. The installation of equipment in the CPC is done remotely and does not involve the exposure of personnel in excess of the normal plant background. The penalty for making an error in the measurement of dimensions (resulting in failure to be able to install the equipment) is not taken in increased personnel radiation exposure but rather in lost production

time. If it were not possible to install the equipment piece, it would be necessary to move it out into the decontamination area, clean it up to the point where it could be worked on again, and make the necessary corrections. 120701

3) Question: The chopping technique for the variety of fuels that will be processed has not been employed before in spent fuel processing plants and the probability of widespread contamination in the cell, as anticipated by NFS, does necessitate "remote maintenance." How is this remote maintenance going to be accomplished on large items such as cell windows and the "push-out ram"?

Answer: The chopping technique has not been in routine plant operation, but it has been operated on full plant scale at Oak Ridge National Laboratory by the Chemical Technology Division. The amount of "dusting" is estimated to be about 1 per cent. To confine this and any fines produced, the chopper will be separately sealed and washed down at the end of a cycle. Nonetheless, the cell is expected to be highly contaminated and the specifications for every equipment piece installed in the cell require that it be capable of remote maintenance for most repairs, and that it be removable either in pieces or in toto if that is required. The windows are removable from the outside of the cell.

Since the push-out ram was questioned specifically, a step-by-step method for its removal is given below:

1) The drive system, control, and power connections are located outside the cell and are not contaminated. These are first removed.

2) All the supporting connections outside the cell are then removed after which the supporting connections inside the cell are removed or loosened by use of the manipulator.

3) A wall section of the operating aisle opposite to the PMC must be removed to allow complete removal of the unit.

4) Around the ram drive mechanism there is some unit shielding. This is removed from outside the cell. A partial radiation check can then be made of the unit. Decontamination of the unit will undoubtedly be required. This is done using the remote manipulators inside the cell. Additional radiation checks are made during the course of the decontamination.

5) Roller units are set up in the operating aisle to allow the unit to be brought out horizontally. A special dolly is brought up outside the building to support the unit as it is being removed and to carry it to the maintenance shop.

6) A sling is attached to the crane inside the cell and the sling is secured to the end of the ram housing. The housing is raised sufficiently by the crane to take the weight off the supports.

7) The rollers are also raised until the ram housing no longer contacts the supports. The ram unit is now free to move.

8) A cable is attached to the ram in the operating aisle, threaded through the opening in the outside wall and attached to a winch located outside so that a straight line pull on the ram unit is possible.

9) The winch is actuated and the ram slowly pulled out of the cell. The crane inside the cell must be moved in parallel with the ram movement. Constant radiation monitoring is carried out during this operation to ascertain that the decontamination has been sufficient. It may be necessary to stop and do additional decontamination. Additional decontamination may be done either in the operating aisle, with or without the use of portable shielding, or it may be done inside the cell by partially reversing the removal operation.

10) As the unit emerges it is placed on the dolly and then transported

to the maintenance shop. The opening in the PMC wall is temporarily shielded.

4) Question: In paragraph 4.11 the return of the fuel transfer basket from the Process Mechanical Cell (PMC) to the Fuel Storage Pool Complex is described. The transfer of contamination to the fuel pool is not discussed during this step. What evaluation has been made to determine the quantity of contamination that will be transferred to the pool? How well will the ion exchange equipment (see paragraph 5.4) remove the contamination? Since only a single circuit of cooler, filter and ion exchange equipment (see Figure 5.4) is going to be used, how will cooling be accomplished throughout the pool while decontamination of only one compartment of the pool (see paragraph 5.5) is in progress?

Answer: Revaluation of the contamination problem has led NFS to decide on a slightly different approach to the problem of transferring the fuel elements into the PMC from the FRS. The fuel storage baskets will be sized so that the elements will protrude a short distance above the top of the basket. The basket will be affixed to the underwater transfer conveyor as indicated in paragraph 4.8 and brought into position below the hatch. The crane will then be used to pick up the fuel element from the basket leaving the basket in place in the underwater transfer conveyor. The basket is returned to the fuel storage pool never having gone into the PMC where it might become contaminated. Paragraphs 4.8 and 4.10 are being rewritten to reflect these changes and new pages will be submitted.

It would appear that the remainder of the questions in this section were prompted by the contamination possibility created by the return to the pool of baskets which had been in the PMC and, therefore, they may be considered to be answered by the above change. There is, of course, some

chance of pool water contamination from other sources such as the storage of the elements. This is not a problem which is unique to this plant, however, and the proposed method for handling the cooling and the decontamination of the pool water has proved effective in many previous installations. There is no justification for duplicating the ion exchange equipment. No contamination problem in a fuel pool is so acute or so sudden that the cleanup facility has to be in constant operation. The same is true of the cooling system. The fuel pool is a tremendous heat sink. At the design rate of heat release, 600,000 Btu/hr--a number which we believe to be conservative, equivalent to the heat from the 200-day-cooled output of 6000 mwt of reactors--the temperature of the fuel pool would increase only 0.1 F per hour. Thus it does not appear to be necessary to provide a spare cooling loop.

5) Question: In reference to the proposed ventilation system what evaluations indicate that (1) a manifolded and butterfly valve controlled system on the exhaust of the blowers (see Figure 6.3) will prevent blow back in the event of a blower failure and (2) that a "minimum" 100 fpm face velocity thru openings will prevent backmixing from active to less active areas. (see paragraph 6.9)

Answer: 1) A detailed answer is being prepared and will be submitted.

2) The 100 ft/min figure has been generally used throughout AEC installations for design purposes.

6) Question: According to Table 2.11a and 2.11c freezing conditions and snowfall can be expected from October to April. Under these conditions, will operational and contamination problems occur in outdoor areas, such as the washdown area (see paragraph 3.6 and 4.3), the general purpose evaporator (see paragraph 4.97 and 5.43), the concrete lined burial bins for high level solid waste (see paragraph 4.98), the low level trash burial area (see paragraph 4.98), the water seals on the thorium and depleted uranium storage

tanks (see Figure 4.96) and the diversion box and outdoor sampling points (see Figure 6.23e)?

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Answer: (1) Operational problems can be expected to occur in an outdoor washdown area. Therefore, this concept has been abandoned. All washing and decontamination will now be done inside the building.

(2) The general purpose evaporator has also been moved into the building.

(3) It is no longer planned to use the concrete-lined burial vaults. These were for the storage of metal hulls which have been leached in boiling nitric acid and thoroughly rinsed with water. Activity which is not removed by this treatment is not likely to be removed by water at a pH of near neutrality. We propose to bury these directly in the silty till, a formation which is not a aquifer and in which the rate of movement of any water that should get into it is essentially zero.

(4) Low level trash burial is an operation which can be halted in extremely inclement weather. Burial ditches will be dug somewhat ahead of time and sloped to one end so that rainwater collecting in the open trench will collect away from the point at which burial is taking place. If water does collect in the end of the trench, it will either be pumped out prior to the use of the end of the trench or the end will be back-filled without making use of it for low level burial.

(5) The seals called for are liquid seals. During winter months, the liquid will be of a non-freezing type.

(6) The diversion box function has also been taken back into the building.

(7) The only outdoor sampling points are on the waste tanks themselves and into the annular space around the tanks. These will be a

simple thief-type sampler which will operate in inclement weather.

Appropriate changes have been made in the Safety Analysis to reflect the above and the revised pages will be submitted.

7) Question: Where and in what quantity will cell penetrations be provided for the future anticipated requirements as indicated by Figures 3.19(a), 3.19(b), 3.22, 4.21(a), 4.33(c), and 4.39(a)?

Answer: There are provided in the contact cells 10% spares for all penetrations and there are 20% spares in the remote cells. These penetrations take the form of stainless steel pipe or tubing so arranged that there is no leakage of radiation in excess of the design shielding for the wall in which they are installed. Both ends are sealed by welding. Consequently, they represent no safety hazard. Their exact locations will be shown on the final drawings.

8) Question: Clothing, monitoring and change facilities are discussed in paragraphs 8.14 to 8.17 but this discussion does not define the boundaries of the controlled zones in the plant, the traffic pattern in the controlled zones or the type and size of facilities provided at each boundary to prevent carry over of contamination from one zone to the next. A discussion of these points for the proposed plant layout will be necessary.

Answer: Drawings are being prepared, coded to show the five kinds of plant areas from a contamination control standpoint. These are:

a) unrestricted access

b) access when wearing plant clothing and shoes

c) access when wearing plant clothing, shoes, and special shoe covers

d) no access at all except after thorough decontamination, health physics surveys, special clothing, and shoe change

c) a few limited areas in which either (a) or (b) is permitted. Persons will enter the plant only through the main entrance.

They will have free access to the (a) areas without changing clothing or shoes and may also go into (e) areas. In the case of (e) areas visitors will not be permitted unless accompanied by plant personnel. The workers will change clothes and shoes in the locker rooms after which they will have access to the (b) areas. At the interface between all (b) and (c) areas there will be shoe cover racks and there will be a change of footgear at every crossing of these interfaces. The (d) areas will not be entered at all except under full health safety coverage and there will be clothes and shoe change areas set up at the point of entry.

9) Question: What are the average and maximum discharge concentrations and flow rates of I_{129} and I_{131} that will be exhausted through the stack? What total quantity of these materials will be released per year?

Answer: In view of the implications of question 11 (see below) the requested data are provided not only for the iodines but also for krypton 85. In Table A-I-4 there are presented data representative of the discharges which are expected from average fuel during the first few years of operation.

The discharges of these same isotopes from a fuel representative of the highest burnups which we contemplate processing in the NFS plant were shown as a part of Table A-I-1 (see answer to question 1) and are repeated here for convenience:

Kr	85	8.25×10^3 curies
I	129	0.017 curies
I	131	1.7 curies
Xe	131m	1.1 curies
Xe	133	5×10^{-3} curies

It had been our intention to discuss this type of fuel when the time came to develop technical specifications. In view of the interest shown by the ACRS at the meeting held on October 5, 1962, we have decided to redo the calculations of Sections VII and VIII using the above maximum numbers. Revised pages for these sections will be submitted as soon as possible.

10) Question: It is suggested in paragraph 7.12 that the storage lagoon will be used as an emergency holdup area for the overheads from the general purpose evaporator. What maximum concentration of activity in these overheads would be discharged to the storage lagoon? Do any other streams feed this lagoon? If so, what type and concentrations of activities will be in these streams? How operable will the lagoon be during winter weather conditions?

Answer: There appears to be some misunderstanding concerning the function of the storage lagoon. It is not our intention to operate this as a seepage basin. That is, it is not the intention to routinely percolate wastes out into the stream through the ground using the ion exchange capacity thereof for additional decontamination.

All the liquid discharges will pass through the storage lagoon. They will be monitored and a record kept of the volume and activity which has been discarded. We expect to discard liquid at this point such that 10 CFR Part 20 will be met in Buttermilk Creek on a gross count basis assuming the absence of radium (1×10^{-7} uc/cc). The average dilution factor available in Buttermilk Creek has been calculated to be 2.7×10^{3}. Using a dilution of 10^{3} would imply that the discharge from the storage lagoon could be as high as 10^{-4} uc/cc.

If the storage lagoon discharge were to become higher than that required to meet 10 CFR Part 20 in Buttermilk Creek the overflow would be

stopped and the discharge held up until the condition causing the higher activity level had been corrected or until specific fission product analyses could show that the waste could be satisfactorily dischared within the limits of 10 CFR Part 20. It is then the function of the lagoon to hold up the activity. In dry warm weather some seepage into the ground can be expected and for the amount which does so seep advantage would be taken of the ion exchange capacity of the ground. This would be an abnormal and not a routine operation, however. In cold weather it is conceivable that the volume held up would freeze. Since the ice could be expected to remain in place the storage lagoon could then be said to be carrying out its function very well.

The process streams which go to the storage lagoon and their expected activity levels are as follows:

1) Overheads from acid fractionation----10^{-5} uc/cc

2) Overheads from General Purpose Evap----10^{-6} uc/cc

3) Floor drains from non-contaminated areas of the plant----------zero to 10^{-6} uc/cc

Miscellaneous wastes such as laundry wastes and laboratory wastes can go to the storage lagoon but they do so by way of the General Purpose Evap Feed Tank. If they prove to be low enough so that evaporation is not necessary they can be then routed to the storage lagoon. We expect to set an operating limit for any waste discharged to the storage lagoon at about 10^{-2} uc/cc. *

We expect not to discharge anything from the storage lagoon so that Buttermilk Creek could become in excess of 10 CFR Part 20.

* This is approximately the limit used at Savannah River also.

11) Question: Since significant quantities of Kr 85 and I_{131} (see paragraph 7.6 and Table 7.7) will be discharged to the atmosphere, with what degree of certainty can we be assured that the generalized parameters used are consistent with the actual site metereology?

Answer: Before operation has started we expect to have collected on-site meteorological data for at least a year and to have some evidential support for the meteorological parameters used. In the meantime the data used in making all calculations have been deduced by Dr. Maynard Smith from a study of the site. He was asked to supply a "conservative" set of data. At a meeting of the ACRS subcommittee held in Buffalo on September 12, 1962, Dr. Smith defined his concept of the degree of conservativism as follows: The parameters were selected to reflect conditions which are perhaps as much as three times better than the worst possible condition and about 1000 times worse than the best conditions.

Respectfully submitted,

Nuclear Fuel Services, Inc.

By T C Thomas
President

Subscribed and sworn to before
me this 16 day of October
1962. Christine C. Kotarski
My Commission expires 3/1/67

Table A-I-1

Daily Throughput of Activity in Various Process Streams[a]

Curies of:[b]	In Fuel At Discharge	HAF	HAW	HCW	IAF
		At 150 Days Cooling			
Cs 135	1	1	1		
Tc 99	9.4	9.4	9.4		
Sm 151	1.8×10^3	1.8×10^3	1.8×10^3		
Sr 90	6.8×10^4	6.7×10^4	6.7×10^4		50
Cs 137	7.2×10^4	7.1×10^4	7.1×10^4	20	50
Nb 93m	1.5×10^5	1.4×10^5	1.4×10^5		100
Pm 147	2.5×10^5	2.2×10^5	2.2×10^5	20	50
Eu 155	3.8×10^3	3.2×10^3	3.2×10^3		
Ru 106	6.65×10^4	5.0×10^4	5.0×10^4	30	200
Ce 144	1.2×10^6	8.4×10^5	8.4×10^5		100
Zr 95	1.5×10^6	2.9×10^5	2.9×10^5	30	200
Y 91	1.4×10^6	2.3×10^5	2.3×10^5		100
Sr 89	1.1×10^6	1.6×10^5	1.6×10^5		100
Ru 103	6.8×10^5	5.3×10^4	5.3×10^4		50
Ce 141	1.4×10^6	6×10^4	6×10^4		
La 140	1.5×10^6	3.6×10^2	3.6×10^2		
		Released during Proc at 150 days			
Gases:					
Kr 85	8.5×10^3	8.25×10^3			
I 129	0.017	0.017			
I 131	6.8×10^5	1.7			
Xe 131m	7×10^3	1.1			
Xe 133	1.5×10^6	5×10^{-3}			
Total[c]	1.15×10^7	2.2×10^6	2.2×10^6	100	1000
Uranium	10^6	10^6	10^3	5×10^2	10^6
Plutonium	5×10^3	5×10^3	5	2.5	10^{-2}

Table A-I-1

Daily Throughput of Activity in Various Process Streams Con't.[a]

Curies of:[b]	IAW	ICW	IDF	IDW	IEW
	At 150 Days Cooling				
Cs 135					
Tc 99					
Sm 151					
Sr 90	50				
Cs 137	49		1	1	
Nb 93m	99		1	1	
Pm 147	48	1	1	1	
Eu 155					
Ru 106	194	2	4	3	0.5
Ce 144	100				
Zr 95	195	2	3	2	0.5
Y 91	100				
Sr 89	100				
Ru 103	50				
Ce 141					
La 140					
Gases:					
Kr 85					
I 129					
I 131					
Xe 131m					
Xe 133					
Total[c]	985	5	10	8	1
Uranium	10^3	5×10^2	10^6	10^3	5×10^2
Plutonium	-	-	10^{-2}	-	-

Table A-I-1

Daily Throughput of Activity in Various Process Streams Con't.[a]

Curies of:[b]	IEU	IIAF	IIAW	IIBW	IIBP
	At 150 Days Cooling				
Cs 135					
Tc 99					
Sm 151					
Sr 90		50	50		
Cs 137		50	49		1
Nb 93m		100	99		1
Pm 147		50	48	1	1
Eu 155					
Ru 106	0.5	200	194	2	4
Ce 144		100	100		
Zr 95	0.5	200	195	2	3
Y 91		100	100		
Sr 89		100	100		
Ru 103		50	50		
Ce 141					
La 140					
Gases:					
Kr 85					
I 129					
I 131					
Xe 131m					
Xe 133					
Total[c]	1	1000	985	5	10
Uranium	10^6	50	-	-	50
Plutonium	10^{-2}	5×10^3	5	25	5×10^3

[a] These data are for a future fuel which is estimated to be the most active that will be processed in the NFS plant. The assumed characteristics of this fuel are:

1) Burnup----------20,000 mwd/ton
2) Specific Power----------27.5 mw/ton
3) Irradiation Time----------2 years
4) Load Factor----------85%
5) Cooling Time----------150 days
6) Throughput----------365 tons/year

[b] Curies are calculated at discharge and at 150 days cooling

Table A-I-2

Storage of Activity in Fuel Pool[a]

	Maximum Possible Loading	More Probable Loading
Total Elements	1000	500
Total Tons	250	125
Average Cooling, Days	150	200
Total Activity,	5.5×10^8	2×10^8

[a] Assumptions:

1) 4 elements/ton

2) No element is received with less than 100 days cooling.

3) Elements can be received at the rate of 60/week.

Table A-I-3

Quantities of Major Fission Products in Waste Storage[a]

Volume Stored, gallons		600,000
Time to Fill Tank, days		1,500
Curies in Storage When Full:		
Tc	99	1.4×10^4
Sm	151	2.7×10^6
Sr	90	1×10^8
Cs	137	1×10^8
Nb	93m	1.5×10^8
Pm	147	2×10^8
Ru	106	2.5×10^7
Ce	144	3.5×10^8
Zr	95	2.5×10^7
Y	91	2×10^7
Sr	89	1×10^7
Ru	103	3×10^6
Ce	141	3×10^6

[a] Assumptions:

1) Waste stored at 400 gallons/ton

2) Processing rate 365 tons/year. Although this rate is not expected to be achieved.

3) Tank size 750,000 gallons filled to 80% of capacity.

Table A-I-4

Gaseous Discharge from Average Fuel in NFS Plant

Reactor	Reactor Power MWT	Effective Power MWT [a]	Reactor Core Load, Tonnes	Yearly Proc Load, Tonnes
Yankee	485	412	20.9	12.36
North St (Boiler)	164	140	6.5	4.92
Comm Ed	630	535	52.3	13.05
Cons Ed	585	500	15.6	7.85
PRDC - Core	210[d]	178	1.74	2.07
PRDC - Blanket	90[d]	76	35.8	6.3

Average

[a] At 85% load factor

[b] Curies/day = $\frac{\text{Effective Reactor Power} \times 8.5 \times 10^5 y \times \text{NFS load}}{\text{Operating Days} \times \text{Core load}} \cdot 1 - e$

[c] Does not include turnaround days

[d] Assumes 70% of power from core; 30% from blanket

Table A-I-4

Gaseous Discharge from Average Fuel in NFS Plant Con't.

Reactor	NFS Operating Days	Curies/Day at 150 Days Cooling[b, c] Kr 85	I 129	I 131	Xe 131m	Xe 133
Yankee	12.4	6×10^{3}	0.01	1.2	0.8	3.7×10^{-3}
North St (Boiler)	4.9	5.2×10^{3}	0.009	1.3	0.9	4.1×10^{-3}
Comm Ed	13	5.9×10^{3}	0.013	0.6	0.4	2×10^{-3}
Cons Ed	15.6	4.8×10^{3}	0.01	1	0.7	3×10^{-3}
PRDC - Core	13.8	2×10^{3}	0.004	1	0.6	2.9×10^{-3}
PRDC - Blanket	8	1.3×10^{3}	0.003	0.1	0.07	0.3×10^{-3}
Average		4.3×10^{3}	0.0085	0.9	0.6	2.7×10^{-3}

[a] At 85% load factor

[b] $\text{Curies/day} = \dfrac{\text{Effective Reactor Power} \times 8.5 \times 10^{5}\text{y} \times \text{NFS load}}{\text{Operating Days} \times \text{Core load}} \quad 1 - e$

[c] Does not include turnaround days

[d] Assumes 70% of power from core; 30% from blanket

120725

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

In the Matter of the Application of

NUCLEAR FUEL SERVICES, INC.

For Construction Permit and Licenses for a
Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104 (b), and 185
of the Atomic Energy Act

AEC Docket No. 50-201

Amendment #3

December 10, 1962

Part B--Safety Analysis

120726

Amendment No. 3

December 10, 1962

This amendment consists of answers to seven questions relating to the Application submitted by Nuclear Fuel Services, Inc. to build and operate a fuel reprocessing plant for spent reactor fuel. The questions were set forth in a letter from R. Lowenstein to B. G. Beinhoefer dated October 1, 1962. Formal answers to these questions follow.

1) Question: In what plant areas will fire be a particular hazard and what will be the general nature of the fire detection and control system to be used in these areas?

Answer: The only area in the plant in which fire is considered to be a particular hazard is the Process Mechanical Cell. In this area various types of fuel elements will be subjected to sawing, chopping, and other methods of mechanical disassembly. In the course of this work some fine particles may be expected to be produced. While particles of stainless steel and of UO_2 are not pyrophoric, those of zirconium, Zircaloy, and uranium are. In addition some fuel elements will be bonded with sodium and this, of course, will burn.

Considerable effort is being taken in this area to reduce the possibility of a fire. Extraneous material will be rigidly excluded from the cell. The operations most likely to produce metal particles will be done inside closed chambers or hoods. An inert gas appropriate to the material being processed will be supplied to these chambers. Fines will not be permitted to accumulate. They will be swept and/or washed into the dissolver canisters or the scrap containers at the end of each batch. At the end of each process lot, there will be a thorough cleanout of the cell followed by a visual and an instrument monitoring of the entire area.

Sodium and NaK will be reacted with a mixture of inert gas and steam. The design of this equipment is not yet fully completed.

Should a fire start in this area, the means of fighting it will depend upon the type of fire encountered. If the fire is a metal fire, the primary attack will be made by placing graphite-based fire fighting compound on the burning areas with the manipulators. This compound will be stored in the cell in plastic containers of a size that can be easily and quickly handled with the manipulators. There will also be a CO_2 deluge system in the cell. This will not be an automatic system, however, since this is not a desirable way to fight an uranium or zirconium fire which involves any considerable quantity of metal. This system will be activated only by direct action as authorized by the senior plant supervisor present. If

CO_2 is used, its rate of introduction will be limited to an amount which will not pressurize the cell.

The method of detecting a fire in this cell is the installation of a number of sensing heads based on rate of temperature rise. The system will activate audible and visible alarms. The method of fire fighting to be employed will be subject to the control of the senior plant supervisor present.

2) Question: What will be the general nature of the fire protection system used in areas where fires are not normally a hazard.

Answer: The fire protection system for the plant consists of the following basic components:

a) A yard fire water system.

b) Wet sprinkler systems for the Process Building-Office Portion, Cold Chemical Penthouse, and Utility Room.

c) A dry sprinkler system for the Warehouse.

d) Wet standpipe systems in Fuel Receiving and Storage, Operating Aisle, Sample Aisle, Warm Equipment Aisle, Product Packaging and Handling, and Remote Operating Station.

e) Hand fire extinguishers at various access areas.

1000-gpm pumps are provided--one electric motor driven and one diesel engine driven in case of power failure. The 460,000-gallon filtered water storage tank serves as the source of fire water for this system. Distribution consists of an 8" looped system around the Process Building with feeders to the Warehouse, parking lot, and cooling tower areas. Ten 1 1/2" hydrants complete with 100' of hose and fog nozzle are located around the area.

The wet sprinkler system provided for the Process Building-Office Portion, Cold Chemical Penthouse, and Utility Room is fed from the domestic water system, and is actuated by temperature.

The dry sprinkler system for the Warehouse is based on ordinary hazard occupancy. When the sprinklers are opened by heat, the air pressured in the system is released and permits the opening of a differtial pressure valve introducing water from the domestic water system.

Fuel Receiving and Storage, Operating Aisle, Sample Aisle, Warm Equipment Aisle, Product Packaging and Handling, and Remote Operating Station are served from the yard fire water system by means of a standpipe(s). Each area is provided with 100' of hose and a fog nozzle.

3) Question: In what processing steps other than dissolution is I_2 evolution expected? How will this evolved I_2 be prevented from entering the atmosphere?

Answers: A fair amount of iodine is expected to be evolved during the chopping step in the PMC. It has already been indicated that this operation will be carried out in a separately hooded area. The ventilation from this area will be put through the dissolver silver reactors before discharge.

The only other place in which any iodine may escape from the process is with the overheads from the acid fractionator. We expect this to be very low and to go with the liquid, rather than the gaseous, discharge.

4) Please describe the stack monitoring system including the efficiency of sampling, sensitivity of measuring and ability to differentiate between elements.

Answer: The stack gas monitoring system consists of an air particulate monitor for measuring gross alpha, beta, and gamma radioactivity of the air borne particles, and a gaseous analyzer to monitor radioactive iodine by detection of specific gamma energy.

The particulate monitor is a portable integrated unit, similar to Nuclear Measurement Corporation Air Particulate Monitor Model AM-2I with a Model FGM-1 detector and an LCRM-5 count ratemeter. It will be located in a cold area near the base of the stack. The sample is withdrawn from one point in the stack on a continuous basis by means of a blower located on the monitor unit. All the particulate matter in the sample is collected on a 20 cm^2 filter paper, and continuously monitored for gross beta-gamma radiation down to 1.3 c/m build-up per hour.

The gaseous monitor receives the gases discharged from the particulate monitor and analyzes for either gross gamma or a specific energy range gamma for radioactive iodine isotope detection. The unit is similar to Nuclear Measurement Corporation Fluid Monitoring System FMS-1 with an LCRM-5 ratemeter, using a spectrometer and an SC-2-2 detector, providing a gross gamma sensitivity of 5×10^{-8} uc/cc. The sensitivity for iodine is in the range of 10^{-10} uc/cc.

The particulate monitor will be provided with a low flow alarm which will be carried to the control board and a radiation alarm which will locally alert and alarm at two preset levels. The gaseous monitor is provided with a radiation alarm, which will locally alert and alarm.

Both units will record the activity detected on a locally mounted two pen recorder and a single alarm will be carried to the board to alarm when either unit reaches the alert stage.

5) Please describe the general nature of the methods used to minimize and control the buildup of dust in the Process Mechanical Cell.

Answer: The operations most likely to produce dust in the PMC are sawing and chopping. Both of these will be carried out within enclosures designed to confine particles to the immediate area. At the conclusion of each operation the particles from that portion of the work will be swept into either the chopped fuel cannisters or the scrap buckets so that the inventory of particles is minimized. At the end of each process lot there will be a thorough cleanup of the entire cell beginning with the two areas indicated but including the whole cell. If possible, this will be done using the manipulators and restricted amounts of liquid. But if necessary the entire cell can be sprayed with water or mild decontaminating agents by use of a spray system which will be installed in the cell.

6) How completely and with what degree of assurance will Na and NaK be deactivated in chopped fuel elements which contain these materials?

Answer: The final design of the sodium deactivation facilities has not been completed. They will be based upon the reaction of sodium with a steam-inert gas mixture. The rate of reaction will be controlled by the controlling of the proportion of the steam and inert gas and the rate of introduction of the mixture. The ambient temperature of these elements will be such that the sodium is molten. Molten sodium is quite fluid; its properties are not too far different from water. That significant quantities of the sodium would remain unreacted, therefore, does not seem credible to us.

7) Question: What provisions are made for discarding waste solvents?

Answer: Relatively little solvent will be discarded. The process is based upon the cleanup and reuse of solvent as indicated in the Safety Analysis. It is recognized, however, that some bleed of waste solvent will be required. This will be absorbed on vermiculite and discarded as solid waste.

AGREEMENT entered into this 10th day of December, 1962 by and between the NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY (the "Authority"), a New York public benefit corporation with principal offices at 230 Park Avenue, New York 17, New York, and NUCLEAR FUEL SERVICES, INC. ("NFS"), a Maryland corporation with principal offices at 910 17th Street, N.W., Washington 6, D. C.

WHEREAS, on June 29, 1962 the parties hereto entered into an agreement granting to NFS an option to lease the Western New York Nuclear Service Center (the "Center"), situated in Cattaraugus County, New York, and to construct and operate thereon in accordance with the terms and conditions of the Outline of Terms of June 29, 1962 (the "Outline of Terms"), a nuclear fuel reprocessing plant, waste storage facilities and related facilities; and

WHEREAS, the parties hereto recognize that the installation at the earliest practicable date of (1) an anticattle fence around the periphery of the Center, (2) the subgrade for a railroad spur from the Baltimore & Ohio main line into the Center, and (3) a water reservoir and supply system the construction of which is related to the installation of the railroad subgrade, is desirable to permit full utilization of the Center and, should the option of June 29, 1962 be exercised, to assist in achieving the timely completion of the projects called for in the Outline of Terms; and

WHEREAS, NFS, with the concurrence and approval of the Authority, has selected Earl W. Ek, P. E. & Associates, with a principal office at 132 1/2 N. First Street, Olean, New York (the "Contractor") to perform certain portions of the work necessary to accomplish the installation of the

NOW, THEREFORE, in consideration of the premises and of the mutual covenants and agreements hereinafter set forth, the parties do hereby agree as follows:

ARTICLE 1.

Duties of NFS

Section 1.01. Contract with Contractor. NFS, prior to December 12, 1962, shall execute with the Contractor, the Contract attached to this Agreement as Appendix A (the "Contract"), and shall furnish to the Authority, within ten (10) days following the date of such execution, a certified copy of the Contract. If the Contract is not executed prior to December 12, 1962, this Agreement shall be null and void, and each party hereto shall be relieved of any obligation to the other under this Agreement. Notice of any amendment, alteration or waiver of the Contract or any term thereof shall promptly be furnished to the Authority in writing. Until and unless this Agreement is terminated under Section 2.02, neither the Contract nor any term thereof may be (a) substantially amended or altered, (b) waived in any material respect or (c) terminated without the written consent of the Authority. NFS, before giving its approval or consent to any matter arising under the Contract which, by the terms thereof, requires the approval or consent of both NFS and the Authority, shall first obtain the approval or consent of the Authority.

Section 1.02. Duty of NFS to Supervise Work, etc. NFS shall supervise the performance by the Contractor of the Contract and use its best efforts to cause all obligations of the Contractor under the Contract to be performed in accordance with the terms, specifications and other requirements relating thereto, and shall assure that the Work and

the Optional Work (as defined in Sections 1.01 and 1.02 of the Contract, respectively; the Work, the Optional Work and any part of either or both thereof shall hereinafter sometimes be referred to as the "work") performed under the Contract is compatible with, and suitable for, the facilities and activities contemplated under the Outline of Terms. NFS, during the progress of the work at the site, shall assign to such work, as full-time superintendent thereof, Mr. E. G. Wallender, or such other competent superintendent as may be approved by the Authority, and all necessary assistants for the superintendent. If NFS fails to enforce any right it may have under the Contract, the Authority may enforce such right either in the name of NFS or in its own name, but in either case without prejudice to any other right or remedy the Authority may have against NFS or the Contractor.

Section 1.03. Duty of NFS to Perform Under Contract. NFS shall promptly and diligently comply with all of its obligations under the Contract. NFS shall not make any payment under the Contract until and unless it is fully satisfied that the work with respect to which such payment is to be made has been completed in accordance with the plans, specifications and other requirements of the Contract applicable thereto.

Section 1.04. Licenses, Permits, etc. NFS, at no cost to the Authority, shall obtain all licenses, permits and other governmental consents necessary to perform, in a lawful manner, its obligations under this Agreement, and shall give all notices and comply with all laws, ordinances, rules and regulations of any governmental body applicable to the performance of such obligations.

Section 1.05. Assignment of Contract. The Contract shall be assignable to the Authority, at the Authority's option and in the Authority's sole and absolute discretion. Upon the exercise by the Authority of such option, all of the obligations of the Contractor to NFS under the Contract shall run to the Authority, and all of the privileges, rights and obligations of NFS under the Contract shall be assumed by the Authority. Upon the exercise of such option by the Authority, this Agreement shall terminate and NFS shall be automatically released from further obligation under this Agreement and shall be entitled to compensation and consideration pursuant to Section 3.04; provided, however, that such termination and release shall not deprive the Authority of any right or remedy against NFS or the Contractor arising prior to the date of such termination and release, which right or remedy shall survive any such termination of and release from this Agreement.

Nothing contained in this Section 1.05 or in any other section of this Agreement shall

(a) create any obligation on the part of the Authority to pay or to see to the payment of any sums to the Contractor until and unless the Contract shall have been assigned to the Authority as herein provided, or

(b) be construed as vesting in the Contractor any right, title or interest in, to or under this Agreement.

ARTICLE 2.

Expiration; Termination; etc.

Section 2.01. Expiration. The term of this Agreement shall expire upon final payment by the Authority to NFS pursuant to Section 3.02, unless this Agreement shall have been earlier terminated pursuant to Section 1.05 (relating to assignment of the Contract), Section 2.02 (relating to the Authority's option to terminate this Agreement), Section 5.02 (relating to execution of the Facilities Contract), or Article 12 (relating to non-compliance with New York law).

Section 2.02. Authority's Option to Terminate. The Authority shall have the right at any time, in its sole and absolute discretion, to terminate this Agreement upon ten (10) days' written notice to NFS. In the event of a termination pursuant to this Section 2.02,

(a) NFS shall be entitled to compensation and consideration pursuant to Section 3.04, and

(b) All rights of the Authority under the Contract shall terminate.

ARTICLE 3.

Contract Payments

Section 3.01. Progress Payments. (a) From time to time during the term of this Agreement as payments by NFS to the Contractor become due under the Contract, the Authority, subject to the provisions of Section 3.05 (relating to the Authority's maximum commitment), Section 4.02 (relating to certain deductions), and Section 4.03 (relating to the Authority's right to withhold payments),

shall make progress payments to NFS on account of this Agreement as provided in this Section 3.01. The amount of each such payment shall be equal to the sum of

(i) amounts payable by NFS to the Contractor pursuant to the Contract and not previously paid to NFS under this Section 3.01, plus

(ii) 5% of such amounts.

(b) Each such payment shall be in the form of two checks drawn by the Authority and made payable

(i) in the case of the check for the portion of such payment due under clause (i) of subsection (a) of this Section 3.01, to NFS and the Contractor, and

(ii) in the case of the check for the portion of such payment due under clause (ii) of subsection (a) of this Section 3.01, to NFS.

(c) Such payments shall be made to NFS promptly after receipt by the Authority of

(i) a voucher or vouchers covering amounts specified in subsection (a) of this Section 3.01,

(ii) such supporting documents for such vouchers in such form as the Authority may reasonably require,

(iii) evidence of the work performed by the Contractor for which the amounts specified in clause (i) of subsection (a) of this Section 3.01 are payable, as furnished to NFS under the terms of the Contract, together with any additional information reasonably required by the Authority to assure itself that such work

has been performed in accordance with the plans, specifications and other requirements of the Contract applicable thereto, and

(iv) a written statement of NFS, signed by an officer of NFS and countersigned by the full-time superintendent assigned to the work pursuant to Section 1.02, stating that

(1) in the opinion of the signers, they have made such examination or investigation as is necessary to enable them to express the opinions contained therein;

(2) in the opinion of the signers such work has been completed in accordance with the plans, specifications and other requirements of the Contract applicable thereto;

(3) in the opinion of the signers, such work is compatible with and suitable for the facilities and activities contemplated under the Outline of Terms; and

(4) the amounts specified in clause (i) of subsection (a) of this Section 3.01 are properly payable under the Contract.

Section 3.02. Acceptance and Final Payment.

(a) The Authority, upon receipt of written notice from NFS that the work is complete and ready for final inspection and acceptance, shall promptly make such inspection as to the Authority appears reasonable and proper, and in the event that the work is found to be acceptable and this Agreement fully performed, the Authority shall promptly give written notice of its finding to NFS.

(b) NFS shall then submit to the Authority the items specified in clauses (i) through (iv) of subsection (c) of Section 3.01, relating to the work for which progress payments have not been made pursuant to Section 3.01.

(c) Within ten (10) days following receipt by the Authority of all such items, the Authority shall, subject to the provisions of Section 3.05 (relating to the Authority's maximum commitment) and Section 4.02 (relating to certain deductions), pay to NFS, in the manner specified in subsection (b) of Section 3.01, the amounts evidenced by the vouchers submitted to the Authority pursuant to this Section 3.02, as the final payment due under this Agreement.

Section 3.03. Release by NFS. The acceptance by NFS of the final payment referred to in Section 3.02, or the payment on termination provided for in Section 3.04, shall constitute and operate as a release by NFS of any and all claims against or liabilities of the Authority which NFS, its representatives or assigns might otherwise have or assert hereunder or by reason of (a) the performance of the work and all other things done or furnished by the Contractor pursuant to the Contract and (b) any and all services rendered by NFS pursuant to this Agreement or any part hereof.

Section 3.04. Payments Upon Termination. (a) In the event this Agreement is terminated pursuant to Section 1.05 (relating to assignment of the Contract), Section 2.02 (relating to the Authority's option to terminate this Agreement) or Section 5.02 (relating to execution of the Facilities Contract), the Authority shall, subject to the provisions of Section 3.05 (relating to the Authority maximum commitment), Section 4.02 (relating to certain deductions), and Section 4.03 (relating to the Authority's

right to withhold payments), pay to NFS pursuant to this Section 3.04, as compensation and consideration for the value of the work performed prior to any such termination of this Agreement:

(i) amounts payable by NFS to the Contractor for such work pursuant to the Contract and not previously paid to NFS pursuant to Section 3.01;

(ii) 5% of such amounts.

(b) Such payment shall be made to NFS within ten (10) days following receipt by the Authority of the items required to be submitted to the Authority with respect to such work pursuant to clauses (i) through (iv) of subsection (c) of Section 3.01, and shall be in the form of two checks drawn by the Authority and made payable

(i) in the case of the check for the portion of such payment due under clause (i) of subsection (a) of this Section 3.04, to NFS and the Contractor, and

(ii) in the case of the check for the portion of such payment due under clause (ii) of subsection (a) of this Section 3.04, to NFS.

Section 3.05. Authority's Maximum Commitment. The aggregate total of all payments made by the Authority to NFS under this Agreement shall not exceed $78,268.05, which sum shall (except to the extent reduced under Section 4.02) be the Authority's maximum commitment hereunder, and all payments made pursuant to this Article 3 shall be subject to this limitation. The Authority, in its sole discretion, may increase its maximum commitment.

ARTICLE 4.

Rights of the Authority

Section 4.01. Authority's Right of Inspection. The Authority shall have the right at all reasonable times to inspect the services being rendered by NFS and the work being performed at the Center, and to inspect all records pertaining to such services and work. Nothing contained in this Agreement or otherwise shall create or imply any duty on the part of the Authority to make any such inspection; nor shall the Authority incur any liability or obligation for not making any such inspection or, once having undertaken any such inspection, for not making the same carefully or properly, or for not completing the same; nor shall the fact such inspection may have been made by the Authority relieve NFS or the Contractor of any obligations they may otherwise have under this Agreement or the Contract.

Section 4.02. Authority's Right to Perform Work. If the Contractor should neglect or fail properly to prosecute the work, and such neglect or failure shall continue for a period of five (5) days after written notice thereof from the Authority or NFS specifying such neglect or failure, and the Contractor or NFS shall not, within such period, commence with due diligence the curing thereof, the Authority may, without prejudice to any other rights it may have hereunder or remedies it may have against NFS or the Contractor, make good any deficiency resulting from such neglect or failure and may deduct the cost thereof from payments then or thereafter due to NFS pursuant to clause (i) of subsection (a) of Section 3.01, such cost to reduce the Authority's maximum commitment specified in Section 3.05 by the amount of such cost.

If the Authority and NFS deem it inexpedient to correct any such deficiency, an equitable deduction from amounts due or to become due to NFS under this Agreement shall be made. Such deduction shall be made without prejudice to any other rights the Authority may have hereunder or remedies it may have against NFS or the Contractor. In the event the Authority and the Contractor are able to agree upon a mutually acceptable deduction in respect of the amounts payable under the Contract, such deduction shall be binding upon them and NFS. In the event the Authority and the Contractor are unable so to agree, either of them may request the then President of the American Arbitration Association (or any organization successor thereto) to appoint a disinterested person of recognized competence in the field involved as an arbitrator to determine such matter. The arbitrator thus appointed shall, as promptly as possible, proceed to a determination and shall submit it in writing to the Authority, NFS and the Contractor. The arbitration shall be conducted in accordance with Article 84 of the Civil Practice Act, and the award of the arbitrator shall be binding, final and conclusive on the Authority, NFS and the Contractor. The fees of the arbitrator and the expenses incident to the arbitration shall be borne equally by the Authority and the Contractor. The fees of respective counsel engaged by the Authority, NFS and the Contractor and the fees of expert witnesses and other witnesses called for by them, shall be paid by the respective party engaging such counsel or calling such witness or witnesses.

Section 4.03. Authority's Right to Withhold Payments. In the event the Contractor should neglect or fail properly to prosecute the work, the Authority, Without

prejudice to any other rights it may have hereunder or remedies it may have against NFS or the Contractor, shall have the right, until either

(a) such neglect or failure shall have been cured by the Contractor or NFS at no cost to the Authority and notice to this effect shall have been furnished to the Authority,

(b) the Authority, pursuant to Section 4.02, shall have made good any deficiency resulting from such neglect or failure and deducted the full cost thereof from payments which, but for this Section 4.03, would have become due to NFS pursuant to clause (i) of subsection (a) of Section 3.01, or

(c) an equitable deduction for any such deficiency which shall not have been cured shall have been determined pursuant to Section 4.02 and fully set off against payments which, but for this Section 4.03, would have become due to NFS pursuant to clause (i) of subsection (a) of Section 3.01,

to withhold payments to NFS in an amount equal to (i) the Authority's reasonable estimate of the amount it will be entitled to deduct pursuant to Section 4.02 because of such neglect or failure, plus (ii) 5% of the amount so estimated.

ARTICLE 5.

Relationship Between Agreement and Option of June 29, 1962

Section 5.01. Fees. Except for the amounts specified in this Agreement, no fee shall be payable to NFS by the Authority, and no payment shall be made for the rendering of the services called for by this Agreement and

the performance by the Contractor of the work, nor shall NFS, through its performance of such services, assume any obligations other than those specified in this Agreement.

Section 5.02. Termination of Agreement Upon Execution of Facilities Contract. Upon the execution by the Authority and NFS of the Facilities Contract contemplated by the option of June 29, 1962 and the Outline of Terms, this Agreement shall terminate, and all amounts paid or to be paid by the Authority as required or permitted by this Agreement shall be credited against the Authority's maximum expenditure of $8,000,000 for development of the Center as provided in the Outline of Terms. In the event of a termination pursuant to this Section 5.02, NFS shall be entitled to compensation and consideration pursuant to Section 3.04.

ARTICLE 6.

Title and Risk of Loss

Section 6.01. Title to Plans, Drawings, etc. The original or master and copies of all plans, reports, surveys, survey notes, maps, tracings, shop drawings, computations, material and process specifications and other results of design and engineering portions of the work, and all other pertinent documents and data prepared by or for NFS or the Contractor in connection with the work, shall be and remain the property of the Authority and shall be delivered to the Authority at the expiration or earlier termination of this Agreement; provided, however, that NFS may reproduce and retain one copy (other than the original or master) of all such items. All such items prepared by or for the Contractor and delivered to the Authority by NFS shall bear thereon the endorsement of the Contractor

Section 6.02. Title to Material, Equipment, etc. Title to all material and equipment supplied by the Contractor or any subcontractor for incorporation in the work, shall pass directly from the Contractor to the Authority, without resting in NFS, when the same is delivered to the Center, but the Contractor shall be responsible for the safe custody of such material and equipment and shall bear the cost of any loss or damage resulting to the same until the Authority has finally accepted the work in the manner provided in Section 3.02.

ARTICLE 7.

Status of NFS

Section 7.01. Status of NFS. The status of NFS under this Agreement shall be that of an independent contractor and not that of an agent, and, in accordance with such status, NFS, its officers and employees, and the Contractor, its officers and employees, shall at all times during the term of this Agreement conduct themselves in a manner consistent with such status and by reason of this Agreement shall neither hold themselves out as, nor claim to be acting in the capacity of officers, employees, agents, representatives or servants of the Authority nor make any claim, demand or application for any right or privilege applicable to a person standing in any such relationship to the Authority, including, but not limited to, workmen's compensation coverage, unemployment insurance benefits, social security coverage and retirement membership or credit.

ARTICLE 8.

Insurance

Section 8.01. Maintenance of Insurance; Policy Provisions. Throughout the term of this Agreement and so long as any NFS employees remain at the Center, NFS, at no cost to the Authority, shall maintain insurance of the types and in the amounts specified in Section 8.02. All such insurance shall be evidenced by insurance policies, each of which shall

(a) name the Authority, the State of New York and NFS, as insureds as their respective interests may appear,

(b) provide that such policy may not be cancelled or modified except upon at least thirty (30) days prior written notice to the Authority, and

(c) be issued by insurance companies of recognized responsibility authorized to do business in the State of New York.

NFS, prior to the commencement of performance under this Agreement, shall furnish the Authority with a certificate or certificates setting forth the particulars of all such insurance policies and shall certify in writing that the same comply with the requirements of this Article 8 and that payment of current premiums and all other current charges thereunder has been made. NFS shall comply with all the terms and conditions of such insurance policies.

Section 8.02. Types of Insurance. The types and amounts of insurance required to be maintained under this Article 8 are as follows:

(a) Workmen's Compensation Insurance for all NFS employees employed in connection with this Agreement, as required by the laws of the State of New York;

(b) Employer's Liability Insurance for liability arising from bodily injury, by accident or disease, including death at any time resulting therefrom sustained by employees of NFS while engaged in performing this Agreement, in an amount not less than $500,000 for any one accident and $500,000 in the aggregate for disease;

(c) Comprehensive General Liability Insurance for bodily injury liability, including death, and property damage liability incurred in connection with the performance of this Agreement, with minimum limits of $500,000 in respect of claims arising out of personal injury or sickness or death for any one person, $2,000,000 in respect of claims arising out of personal injury, sickness or death in any one accident or disaster and $1,000,000 in respect of claims arising out of property damage in any one accident or disaster; and

(d) Comprehensive Automobile Liability Insurance in respect of NFS's owned, licensed or hired motor vehicles for bodily injury liability, including death, and property damage liability incurred in connection with the performance of this Agreement, with minimum limits of $500,000 in respect of claims arising out of personal injury or sickness or death of any one person, $1,000,000 in respect of claims arising out of personal injury, sickness or death in any one accident or disaster, and $100,000 in respect of claims arising out of property damage for any one accident or disaster.

ARTICLE 9.

Assignments, etc.

Section 9.01. Assignments, etc. Except as permitted by Section 1.01 (relating to the Contract) and Section 1.05 (relating to assignment of the Contract), NFS shall not assign, transfer, convey, sublet, subcontract or otherwise dispose of this Agreement or the Contract, or the services to be rendered or the work to be performed hereunder or thereunder, respectively, or any of its right, title or interest herein or therein, to any person, company or corporation without the previous consent in writing of the Authority.

ARTICLE 10.

Taxes, etc.

Section 10.01. Taxes, etc. NFS shall be liable for, and shall pay before delinquency, at no cost to the Authority, all taxes, licenses and fees levied or assessed in connection with or incident to the performance by NFS of its obligations under this Agreement, including, without limitation, all taxes and assessments now required or assessed by the State of New York or the Federal Government for unemployment compensation insurance, old age benefits, social security and any other taxes upon the wages of NFS, its agents, employees and representatives.

ARTICLE 11.

Optional Work Under Contract

Section 11.01. Optional Work Under Contract. The option contained in Article VIII of the Contract, providing for the performance by the Contractor of the

Optional Work upon the exercise thereof, may be exercised by NFS only with the prior written approval of the Authority. Such option may be exercised by the Authority only after first submitting to NFS a written request (which shall be deemed to be an approval for purposes of this Section 11.01 and Article VIII of the Contract) that NFS exercise such option and the refusal or failure of NFS, within 10 days following receipt of such request, to exercise such option.

ARTICLE 12.

NFS to Comply with Laws of New York, etc.

Section 12.01. Labor Law, etc. NFS shall comply amd shall cause all its subcontractors to comply with all provisions of the Labor Law of the State of New York, and any other statutes, ordinances, rules and regulations applicable to the entry into and performance of this Agreement. No laborer, workman, or mechanic in the employ of NFS, any subcontractor or other person rendering or contracting to render the whole or part of the services contemplated by this Agreement, shall be permitted or required to work more than eight (8) hours in any one calendar day or more than five (5) days in any one week except in cases of extraordinary emergency (referred to in Section 220 of the New York Labor Law) including flood or danger to life or property.

Each laborer, workman or mechanic employed by NFS or any subcontractor or other person rendering or contracting to render the whole or any part of the services contemplated by this Agreement shall be paid such wages for a legal day's work (as defined in the New York Labor Law) and shall be provided such supplements (as defined in the New York Labor Law) as are required by Article 8 of the

New York Labor Law. Each such laborer, workman or mechanic shall be paid not less than the hourly minimum rate of wage and shall be provided not less than the minimum supplements as are required by Article 8 of the New York Labor Law.

Section 12.02. Non-Discrimination. NFS, with respect to operations performed within the territorial limits of the State of New York, shall assure that,

(a) In the hiring of employees for the performance of this Agreement, no contractor, subcontractor, nor any person acting on behalf of such contractor, shall be reason of race, creed, color or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates, and

(b) No contractor, subcontractor, nor any person on his behalf shall, in any manner, discriminate against or intimidate any employee hired for the performance of such work on account of race, creed, color or national origin.

There may be deducted from the amount payable to NFS by the Authority under this Agreement a penalty of five dollare ($5.00) for each person for each calendar day during which such person was discriminated against or intimidated in violation of the provisions of this Section 12.02, and, should a second or subsequent violation of the terms or conditions of this Section 12.02 occur, this Agreement may be cancelled or terminated by the Authority, and all moneys due or to become due hereunder may be forfeited.

Section 12.03. Public Authorities Law. NFS shall comply with the provisions of Section 2601 of the New York Public Authorities Law which requires that upon

the refusal by a person, when called before a grand jury to testify concerning any transaction or contract had with the State, any political subdivision thereof, a public authority or with any public department, agency or official of the State or of any political subdivision thereof or of a public authority, to sign a waiver of immunity against subsequent criminal prosecution or to answer any relevant question concerning such transaction or contract,

(a) such person, and any firm, partnership or corporation of which he is a member, partner, director or officer shall be disqualified from thereafter selling to or submitting bids to or receiving awards from or entering into any contracts with any public authority or official thereof, for goods, work or services, for a period of five (5) years after such refusal, and

(b) any and all contracts made with any public authority or official thereof, since the effective date of that law, by such person, and by any firm, partnership, or corporation of which he is a member, partner, director or officer may be cancelled or terminated by the public authority without incurring any penalty or damages on account of such cancellation or termination, but any moneys owing by the public authority for goods delivered or work done prior to the cancellation or termination shall be paid.

Section 1204. Preference in Employment. In the performance of this Agreement, NFS shall give preference in employment to citizens of the State of New York who have been residents thereof for at least six (6) consecutive months immediately prior to the commencement of their employment. Persons other than such citizens may be employed when such citizens are not available.

Miscellaneous

Section 13.01. Changes, Waivers, etc. Neither this Agreement nor any term or provision hereof may be changed, waived, discharged or terminated orally, but only by an instrument in writing signed by the party against which the enforcement of the change, waiver, discharge or termination is sought.

Section 13.02. Law Governing. This Agreement shall be governed by and construed and enforced in accordance with the laws of the State of New York.

Section 13.03. Time of the Essence. All time limits stated in this Agreement and in the Contract are of the essence of this Agreement. The Authority or NFS may give its written consent to any change in any of the time limits specified in this Agreement requested in writing by the other party hereto, and upon receipt of such consent by such party, any such change shall become effective.

Section 13.04. Counterparts. This Agreement may be executed in several counterparts, each of which shall be an original but all of which shall constitute but one and the same instrument.

Section 13.05. Parties in Interest. The covenants and agreements herein contained shall, subject to the provisions of this Agreement, bind and inure to the benefit of the Authority, its successors and assigns and NFS, its successors and assigns.

Section 13.06. Separability of Provisions. If any term or provision of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, and the application of such term or provision to persons or circumstances other than those as to which it is held invalid or unenforceable, as the case may be, shall not be affected

be valid and enforced to the fullest extent permitted by law.

Section 13.07. Notices, etc. All notices, demands, requests and consents, approvals and other communications which may or are required to be given by either party to the other under this Agreement shall be in writing, and shall be deemed to have been sufficiently given for all purposes hereunder when delivered or mailed by first class registered or certified mail, postage prepaid, return receipt requested,

(a) if to the Authority, at 230 Park Avenue, New York 17, N. Y. or at such other address as the Authority shall have furnished to NFS in writing, or

(b) if to NFS, at 910 17th Street, N. W., Washington 6, D. C. or such other address as NFS shall have furnished to the Authority in writing.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed and their respective corporate seals to be hereunto affixed and attested by their respective officers thereunto duly authorized.

NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY,

By _____
Chairman

Attest:

_____
Secretary

NUCLEAR FUEL SERVICES, INC.,

By _____
President

Attest:

_____

12/26/62

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON 25 D. C.

50-201
Bus. file

December 26, 1962

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington 25, D. C.

Subject: REPORT ON NUCLEAR FUEL SERVICES, INC.

Dear Dr. Seaborg:

At its forty-fifth meeting on December 13-15, 1962 at Oak Ridge, Tennessee, the Advisory Committee on Reactor Safeguards considered the nuclear fuel processing plant proposed by Nuclear Fuel Services, Inc. to be constructed at the state-owned, Springville site located southwest of Buffalo, New York. In its letter of October 11, 1962, the Committee commented on the suitability of the site for the proposed operations. The Committee had the benefit of oral presentations by representatives of Nuclear Fuel Services, Inc., Bechtel Corp., the AEC Regulatory Staff and its consultant, and of the reports listed.

The process to be used is a batch dissolution of fuel elements which are usually chopped into small pieces. The plant will be designed to handle a nominal throughput of 1000 kilograms of uranium per day. A variety of types of fuel with varying exposure time histories are to be processed, the upper limit of which is approximately represented by the following parameters:

Burnup	20,000	mwd/ton
Specific power	27.5	mw/ton
Irradiation time	2	years
Load factor	85	percent
Cooling time	150	days

Similar chemical processing operations have been conducted on a production basis at various Commission-owned plants for several years. A prototype fuel element chopping operation has been carried on at Oak Ridge for about three years. This experience furnishes an adequate basis for plant design.

DEC [illegible]

The Committee believes that this plant can be designed and constructed with reasonable assurance that it may be operated without undue hazard to the health and safety of the public.

Mr. K. R. Osborn did not participate in the discussions of this project.

Sincerely yours,

/s/ F. A. Gifford, Jr.

F. A. Gifford, Jr.
Chairman

References:

1. Application for Construction Permit & License for a Spent Fuel Processing Plant, Part A - General Information, dated July 25, 1962.
2. Safety Analysis, Spent Fuel Processing Plant, Part B - Vol. I and Vol. II, dated July 1962.
3. Letter from Scharfeld, Bechhoefer, Baron & Stambler, dated September 7, 1962, transmitting additional information to Part B.
4. Application for Construction Permit & License for a Spent Fuel Processing Plant, Part B -- Safety Analysis, Amendment No. 1, dated October 12, 1962.
5. Letter from Scharfeld, Bechhoefer, Baron & Stambler, dated October 24, 1962, transmitting seven (7) drawings referred to in Amendment No. 1.
6. Amendment No. 2 dated November 23, 1962 to Application for Construction Permit & License.

11/27/62 TRANSMITTING
11/23/62

November 27, 1962

Mr. Robert Bower
Commonwealth Edison Company
72 West Adams Street
Chicago 90, Illinois

Dear Mr. Bower:

Attached is a copy of amendment #2 of the Safety Analysis supporting the application of Nuclear Fuel Services, Inc to build a chemical reprocessing plant for spent reactor fuel.

This amendment consists of a number of corrected pages, figures, tables, and appendices. The corrected pages in the enclosure are in the order in which they need to be inserted in the book. At the first of the pages there is a log of the paragraphs of text which have been corrected. This is followed by a list of the revised tables, then figures, and then appendices. It should be noted that one table and several figures and appendices have been deleted. Using these log sheets as a guide will you please go through your copy of the Safety Analysis and make the necessary changes.

According to my records you have copy #110. Will you please see that the necessary corrections are made.

Sincerely yours,

Walton A. Rodger

WAR:mb

Attachment

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

APR 18 1966

IN REPLY REFER TO:
Docket No. 50-201

Nuclear Fuel Services, Inc.
Box 124
West Valley, New York 14171

Attention: Mr. W. H. Lewis
Vice President and General Manager

AND

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

Attention: Mr. Oliver Townsend
Chairman

Gentlemen:

Enclosed is Provisional Operating License No. CSF-1, together with a copy of a notice being published in the Federal Register concerning this license. Also enclosed are three copies of Amendment No. 3 to Indemnity Agreement No. B-29 for your acceptance and return of one signed copy.

In accordance with the amendment to your application dated January 25, 1965, you are hereby authorized to maintain the specified criticality alarm system in lieu of the devices specified in 10 CFR 70.24(a)(1).

Sincerely yours,

J. A. McBride, Director
Division of Materials Licensing

Enclosures:
As stated above

cc: C. R. Braun
B. G. Bechhoefer

UNITED STATES ATOMIC ENERGY COMMISSION

NOTICE OF ISSUANCE OF FACILITY LICENSE

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

Please take notice that construction of the facility having been completed and no request for a hearing or petition to intervene having been filed following publication of the notice of proposed action in the Federal Register, the Atomic Energy Commission has issued effective as of the date of issuance Provisional Operating License No. CSF-1 to Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority authorizing operation of the irradiated nuclear fuel processing plant located at the Western New York Nuclear Service Center, Cattaraugus and Erie Counties, New York.

The license was issued as set forth in the Notice of Proposed Issuance published in the Federal Register September 10, 1965, 30 F.R. 11649, except that bases for technical specifications have been expanded in some instances, and certain clarifications have been made, including:

(1) Specification 2.3 was changed to permit the use of some additional small radioactive sources for calibration and test purposes.

(2) Specification 4.13.1 was changed to permit waste burial at a more convenient location on the site and to specify minimum earth cover requirements.

(3) Specification 5.3.1 was changed to require that all off-gas from shear or dissolution operations be processed through a chemical scrubber and to specify that the off-gas from a fuel batch containing less than ~~160~~ 16 curies millicuries of I-131 need not be processed through the silver nitrate reactor.

(4) Specification 6.6.1 was changed to assure that sufficient air shall be added to keep the hydrogen gas concentration below its lower explosive limit.

(5) Specification 7.1 was expanded to identify with greater particularity the management organization and responsibility and to specify situations requiring corrective actions and plant shut down.

FOR THE ATOMIC ENERGY COMMISSION

J. A. McBride, Director
Division of Materials Licensing

Dated at Bethesda, Maryland
this 19th day of April, 1966

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

NUCLEAR FUEL SERVICES, INC.
AND
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

PROVISIONAL OPERATING LICENSE

License No. CSF-1

The Atomic Energy Commission having found that:

a. The application for license complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in Title 10, CFR;

b. Construction of the facility has been completed in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission;

c. As an intermediate procedure prior to issuance of an operating license pursuant to Title 10, CFR, § 50.56, a provisional operating license should be issued because there are involved features, characteristics or components of the proposed facility as to which it appears desirable to obtain actual operating experience before issuance of an operating license for the full term requested in the application;

d. There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in Title 10, CFR;

e. The applicants are technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the regulations in Title 10, CFR;

f. The applicable provisions of Part 140, Title 10, CFR, have been satisfied; and

g. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

Provisional Operating License No. CSF-1 is hereby issued as follows:

1. This license applies to the irradiated nuclear fuel processing plant (the "facility") located at the Western New York Nuclear Service Center, Cattaraugus and Erie Counties, New York, and described in

Part B of the revised license application, as amended, filed by Nuclear Fuel Services, Inc. ("NFS") and incorporated by reference in the revised license application, as amended, of the New York State Atomic and Space Development Authority ("ASDA"). Volumes 1 and 2 of said Part B of the revised license application, as amended, entitled "Final Safety Analysis Report" are considered to be the "Hazards Summary Report".

2. Subject to the conditions and requirements incorporated herein the Commission hereby licenses NFS -- as lessee of the site; as owner of those portions of the facility in which actual chemical processing will take place; and as the party responsible for the operation of the facility, including storage of irradiated fuel elements, storage of radioactive wastes and burial of radioactive waste --

A. Pursuant to Section 104.b of the Atomic Energy Act of 1954, as amended (the "Act"), and Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities", to possess, use and operate the facility as a production facility;

B. Pursuant to the Act and Title 10, CFR, Part 70, "Special Nuclear Material", to receive, acquire, possess and use that amount of special nuclear material in or from irradiated solid nuclear fuel elements, and that amount of special nuclear material contained in auxiliary sources such as calibration and laboratory standards, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license;

C. Pursuant to the Act and Title 10, CFR, Part 30, "Licensing of Byproduct Material", to receive, separate, possess and use that amount of byproduct material in or from irradiated solid nuclear fuel elements, and to receive, possess and use that amount of byproduct material contained in auxiliary sources such as calibration and laboratory standards, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license;

D. Pursuant to the Act and Title 10, CFR, Part 40, "Licensing of Source Material", to receive, possess and use that amount of source material in or from irradiated solid nuclear fuel elements, and that amount of source material contained in fuel element prototypes and other auxiliary forms, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license; and

E. Pursuant to the Act and Title 10, CFR, Parts 20, 30, 40, and 70 to dispose of solid radioactive waste generated in the operation of the facility by burial in the soil in accordance with the technical specifications.

3. Subject to the conditions and requirements incorporated herein the Commission hereby licenses ASDA -- as owner and lessor of the site, of those portions of the facility in which the preprocessing storage of irradiated fuel elements and the storage and burial of radioactive wastes will take place, and of other site improvements -- to possess title to those portions of the facility not owned by NFS and to permit NFS to perform those acts which NFS is authorized to do by paragraph 2 of this license.

4. A. Notwithstanding any expiration, modification, cancellation or termination of the contractual arrangements between NFS and ASDA, NFS shall, so long as this license shall be in force with respect to NFS, be responsible for assuring that the provisions of this license and Commission regulations for protection of health and safety from radiation hazards are observed with respect to the facility and materials covered by this license. In the event of any expiration, modification, cancellation or termination of the contractual arrangement between NFS and ASDA or any other change in the relationship between them, including any proposed transfer from NFS to ASDA of responsibility for the operation and care of those portions of the facility in which the storage and burial of radioactive wastes will take place, NFS or ASDA may apply to the Commission for an appropriate amendment of this license reflecting the future responsibilities of NFS and ASDA with respect to satisfying Commission regulatory requirements. Until such amendment is issued, ASDA shall in no way prevent NFS from observing the requirements set forth in this condition.

B. To the extent that the operation of the facility under this license results in the production of radioactive wastes to be stored in portions of the facility or in improvements hereafter constructed at the site, or otherwise to be managed at the site, beyond the term of this license or any superseding license, NFS or ASDA may apply to the Commission for an appropriate amendment of this license or any superseding license with respect to such continued storage or management in accordance with Commission regulations.

5. Except as specifically otherwise provided by the Commission, this license shall be deemed to contain and be subject to the conditions specified in Section 50.54 of Part 50, Section 70.32 of Part 70, Section 40.41 of Part 40 and Section 30.34 of Part 30 of the Commission's regulations; is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect, including Part 20; and is subject to the additional conditions specified below:

A. Technical Specifications

The technical specifications for operation of the facility contained in Appendix A attached hereto are hereby incorporated in this license. Except as hereinafter provided, the facility shall be operated in accordance with the technical specifications. Changes may be made in the technical specifications only when authorized by the Commission in accordance with the provisions of Section 50.59 of the Commission's regulations (Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities").

B. Records

In addition to those otherwise required under this license and applicable regulations, NFS shall keep the following records:

(1) Records showing the radioactivity released or discharged to unrestricted areas as measured at or prior to the point of such release or discharge.

(2) Records of radioactivity measurements at on-site and off-site monitoring stations described in the technical specifications.

(3) Records of the radioactive material received, transferred, stored as high-level liquid waste or disposed of as solid waste.

(4) Records of facility tests, measurements and calculations performed pursuant to the requirements of the technical specifications.

(5) Records of major repairs or substitution or replacement of major equipment listed in Equipment List, Appendix 5.2 of the Final Safety Analysis Report.

(6) Letters of authorization, run sheets, operating logs and check-off lists of the mechanical processing and chemical processing operations performed in the plant.

NFS is hereby authorized to dispose of the records described in 5.B.(4), (5) and (6) after a retention period of two years from the date of occurrence of the activity recorded. Records described in 5.B.(1), (2) and (3) shall be retained until disposal is authorized by the Commission.

C. Reports

In addition to reports otherwise required by this license and applicable regulations:

(1) Any operation outside the limits established by the technical specifications, and any operation of the facility in the "ready condition" as defined in the technical specifications, shall be promptly reported by telephone or telegraph to the Director of the appropriate Atomic Energy Commission Regional Compliance Office listed in Appendix D of 10 CFR 20. NFS shall submit within 10 days a complete report of the causes and corrective actions taken. This report shall be submitted to the Director, Division of Materials Licensing, with a copy to the Regional Compliance Office.

(2) NFS shall report to the Commission in writing within 30 days of its occurrence any change in the plant organization indicated in the amendment to the application by NFS dated October 19, 1965.

(3) NFS shall report to the Commission in writing within 30 days of the time it is observed any change in the validity of the assumptions used in the accident analyses, as described in Section VII of the Final Safety Analysis Report.

(4) NFS shall submit to the Commission, at least quarterly, during the period of this provisional operating license, a written report covering the following matters:

a. A summary of the processing operations performed during the period, including their duration.

b. The amount of radioactive material received, transferred, stored as high-level liquid waste, disposed of as solid waste, and released as liquid, gaseous and solid effluent.

c. The levels of radioactivity measured at the stack, the site-perimeter monitoring stations and in the milk from the cows on the NFS-operated farm.

d. A brief explanation of the cause of each unplanned process shutdown.

e. A description of major repairs performed in the facility with reasons therefor.

f. A description of changes, tests, and experiments performed pursuant to Paragraph 50.59(a) of the Commission's rules and regulations.

g. A description of malfunctions of any equipment listed in Appendices 5.2, 9.51, 9.53, and 9.56 of the Final Safety Analysis Report which is important to safety.

h. The results of periodic testing performed in accordance with Section 6 of the technical specifications.

Such reports shall be submitted within 30 days after the end of each reporting period.

(D) Special Nuclear Material Safeguards. (See letter Dated 9/4/69 - 6/30/70)

6. This license is effective as of the date of issuance and shall expire eighteen months from the date of issuance (unless extended for good cause shown), or upon the earlier issuance of a superseding operating license.

FOR THE ATOMIC ENERGY COMMISSION

Director
Division of Materials Licensing

Attachment:
Appendix A

Date of Issuance: APR 19 1966

APPLICATION FOR LICENSE

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BEFORE THE UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

AEC Docket No. 50-201

NEW YORK STATE

ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY

Application for Licenses

January 29, 1963

Before the
U. S. Atomic Energy Commission
Washington, D. C.

Application for Licenses

In accordance with the Atomic Energy Act of 1954, as amended (hereinafter referred to as the "Act"), and the regulations issued pursuant thereto, the New York State Atomic Research and Development Authority (hereinafter referred to as the "Authority") applies to the Atomic Energy Commission (hereinafter referred to as the "Commission") for the licenses identified in paragraph 5 below. In support of the application and pursuant to Section 50.33 of the Commission's regulations, the Authority states the following:

1. Name and Address of the Applicant

New York State Atomic Research and
Development Authority
230 Park Avenue
New York 17, New York

2. Description of Applicant

The Authority is a body corporate and politic constituting a public benefit corporation, created by the New York State Atomic Research and

Development Authority Act, Title 9 of Article 8 of the Public Authorities Law of the State of New York (as added by Chapter 210 of the Laws of New York of 1962, a copy of which is attached hereto as Appendix A).

The purposes of the Authority are to encourage and cooperate in the maximum development and use of atomic energy for peaceful and productive purposes within the State of New York (hereinafter referred to as the "State"). In carrying out such purposes, the Authority has broad powers with respect to activities relating to the development and use of atomic energy, including research and development, the provision of services and the dissemination of information. The statute by which the Authority was created provides that in carrying out its corporate purposes and exercising its powers, the Authority shall be regarded as performing a governmental function. The Authority proposes to do business throughout the State of New York but the principal location of its business is at its office, 230 Park Avenue, New York 17, New York.

3. Members and Officers of the Authority

The statutorily authorized membership of the Authority consists of the Director of the State Office of Atomic Development, ex-officio, and two members to be appointed by the Governor, by and with the advice and consent of the Senate. The Director of the State Office of Atomic Development serves as Chairman of the Authority and as the chief executive officer of the Authority. All other officers of the Authority are appointed by the Authority.

The position, name, and business address of all present members and officers of the Authority are set forth below:

Position	Name	Address
Chairman and Member	Oliver Townsend	230 Park Ave., New York 17, N. Y.
Vice Chairman and Member	Whitworth Ferguson	230 Park Ave., New York 17, N. Y.
General Manager	Jon D. Anderson	230 Park Ave., New York 17, N. Y.
Treasurer	John G. Lauber	230 Park Ave. New York 17, N. Y.
Secretary	Maurice Axelrad	230 Park Ave., New York 17, N. Y.

All of the above named members and officers of the Authority are citizens of the United States.

The position of the third member of the Authority is vacant at the present time.

The Authority is not owned, controlled or dominated by an alien, a foreign corporation or a foreign government.

The Authority is filing this application on its own behalf and is not acting as agent or representative of any other person.

4. Summary of the Project

On June 29, 1962, the Authority and the Nuclear Fuel Services, Inc. (hereinafter referred to as "NFS") entered into an Option Agreement by the terms of which NFS may enter into contractual and lease arrangements with the Authority in accordance with the Outline of Terms dated as of June 29, 1962 (the "Outline of Terms"). Under the Outline of Terms NFS will:

(a) lease from the Authority all or part of a State-owned site in Cattaraugus County, New York, comprising the Western New York Nuclear Service Center (hereinafter referred to as the "Site");

(b) construct for its own account at the

Site a plant for the processing of irradiated fuel elements (the "Plant");

(c) construct for the Authority at the Site irradiated fuel receiving and high level waste storage facilities (the "Storage Facilities"), which form an integral part of the complex necessary for the processing of irradiated fuel elements, as well as facilities for the burial of low level nuclear waste, fencing and other Site improvements; and

(d) operate the Plant, Storage Facilities and the other improvements at the Site.

Copies of the contractual and lease arrangements which the Authority and NFS propose to enter into will be filed with the Commission by amendments to this application.

Information pertaining to this project, including the option agreement executed by the Authority and NFS on June 29, 1962, has previously been submitted to the Atomic Energy Commission by NFS in its "Application for Construction Permit and License for a Spent Fuel Processing Plant", dated July 25, 1962, as subsequently amended (the "NFS Application").

5. Licenses Requested

Under the Outline of Terms,

(a) NFS will be responsible for satisfying all requirements of the Commission with respect to the construction of the Plant and Storage Facilities, irrespective of ownership, and, at least initially, will be responsible for satisfying all requirements of the Commission with respect to the operation of the Plant and Storage Facilities;

(b) NFS may at its discretion, but subject to the conditions contemplated by the Outline of Terms, turn over to the Authority, and the Authority will assume, responsibility for the maintenance of the high level waste storage facilities; and

(c) the Authority may, upon the happening of certain events specified in the Outline of Terms, assume responsibility for the construction or operation, or both, of the Plant, the Storage Facilities, and the facilities for the burial of low level nuclear waste, or any of them.

The Authority, in its capacity as prospective holder of the Site and Storage Facilities in the name of the State, and, in accordance with the Outline of Terms, prospective lessor of the Site and

Storage Facilities under a lease with NFS calling for the operation by NFS of the Plant and the Storage Facilities at the Site, respectfully requests the following licenses:

(a) A construction permit, issued under Section 185 of the Act, authorizing the Authority

(i) to construct the Storage Facilities at the Site for the Authority's account, through arrangements with NFS and as contemplated in the NFS Application, and

(ii) insofar as may be required by the Act and pertinent regulations of the Commission, to permit NFS to construct the Plant at the Site for the account of NFS in accordance with the NFS Application.

(b) A license, issued under Section 104(b) of the Act, authorizing the Authority

(i) to acquire, possess and use the Storage Facilities at the Site through arrangements with NFS and as contemplated in the NFS Application, and

(ii) insofar as may be required by the Act and pertinent regulations of the Commission, to permit NFS to acquire, possess and

use the Plant at the Site in accordance with the NFS Application.

Said license is requested for a period of forty (40) years, or such longer period as the Commission may determine.

(c) Such special nuclear, source and by-product material licenses as may be necessary or appropriate in connection with the powers and responsibilities of the Authority arising from its holding of the Site in the name of the State and from the acquisition, possession, use and storage of radioactive materials at the Site.

The licenses issued to the Authority as requested above should, to the extent appropriate,

(x) condition the exercise of the authorizations granted therein upon the satisfaction by NFS of all applicable financial and technical requirements of the Commission and the issuance to NFS of the licenses necessary to permit NFS to perform as contemplated in such licenses to the Authority; and

(y) provide that the Authority, in the event NFS, for any reason whatsoever, fails, or is unable or unwilling to perform as contemplated in such license of the Authority, may substitute another person

or persons (including itself) so to perform, provided such other person or persons are licensed by the Commission so to perform.

The Authority further respectfully requests that all licenses pertaining to the project issued to either NFS or the Authority clearly reflect the basic responsibilities for satisfying Commission regulatory requirements to be imposed upon, and assumed by, NFS, as contemplated in the Outline of Terms.

6. Financial Qualifications

Pursuant to Section 6 of Chapter 133 of the Laws of New York of 1962, the sum of $9,300,000 was appropriated to the Authority for use for its corporate purposes. The Authority will use $8 million of the funds provided by that appropriation for its expenditures in connection with the project under the proposed contractual and lease arrangements between the Authority and NFS as contemplated in the Outline of Terms, under which the cost to the Authority of its participation in the project will be guaranteed by NFS not to exceed $8 million. The payments to be

made to the Authority by NFS for its lease of the Site and Storage Facilities and for the maintenance, surveillance, insurance and tank replacement costs related to the perpetual storage of radioactive wastes will be fully set forth in the contractual and lease arrangements between the Authority and NFS to be filed by amendment to this application.

7. Technical Qualifications

Under the proposed contractual and lease arrangements between the Authority and NFS, as contemplated in the Outline of Terms, NFS will bear initial responsibility for the construction and operation of the Plant and the Storage Facilities at the Site. In view of this fact and in view of the nature of the licenses sought by the Authority in this application, it is the belief of the Authority that, by virtue of such contractual and lease arrangements, the Authority will possess adequate technical qualifications.

8. Completion Date

The earliest date for completion of construction of the Plant and Storage Facilities is January 1, 1965 and the latest date for completion is December 31, 1965.

9. Technical Information

NFS set forth in Part B of the NFS Application, dated July 25, 1962, what was stated in Part A of the NFS Application to be "all of the technical information hazards summary report required under Section 50.34 of Part 50 of the Commission's regulations contained in Title 10 of the Code of Federal Regulations." The Authority hereby incorporates by reference the technical information in said Part B and in the amendments thereto to and including December 10, 1962, as filed by NFS.

10. Allocation of Special Nuclear Material

No allocation of special nuclear material to the Authority will be required.

11. Security Agreement

The Authority agrees that it will not permit any individual to have access to restricted data until the Civil Service Commission shall have made an investigation and report to the Commission on the character, associations and loyalty of such individual and the Commission shall have determined that permitting such person to have access to restricted data will not endanger the common defense and security.

12. Communications

Communications from the Commission to the Authority pertaining to this application should be sent to:

Oliver Townsend, Chairman, New York State Atomic Research and Development Authority, 230 Park Avenue, New York 17, New York.

A copy of all communications should be sent to Oscar M. Ruebhausen, Attorney for Applicant, c/o Debevoise, Plimpton, Lyons & Gates, 320 Park Avenue, New York 22, New York.

13. Consolidation of Proceedings

In view of the relationship between the licenses sought by the Authority and the licenses sought by NFS in its previously identified application dated July 25, 1962, as amended, the Authority respectfully requests that the Commission, as permitted by Section 2.716 of the Commission's regulations, consolidate the two proceedings initiated by the applications filed by NFS and the Authority, respectively. The Authority believes, and requests the Commission to find, that such consolidation will be conducive to the proper dispatch of the Commission's business and to the ends of justice.

Wherefore, the Authority requests the Commission to issue to the Authority the licenses set forth in paragraph 5 above.

Respectfully submitted,

NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY

By OLIVER TOWNSEND
Chairman

STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

On the 29th day of January, 1963, before me personally came OLIVER TOWNSEND, to me known, and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

LOUIS H. KURRELMEYER
Notary Public

LOUIS H. KURRELMEYER
Notary Public, State of New York
No. 31-7387150
Qualified in New York County
Commission Expires March 30, 1964

CHAPTER 210

AN ACT to amend the public authorities law, in relation to crea New York state atomic research and development authority for the of encouraging the maximum development and use of atomic en peaceful and productive purposes within the state and providing powers of such authority

Became a law March 27, 1962, with the approval of the Governor. by a majority vote, three-fifths being present

The People of the State of New York, represented in Senate and Ass do enact as follows:

Section 1. Legislative findings and declaration of policy. legislature hereby finds, determines and declares:

1. That the maximum development and use within the sta atomic energy for peaceful and productive purposes, consi with the health and safety of the public, will promote the s economic growth and will be in the best interests of the h and welfare of the state's population.

2. That the encouragement of such development and use req action by the state in the provision of services required by i trial, commercial, medical, scientific, educational and governm organizations.

3. That such encouragement further requires action by the in conducting, sponsoring, assisting and fostering progra research and development in the methods of production an of atomic energy as well as in accumulating and dissemin pertinent information.

4. That such state action can most effectively and appropri be accomplished by a public benefit corporation.

It is hereby declared to be the policy of the state to encou through the public benefit corporation hereinafter created. maximum development and use within the state of atomic e for peaceful and productive purposes.

§ 2. The public authorities law is hereby amended by a to article eight thereof a new title, to be title nine, to re follows:

TITLE 9

NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMEN AUTHORITY

EXPLANATION — Matter in *italics* is new; matter in brackets [ ] is old law to be

§ 1850. Short title. This title may be cited as the "New York state atomic research and development authority act."

§ 1851. Definitions. As used or referred to in this title, unless a different meaning clearly appears from the context:

1. "Atomic energy" shall mean all forms of energy released in the course of nuclear fission, nuclear fusion or other nuclear transformation.

2. "Authority" shall mean the New York state atomic research and development authority created by section one thousand eight hundred fifty-two of this title.

3. "Bonds" and "notes" shall mean such bonds and notes as are issued by the authority pursuant to this title.

4. "Comptroller" shall mean the comptroller of the state.

5. "Person" shall mean any natural person, firm, association, public or private corporation, organization, partnership, trust, estate, or joint stock company, or any political subdivision of the state, or any officer or agent thereof.

6. "Real property" shall mean lands, waters, rights in lands or waters, structures, franchises, improvements and interests in land, including lands under water and riparian rights, and any and all other things and rights usually included within said term and includes also any and all interests in such property less than full title, such as easements permanent or temporary, rights-of-way, uses, leases, licenses and all other incorporeal hereditaments in every estate [illegible]rest or right, legal or equitable.

7. "State" shall mean the state of New York.

8. "State agency" shall mean any officer, department, boa commission, bureau, division, corporation, agency or instrum tality of the state.

9. "Superintendent" shall mean the superintendent of pul works of the state of New York.

§ 1852. New York state atomic research and development auth ity. 1. There is hereby created the "New York state atom research and development authority". The authority shall be body corporate and politic, constituting a public benefit corpora tion. Its membership shall consist of the director of the state offic of atomic development and two members to be appointed by th governor, by and with the advice and consent of the senate.

2. The members first appointed by the governor shall serve fo terms ending April first, nineteen hundred sixty-five and ninetee hundred sixty-eight, respectively. Persons appointed by the gov ernor for full terms as their successors shall serve for terms of si years each commencing as of April first. In the event of a vacanc occurring in the office of a member appointed by the governor, b death, resignation or otherwise, the governor shall appoint a suc cessor, by and with the advice and consent of the senate, to serv for the balance of the unexpired term.

3. The director of the state office of atomic development sha serve as chairman and shall be the chief executive officer of th authority. He shall be primarily responsible for the discharge o the executive and administrative functions of the authority. H shall not engage in any business, vocation or employment oth than that of serving as chairman, except as director of the stat office of atomic development or as an advisor or consultant to oth agencies of the state, the federal government, or interstate orga izations of which the government of the state is a member.

4. The members shall serve without compensation, but eac member, including the chairman, shall be entitled to reimburse ment for his actual and necessary expenses incurred in th performance of his official duties.

5. Any member (except the chairman) may engage in privat employment, or in a profession or business, subject to the limita tions contained in sections seventy-three and seventy-four of th public officers law. The authority shall, for the purposes of such sections, be a "state agency" and such members shall be "officers" of the agency for the purposes of said sections.

6. Notwithstanding any inconsistent provisions of law, genera special or local, no officer or employee of the state, or of any civi division thereof, shall be deemed to have forfeited or shall forfei his office or employment by reason of his acceptance of membe ship on the authority; provided, however, a member who hold such other public office or employment shall receive no additiona compensation or allowance for services rendered pursuant to thi

article, but shall be entitled to reimbursement for his actual and necessary expenses incurred in the performance of such services.

7. The governor may remove any member appointed by the governor for inefficiency, neglect of duty or misconduct in office after giving him a copy of the charges against him, and an opportunity to be heard, in person or by counsel, in his defense, upon not less than ten days' notice. If any member shall be so removed, the governor shall file in the office of the department of state a complete statement of charges made against such member, and his findings thereon, together with a complete record of the proceedings. The holding of office by the director of the state office of atomic development shall continue to be governed by the provisions of section four hundred fifty-three of the executive law.

8. The powers of the authority shall be vested in and exercised by a majority of the members.

9. The authority may appoint such persons to serve as officers, agents or employees of the authority as it may deem advisable and may prescribe their duties and fix their compensation, subject to the civil service law and the rules and regulations of the civil service commission of the state.

10. The authority may appoint one or more advisory committees consisting of not more than seven members each to consider and advise the authority upon all matters submitted to them by the authority and to recommend to the authority such changes in the administration of this title and the operations of the authority as the advisory committee may deem desirable. Members of advisory committees shall serve without salary for such terms, not to exceed four years, as the authority may determine, and shall be entitled to reimbursement for their actual and necessary travel expenses incurred in the performance of their official duties.

§ 1853. Approval power of the governor. 1. No action taken at any meeting of the authority shall have force or effect until the governor shall have an opportunity to approve or veto the same.

2. For the purpose of procuring such approval or veto, the authority shall by rule designate an officer of the authority to transmit to the governor at the executive chamber in Albany a certified copy of the minutes of every meeting of the authority as soon after the holding of such meeting as such minutes can be written out. The governor shall, within fifteen days after such minutes shall have been delivered to the executive chamber as aforesaid, cause the same to be returned to the authority either with his approval or with his veto of any action therein recited as having been taken, provided, however, that if the governor shall not return the said minutes within the said period then at the expiration thereof any action therein recited shall have full force and effect according to the wording thereof.

3. If the governor within the said period returns the said minutes with a veto against any action recited therein, then such action shall be null and void.

4. The governor may by order filed with the authority r the authority from the duty of procuring his approval of its upon any particular matter or class of matters, and thereupo authority shall be relieved from reporting the same to him.

§ 1854. Purposes and specific powers of the authority. purposes of the authority shall be to encourage and cooperat the maximum development and use of atomic energy for peac and productive purposes within the state. In carrying out s purposes, the authority shall, with respect to the activities specif have the following powers:

1. Research and development. To conduct, sponsor, assist a foster programs of research and development in the methods production and use of atomic energy, including the power establish, acquire, operate, develop and manage facilities theref

2. The provision of services. To provide services required for development and use of atomic energy by the industrial, co mercial, medical, scientific, educational and governmental organi tions within the state, including the power to establish, acq and develop facilities therefor not otherwise available within state, and to operate and manage such facilities.

3. The dissemination of information. To accumulate and seminate information relating to the development and use of ato energy, including the power to conduct, sponsor, assist and fos studies and surveys, and publish the results thereof.

In exercising the powers granted by this title, the autho shall, insofar as practicable, cooperate and act in conjunction u industrial, commercial, medical, scientific and educational org izations within the state, and with agencies of the federal gov ment, of the state and its political subdivisions, of other states, joint agencies thereof.

In carrying out its corporate purposes and in exercising powers granted by this title, the authority shall be regarded performing a governmental function.

§ 1855. General powers of the authority. Subject to the o provisions of this title and the provisions of any contract with b holders or noteholders, the authority shall have the follow powers in addition to any powers specifically conferred upon authority elsewhere in this title:

1. To sue and be sued.

2. To have a seal and alter the same at pleasure.

3. To make and alter by-laws for its organization and int management.

4. To make rules and regulations governing the exercise o corporate powers and the fulfillment of its corporate pur under this title, which shall be filed with the department of s in the manner provided by section one hundred two of executive law.

5. To purchase, receive, lease, or otherwise acquire and hold in the name of the state, and to sell, convey, mortgage, lease, pledge or otherwise dispose of, upon such terms and conditions as the authority may deem advisable, real or personal property, together with such rights and privileges as may be incidental and appurtenant thereto and to the use thereof, including but not restricted to, any real or personal property acquired by the authority in the satisfaction of obligations contained in contracts, leases or other arrangements.

6. To enter into contracts, leases or other arrangements providing for the establishment, operation, development and management of any property or facility under the jurisdiction of the authority.

7. To enter into contracts, leases or other arrangements permitting any person to use any property or facility under the jurisdiction of the authority; permitting such person to build or add facilities or improvements upon such property or facility; and providing, at the discretion of the authority, for the acquisition by the authority of any such facilities or improvements built or added by such person, upon such terms and conditions as the authority may deem advisable.

8. To sell or otherwise make available, upon such terms and conditions as the authority may deem advisable, any product, by-product or service produced in or provided by any facility under its jurisdiction.

9. To fix and collect fees, rentals and charges for the use of any property or facility under its jurisdiction, or for the sale of any product, by-product or service produced in or provided by any such facility, and to establish the rights and privileges created upon payment thereof. Such fees, rentals and charges shall be established by the authority so as to produce revenues sufficient, together with any other funds available to the authority, to meet the expenses of maintenance and operation of the facilities of the authority, to repay any moneys repayable to the state, to fulfill the terms of agreements with the holders of its bonds, notes or other obligations, and to provide funds for such other corporate purposes as the authority may deem appropriate.

10. To enter into any contracts and to execute all instruments necessary or convenient for the exercise of its corporate powers and the fulfillment of its corporate purposes under this title.

11. To borrow money and to issue negotiable bonds, notes or other obligations and to provide for the rights of the holders thereof.

12. To enter into agreements to pay annual sums in lieu of taxes to any municipality or taxing district of the state in respect of any real property which is owned by the authority, leased by the authority to a person and located in such municipality or taxing district, provided, however, that the amount so paid for any year upon any such property shall not exceed the sum last paid as taxes

on such property to such municipality or taxing district prior the time of its acquisition by the authority.

13. To procure insurance, or obtain indemnification from federal government or other persons, against any loss in connecti with the assets of the authority and any liability in connecti with the activities of the authority, such insurance or indemnifi tion to be procured or obtained in such amounts, and from su sources, as the authority deems to be appropriate.

14. To accept any gifts or grants or loans of funds or proper or financial or other aid in any form from the federal governme or any agency or instrumentality thereof or from the state or fro any other source and to comply, subject to the provisions of th title, with the terms and conditions thereof.

15. To enter into any lands, waters or premises for the purpo of making borings, soundings, surveys or other investigatio necessary to the purposes of the authority or to public health a safety.

16. To engage the services of bond counsel, financial adviso accountants, engineers, attorneys and other private consultan on a contract basis for rendering professional and technic assistance and advice.

17. To do all things necessary or convenient to carry out corporate purposes and exercise the powers given and granted this title.

§ 1856. Acquisition of real property. 1. Upon determination the authority that any real property is necessary for its corpora purposes, the superintendent shall acquire the same in the na of the state by dedication, by agreement, by condemnation pursua to the condemnation law, or by appropriation in the manner p vided by section thirty of the highway law, and payment there shall be made by the authority from the proceeds of sale of bonds, notes or other obligations, or from other available mon therefor. The authority shall hold such property in the name of t state and shall have the right to possess and use for its corpor purposes, so long as its corporate existence shall continue, such real property and rights in real property so acquired.

2. At any time after this title shall become effective, the autho may, by resolution, assume jurisdiction over and hold in the na of the state all or any part of the real property acquired and h in the name of the state by the state office of atomic developme Upon the effective date of such resolution, the authority shall h any such real property in the name of the state and shall have right to possess and use for its corporate purposes, so long as corporate existence shall continue, any such real property.

§ 1857. Officers and employees; transfer, promotion and sen ity. 1. Officers and employees of state departments and agen may be transferred to the authority and officers and employees the authority may be transferred to state departments and agen

without examination and without loss of any civil service status or rights. No such transfer may, however, be made except with the approval of the head of the state department or division involved and the director of the budget and the chairman of the authority and in compliance with the rules and regulations of the state civil service commission.

2. Promotions from positions in state departments and agencies to positions in the authority, and vice versa, may be made from interdepartmental promotion lists resulting from promotion examinations in which both employees of the authority and employees of the state are eligible to participate.

3. In computing seniority for purposes of promotion or for the purposes of suspension or demotion upon the abolition of positions in the service of the authority or in the service of the state, in the case of an employee of the authority a period of prior employment in the service of the state shall be counted in the same manner as though such period of employment had been in the service of the authority, and in the case of an employee of the state a period of prior employment in the service of the authority shall be counted in the same manner as though such period of employment had been in the service of the state. For the purposes of the establishment and certification of preferred lists, employees suspended from the authority shall be eligible for reinstatement in the service of the state, and employees suspended from the service of the state shall be eligible for reinstatement in the service of the authority, in the same manner as though the authority were a department of the state.

§ 1858. Assistance by state officers, departments, boards, divisions and commissions. At the request of the authority, engineering and legal services for such authority shall be performed by the department of public works and the department of law, respectively, and all other state agencies shall upon request by the authority render services within their respective functions.

§ 1859. Deposit, investment and accounting of moneys of the authority. 1. All moneys of the authority, from whatever source derived, shall be paid to the commissioner of taxation and finance as agent of the authority, who shall not commingle such moneys with any other moneys. Such moneys shall be deposited in a separate bank account or accounts to be known as the "atomic research and development operating fund." The moneys in such fund may be expended for payment of any and all costs and expenditures as required for the corporate purposes of the authority; provided, until such time as the state of New York is reimbursed in full for all moneys repayable to the state by the authority, all expenditures from this fund shall be subject to the prior approval of the director of the budget of the state of New York. The moneys in such fund when made available shall be paid out on check of the commissioner of taxation and finance on requisition of t' chairman of the authority or of such other person

as the authority shall authorize to make such requisition. deposits of such moneys shall, if required by the commissione taxation and finance or the authority, be secured by obliga of the United States or of the state of New York of a market v equal at all times to the amount of the deposit and all banks trust companies are authorized to give such security for s deposits.

2. Notwithstanding the provisions of subdivision one of t section, the authority shall have power, subject to the appro of the commissioner of taxation and finance, to contract with holders of any of its bonds or notes, as to the custody, collecti securing, investment and payment of any moneys of the authori or of any moneys held in trust or otherwise for the payment bonds or notes or in any way to secure notes or bonds, and to ca out any such contract. Moneys held in trust or otherwise for payment of bonds or notes or in any way to secure notes or bon and deposits of such moneys may be secured in the same mann as moneys of the authority, and all banks and trust companies authorized to give such security for such deposits.

3. Any moneys of the authority not required for immediate may, at the discretion of the authority, be invested by the co missioner of taxation and finance in obligations of the state or of United States of America or obligations the principal and inter of which are guaranteed by the state or the United States America.

4. Subject to the provisions of any contract with bondhold and noteholders and to the approval of the comptroller, authority shall prescribe a system of accounts.

§ 1860. Bonds and notes. 1. The authority shall have the pow and is hereby authorized to issue at one time or in series from ti to time negotiable bonds and notes as, in the opinion of authority, shall be necessary to provide sufficient moneys achieving the authority's corporate purposes, including the esta lishment of reserves to secure the bonds and notes and the payme of interest on bonds and notes, which bonds and notes, howeve shall not exceed an aggregate principal amount of thirty milli dollars ($30,000,000), excluding bonds and notes issued to refu outstanding bonds and notes.

2. The authority shall have power from time to time to ren notes or to issue renewal notes for such purpose, to issue bonds pay notes, and, whenever it deems refunding expedient, to refu any bond by the issuance of new bonds, whether the bonds to refunded have or have not matured, and may issue bonds part to refund bonds then outstanding and partly for any other corp rate purpose of the authority. Bonds issued for refunding purpos shall be sold and the proceeds applied to the purchase, redempti or payment of the bonds to be refunded.

3. Except as may otherwise be expressly provided by authority, every issue of bonds or notes shall be general oblig

payable out of any moneys or revenues of the authority, subject only to any agreements with the holders of bonds or notes pledging any receipts or revenues.

4. Whether or not the bonds or notes are of such form and character as to be negotiable instruments under the terms of the negotiable instruments law (constituting chapter thirty-eight of the consolidated laws) the bonds or notes shall be and are hereby made negotiable instruments within the meaning of, and for all the purposes of, the negotiable instruments law, subject only to the provisions of the bonds for registration.

5. The bonds and notes shall be authorized by resolution of the authority, shall bear such date or dates and mature at such time or times as such resolution shall provide, except that notes and any renewals thereof shall mature within five years from their respective dates and bonds shall mature within forty years from their respective dates. The bonds and notes shall bear interest at such rate or rates, be in such denomination, be in such form, either coupon or registered, carry such registration privileges, be executed in such manner, be payable in such medium of payment at such place or places, and be subject to such terms of redemption as such resolution or resolutions may provide.

6. Bonds and notes shall be sold by the authority, at public or private sale, at such price or prices as the authority may determine. Bonds and notes of the authority shall not be sold by the authority at private sale unless such sale and the terms thereof have been approved in writing by the comptroller, where such sale is not to the comptroller, or by the director of the budget, where such sale is to the comptroller.

7. In the discretion of the authority any bonds or issue of bonds or notes or issue of notes may be secured by such resolution or by a trust indenture by and between the authority and a corporate trustee which may be any trust company or bank having the powers of a trust company in the state or by a secured loan agreement or other instrument. Such resolution, trust indenture, loan agreement or other instrument may contain any usual or customary provisions, covenants or limitations for bonds or notes of similar nature which shall be a part of the contract with the holders thereof, including such provisions for protecting and enforcing the rights and remedies of bondholders and noteholders as may be reasonable and proper and not in violation of law.

8. Any resolution or resolutions authorizing any notes or bonds or any issue thereof may contain provisions, which shall be a part of the contract with the holders thereof, as to:

(a) pledging all or part of the fees, charges, gifts, grants, rents, revenues or other moneys received or to be received and leases or agreements to secure the payment of the notes or bonds or of any issue thereof subject to such agreements with bondholders as may then exist;

(b) the rates of the fees or charges to be established, and the amounts to be [illegible]l in each year thereby and the use and disposition of the fees, charges, gifts, grants, rents, revenues or moneys received or to be received;

(c) the setting aside of reserves or sinking funds, and regulation and disposition thereof;

(d) limitations on the purpose to which the proceeds of sale any issue of notes or bonds then or thereafter to be issued may applied and pledging such proceeds to secure the payment of notes or bonds or of any issue thereof;

(e) limitations on the issuance of additional notes or bonds the terms upon which additional notes or bonds may be issued and secured; the refunding of outstanding or other notes or bonds

(f) the procedure, if any, by which the terms of any contract with bondholders or noteholders may be amended or abrogated the amount of notes or bonds the holders of which must consent thereto, and the manner in which such consent may be given;

(g) any other matters, of like or different character, which in any way affect the security or protection of the notes or bonds.

9. It is the intention hereof that any pledge made by the authority shall be valid and binding from the time when the pledge is made, that the moneys so pledged and thereafter received by the authority shall immediately be subject to the lien of such pledge without any physical delivery thereof or further act, and that the lien of any such pledge shall be valid and binding as against all parties having claims of any kind in tort, contract or otherwise against the authority irrespective of whether such parties have notice thereof. Neither the resolution nor any other instrument by which a pledge is created need be recorded.

10. Neither the members of the authority nor any person executing the bonds or notes shall be liable personally on the bonds or notes or be subject to any personal liability or accountability by reason of the issuance thereof.

11. Subject to such agreements with bondholders or noteholders as may then exist, the authority shall have power out of any funds available therefor to purchase bonds or notes at a price not exceeding (a) if the notes or bonds are then redeemable, the redemption price then applicable plus accrued interest to the next interest payment date thereon, or (b) if the notes or bonds are not then redeemable, the redemption price applicable on the first date after such purchase upon which the notes or bonds become subject to redemption plus accrued interest to said date. Bonds and notes so purchased shall thereupon be cancelled.

12. The state does hereby pledge to and agree with the holders of any bonds or notes that the state will not limit or alter the rights and powers vested in the authority by this title to fulfill the terms of any contract made by the authority with such holders or in any way impair the rights and remedies of such holders until such bonds and notes, together with the interest thereon, with interest on any unpaid installments of interest, and all costs and expenses in connection with any action or proceeding by or

behalf of such holders, are fully met and discharged. The authority is authorized to include this pledge and agreement of the state, insofar as it refers to holders of any bonds or notes, in any contract with such holders.

§ 1861. Exemption from taxation of the property and income of the authority. The property of the authority and its income and operations shall be exempt from taxation.

§ 1862. Exemption from taxation of bonds and notes. The state covenants with the purchasers and with all subsequent holders and transferees of bonds and notes, in consideration of the acceptance of and payment for the bonds and notes, that the bonds and notes and the income therefrom, and all moneys, funds and revenues pledged to pay or secure the payment of such bonds and notes shall at all times be free from taxation, except for estate and gift taxes and taxes on transfers.

§ 1863. Bonds and notes legal investments for fiduciaries. The bonds and notes are hereby made securities in which all public officers and bodies of the state and all municipalities and municipal subdivisions, all insurance companies and associations and other persons carrying on an insurance business, all banks, bankers, trust companies, savings banks and savings associations, investment companies and other persons carrying on a banking business, all administrators, guardians, executors, trustees and other fiduciaries, and all other persons whatsoever who are now or who may hereafter be authorized to invest in bonds or other obligations of the state, may properly and legally invest funds including capital in their control or belonging to them. Notwithstanding any other provisions of law, the bonds and notes of the authority are also hereby made securities which may be deposited with and may be received by all public officers and bodies of this state and all municipalities and municipal subdivisions for any purpose for which the deposit of bonds or other obligations of the state is now or may hereafter be authorized.

§ 1864. Right of state to require redemption of bonds. Notwithstanding and in addition to any provisions for the redemption of bonds which may be contained in any contract with the holders of the bonds, the state may, upon furnishing sufficient funds therefor, require the authority to redeem, prior to maturity, as a whole, any issue of bonds on any interest payment date not less than twenty years after the date of the bonds of such issue at one hundred five per cent of their face value and accrued interest or at such lesser redemption price as may be provided in the bonds in case of the redemption thereof as a whole on the redemption date. Notice of such redemption shall be published in at least two newspapers published and circulating respectively in the cities of Albany and New York at least twice, the first publication to be at least thirty days before the date of redemption.

§ 1865. Rights and remedies of bondholders and noteholders. The holders of bonds and notes shall have the following rights and remedies, subject to the terms of the resolution authorizing such bonds and notes or any trust indenture, secured loan agreement or other instrument related thereto:

1. In the event that the authority shall default in the payment of principal of or interest on any issue of bonds or notes after the same shall become due, whether at maturity or upon call for redemption, and such default shall continue for a period of thirty days, or in the event that the authority shall fail or refuse to comply with the provisions of this title, or shall default in any contract made with the holders of any issue of bonds or notes, the holders of twenty-five per centum in aggregate principal amount of the bonds or notes of such issue then outstanding, by instrument or instruments filed in the office of the clerk in the county of Albany and approved or acknowledged in the same manner as a deed to be recorded, may appoint a trustee to represent the holders of such bonds or notes for the purposes herein provided.

2. Such trustee may, and upon written request of the holders of twenty-five per centum in principal amount of such bonds or notes then outstanding shall, in his or its own name

(a) by mandamus or other suit, action of proceeding at law or in equity enforce all rights of the bondholders or noteholders, including the right to require the authority to collect fees, rentals and charges adequate to carry out any agreements with the holders of such bonds or notes and to perform its duties under this title;

(b) bring suit upon such bonds or notes;

(c) by action or suit in equity, require the authority to account as if it were the trustee of an express trust for the holders of such bonds or notes;

(d) by action or suit in equity, enjoin any act or things which may be unlawful or in violation of the rights of the holders of such bonds or notes;

(e) declare all such bonds or notes due and payable, and if all defaults shall be made good then with the consent of the holders of twenty-five per centum of the principal amount of such bonds or notes then outstanding, to annul such declaration and its consequences.

3. Such trustee, whether or not the issuance of bonds or notes represented by such trustee had been declared due and payable, shall be entitled as of right to the appointment of a receiver of any property of the authority, the fees, rentals, charges or other revenues of which are pledged for the security of the bonds or notes of such issue and such receiver may enter and take possession of such property, or any part or parts thereof and operate and maintain the same and receive all fees, charges, rentals and other revenues thereafter arising therefrom and exercise such other powers of the authority as the court may deem advisable and

erform the public duties and carry out the agreements and obliga-ions of the authority under the direction of the court. In any uit, action or proceeding by the trustee the fees, counsel fees and xpenses of the trustee and of the receiver, if any, shall constitute axable disbursements and all costs and disbursements allowed by he court shall be a first charge on any fees, charges, rentals and ther revenues derived from such properties.

4. Such trustee shall in addition to the foregoing have and ossess all of the powers necessary or appropriate for the exercise f any functions specifically set forth herein or incident to the eneral representation of bondholders or noteholders in the enforce-ient and protection of their rights.

5. The supreme court shall have jurisdiction of any suit, action r proceeding by the trustee on behalf of such bondholders or oteholders. The venue of any such suit, action or proceeding shall e laid in the county of Albany.

6. Before declaring the principal of bonds or notes due and pay-ble, the trustee shall first give thirty days' notice in writing to he governor, to the authority, to the comptroller and to the ttorney-general of the state.

§ 1866. State not liable on bonds and notes. The bonds and notes hall not be a debt of the state of New York nor shall the state be able thereon and such bonds and notes shall contain on the face hereof a statement to that effect.

§ 1867. Inconsistent provisions of other acts. Insofar as the rovisions of this title are inconsistent with the provisions of any ther act, general or special, the provisions of this title shall be ontrolling, provided, however, nothing contained in any provision f this title shall be construed to relieve the authority of the obliga-ion on its part to comply with the provisions of article nine of he public authorities law in force on the effective date of this itle, including the obligation to submit an annual report as pecified therein.

§ 1868. Termination of the authority. The authority and its orporate existence shall continue until terminated by law, pro-ided, however, that no such law shall take effect so long as the uthority shall have bonds, notes or other obligations outstanding. pon termination of the existence of the authority all its rights, roperty, assets and funds shall pass to and be vested in the state. or the purposes of this section, any appropriation or advance ade to the authority by the state, which has not been repaid, hall not be deemed to be an outstanding obligation of the uthority.

§ 1869. Title not affected if in part unconstitutional or ineffective. f any subtitle, section, subdivision, paragraph, sentence, clause r provision of this title shall be unconstitutional or be ineffective n whole or in part, to the extent that it is not unconstitutional or neffective, it shall be valid or effective and no other subtitle,

section, subdivision, paragraph, sentence, clause or provision shall on account thereof be deemed invalid or ineffective.

§ 3. This act shall take effect April first, nineteen hundred sixty-two.

STATE OF NEW YORK,
Department of State, } *ss:*

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

CAROLINE K. SIMON,
Secretary of State

CERTIFICATE OF SERVICE

The undersigned, Oscar M. Ruebhausen, Attorney for the Applicant, the New York State Atomic Research and Development Authority, does hereby certify that he caused the attached Application, before the United States Atomic Energy Commission, for licenses as therein set forth, dated January 29, 1963, to be filed and served as follows:

1. Three fully signed originals executed by the Chairman of the Authority, together with nineteen conformed copies to be delivered today in person at the Commission's offices, 1717 H Street N. W., Washington, D. C., addressed to the attention of the Division of Licensing and Regulation; and

2. One conformed copy to be deposited today in the United States mail properly stamped and addressed to each of the following:

(a) E. Scott Smith, County Clerk
Cattaraugus County
Little Valley
New York

(b) Bernhard G. Bechhoefer, Esq.
Attorney for Nuclear Fuel Services, Inc.
816 Connecticut Avenue, N.W.
Washington 6, D. C.

(c) Mr. T. C. Runion, President
Nuclear Fuel Services, Inc.
P. O. Box 218
Erwin, Tennessee

/s/ Oscar M. Ruebhausen
Oscar M. Ruebhausen

Dated: January 30, 1963

02/14/63 SUB. TO
PART A OF POL.

Law Offices
Scharfeld, Beechhoefer, Baron & Stambler
5th Floor, 1710 H Street, N.W.
Washington 6, D.C.

Arthur W. Scharfeld
Bernhard G. Beechhoefer
Theodore Baron
Arthur Stambler

Telephone
298-6030

February 14, 1963

Mr. T. C. Runion
Nuclear Fuel Services, Inc.
212 Carr Building
910 17th Street, N. W.
Washington 6, D. C.

Dear Charlie:

The following items have not yet been submitted in Part A of the License Application:

1. Annex 2 - The additional agreements with ARDA. (These should be supplied as soon as possible.)

2. Annex 5 - Arrangements for bank loans and board resolutions of AMF and Grace authorizing equity investments. (The bank arrangements should be submitted as soon as we receive them. If the Grace Board resolution is not available on March 4, we can stipulate that it be placed in the record at a later date.)

3. Annex 7 - Pro-forma consolidated balance sheets, profit statements and cash flow of NFS. (Mr. Cecil said this would be available immediately and we can file it as soon as we receive it.)

4. Annex 12 - Bechtel contract. (This should be supplied as soon as you receive it. The Division of Licensing and Regulation wishes a financial statement of Bechtel which should be easily obtainable. There are probably two dozen such statements already on file at the Commission in connection with other licenses.)

The question of the price guarantee in the Bechtel contract raises a fundamental issue relating to the financial responsibility of the Applicant. If the Bechtel contract covered the entire cost of the project this issue would disappear. However, if the Bechtel contract guarantees only $20,000,000 of the construction and there is $3,000,000 subject to an override, it will be necessary to present some material to prove that the override could not be in excess of the 50% which we are estimating.

The absence of the Bechtel contract and this supplementary information together with the absence of Annex 7 make it probable that the Commission will not make a finding of financial responsibility at the hearing on March 4. We have pointed out previously the strong possibility that the hearing might be continued to Washington where the financial showing would be made. Such a continuance, however, would have one undesirable aspect. It would give more opportunity for adversary intervention which would upset the entire procedures. Therefore we feel that this should be avoided if possible. It may not be possible since in fact the hearing board relies entirely upon a Staff report in determining financial responsibility and it may even now be too late to give the Staff the necessary information.

All of this underlies the necessity of having Annex 7, Annex 12, and in connection with Annex 12, the information to breach the gap between the Bechtel guarantee and the cost of the rest of the plant, for filing as soon as possible.

Sincerely,

Bernhard G. Bechhoefer

BGB:djt

cc: Mr. Cecil

CONFORME
3.17

MEMORANDUM OF AGREEMENT, this 21st day of March, 1963, between the New York State Office of Atomic Development ("Office") and the New York State Atomic Research and Development Authority ("ARDA").

WHEREAS, the Office was created in 1959 and authorized, among other things, to coordinate the atomic energy activities of all agencies of the State and to locate and acquire within the State a site for concentrating and storing radioactive by-products; and

WHEREAS, the Legislature of the State then declared it to be one of the policies of the State to adapt its laws and procedures from time to time to meet new conditions in ways that will encourage the development of atomic energy, and private participation therein, while fully protecting the interest, health, and safety of the public; and

WHEREAS, in furtherance of this policy, ARDA was created in 1962 and authorized, among other things, to establish, develop, and manage facilities both for research and development in the production and use of atomic energy and for the provision of services not otherwise available within the State for the development

and use of atomic energy by public and private, non-profit and commercial organizations; and

WHEREAS, the economic development and use of atomic energy for the production of electric power requires the development and operation of a facility for the processing of the "spent" nuclear fuel so as (i) to recover the valuable, usable fissionable materials remaining in such spent fuel and (ii) to separate from the spent fuel the radioactive waste fission products with which the fissionable materials in the fuel are associated; and

WHEREAS, no such facility has yet been established in the United States to process on a regular commercial basis the spent fuels now being, and to be, removed from the increasing number of nuclear reactors producing electric power in the United States and abroad; and

WHEREAS, such a facility, if it is to be economically feasible and if it is to reduce to the minimum the health and safety risks involved in transportation of radioactive materials, should be located not only in reasonable proximity to the nuclear reactors from which

the spent fuel is taken, but also in close proximity to facilities for the storage and management of waste fission products; and

WHEREAS, the industrial northeastern portion of the United States, with its relatively high costs of conventional power, has been and will continue to be one of the primary areas in the United States for the development of nuclear reactors for electric power; and

WHEREAS, no site has yet been developed north of Tennessee and east of Idaho for the storage, retention and use of high level radioactive (and potentially valuable) waste fission products; and

WHEREAS, it is necessary to the development and use of atomic energy, and desirable for the economic growth of the State, that such a site be established and put into operation at an early date at an optimum location in the State; and

WHEREAS, it is the policy of the United States Atomic Energy Commission ("AEC") (reflected, for example, in Section 20.302 of the AEC's Regulations) that sites for the storage of high level waste fission products may not be privately owned but must be owned either by a

state or by the Federal Government; and

WHEREAS, the Office has acquired, in the name of the State, a site of some 3300 acres in Cattaraugus County ("Site") which the Office and ARDA and the AEC Regulatory Staff all deem suitable for such a spent fuel processing facility and the associated storage of waste fission products without undue hazard to the public, and ARDA is authorized, by § 1856 of Title 9, Article 8, of the Public Authorities Law of the State of New York (the "Authority's Act"), to assume jurisdiction over and hold such Site in the name of the State; and

WHEREAS, ARDA proposes (i) to establish and develop the Site to provide facilities for receiving and holding spent nuclear fuel, for the storage of waste fission products and for the storage of radioactive by-products ("Facilities"), (ii) to lease such portion of the Site as may be required to accommodate a privately operated spent fuel processing plant with access to the Facilities, and thus (iii) to provide essential services required for the further development and use of atomic energy in the State and throughout the nation; and

WHEREAS, the AEC staff has requested reasonable

assurance that the State will be responsible for the perpetual care of the Facilities; and

WHEREAS, the Office and ARDA desire to coordinate their respective responsibilities for the development of atomic energy and the protection of the public health and safety from radiation hazards;

NOW, THEREFORE, the Office and ARDA do agree:

1. ARDA shall, pursuant to the authority conferred upon it by the Authority's Act, and in compliance with the terms of all applicable laws, regulations and licenses (federal, state and local) for the protection of the public health and safety from radiation hazards,

(a) assume jurisdiction over the Site, by appropriate resolution, and hold such Site in the name of the State, pursuant to § 1856 of the Authority's act;

(b) proceed with the development of the Site so as to establish at the Site the Facilities to receive and hold spent nuclear fuels, waste fission products, and radioactive by-products;

(c) make the Site and Facilities available, on reasonable compensatory terms, both to an

operator of a spent fuel processing plant and to other industrial, commercial, medical, scientific, educational and governmental organizations within the State for atomic research, atomic development and other authorized atomic uses (it being understood that the use of the nuclear fuel receiving and high level waste storage facilities by others must be consistent with the operation of a spent fuel processing plant at the Site);

(d) maintain and monitor the Site, the Facilities and the related improvements and care for, manage, use and dispose of the waste products stored at the Site so as to protect the public health and safety from radiation hazards; and

(e) arrange for the establishment of maintenance, surveillance, liability protection and replacement funds in amounts deemed sufficient by ARDA to make available the sums which ARDA estimates may reasonably be required to provide perpetual care, maintenance, protection and replacement for the high and low level waste storage facilities at the Site.

2. The Office shall, subject to the availability

of funds,

(a) to the extent required by the terms of any applicable laws, regulations or licenses for the protection of the public health and safety from radiation hazards, take such action or render such assistance through the appropriate offices and agencies of the State as may be necessary for such protection of the public; and

(b) upon termination of the existence of ARDA, (i) reassume jurisdiction over and hold in the name of the State both the Site and all improvements thereon owned by the State, (ii) maintain and monitor the Site and the Facilities, and (iii) care for, manage, use and dispose of the radioactive wastes stored at the Site, all in accordance with applicable laws, regulations and licenses and so as to protect in perpetuity the public health and safety from any radiation hazards arising at the Site or resulting from the uses made of it.

3. The State, pursuant to its declared policy as expressed in its laws, has a paramount concern with the protection of the public health and safety from any radiation hazards arising at the Site or resulting

from its use. The State, also, by reason of its ownership of the Site, has a responsibility for the maintenance and monitoring of the Site, the Facilities and the related improvements, and for the maintenance and care of the stored wastes, all in accordance with applicable laws, regulations and licenses and so as to protect the public health and safety from radiation hazards arising at the Site or resulting from its use.

4. The Office at any time upon a failure by ARDA, after notice, to take such action as may be required by the terms of any applicable laws, regulations and licenses (federal, state or local) to protect the public health and safety from radiation hazards arising at the Site or resulting from its use, shall on behalf of the State, subject to the availability of funds, take such action itself through the appropriate agencies and offices of the State as it may deem proper.

5. In the event that either (i) the existence of ARDA is terminated or (ii) ARDA fails, after notice, to take the action required by any such applicable laws, regulations and licenses for the protection of the public health and safety from radiation hazards, and the State takes such action itself, then in either

case there shall be automatically transferred to the Office on behalf of the State the full management and disposition of the funds established by ARDA for maintenance, surveillance, liability protection and replacement in connection with the high and low level storage facilities at the Site and ARDA shall thereupon be released from any further responsibility with respect to the management and disposition of such funds.

6. This agreement does not, and shall not be deemed to, restrict or limit the powers and authority heretofore conferred by law on the Office and ARDA, respectively.

7. This agreement shall not be effective until ratified by a resolution adopted by ARDA (and approved by the Governor of the State of New York in accordance with § 1853 of the Authority's Act). Thereafter, this agreement shall be binding upon the parties hereto and upon their successors.

IN WITNESS WHEREOF, the Office and ARDA

have hereunto signed this agreement this 21st day of March, 1963.

NEW YORK STATE OFFICE
OF ATOMIC DEVELOPMENT

By: /s/ OLIVER TOWNSEND
Director

Attest:

/s/ J. D. ANDERSON

NEW YORK STATE ATOMIC RESEARCH
AND DEVELOPMENT AUTHORITY

By: /s/ WHITWORTH FERGUSON
Vice Chairman

Attest:

/s/ MAURICE AXELRAD
Secretary

Approved as to Form
Date 3/25/63
Louis J. LEFKOWITZ
Attorney General
By /s/
Assistant

Approved April 4, 1963
/s/ F. V. BURGESS
FOR THE STATE
COMPTROLLER

APPENDIX C 03/15/63

Appendix C

5c-201

AEC File Copy

CERTIFICATE

The undersigned, Maurice Axelrad, Secretary of the New York State Atomic Research and Development Authority (the "Authority"), a public benefit corporation, hereby certifies that the following is a complete and correct copy of resolution No. 43, duly adopted at a meeting of the Authority duly held on March 15, 1963, at which a quorum was present and acting throughout, and further certifies that said resolution has not been modified or revoked and continues in full force and effect:

> "43. RESOLVED, that the Vice Chairman be, and he hereby is, authorized to enter into an agreement with the Director of the Office of Atomic Development of the State of New York in the form in which it was submitted to the meeting, with such additional clauses therein as may be requested by the State Attorney General or by the State Comptroller as clauses customarily contained in agreements executed by agencies of the State of New York, provided that the Vice Chairman, upon the advice of counsel, approve such additions, which approval shall be conclusively evidenced by his signature of the agreement."

The undersigned hereby further certifies that the agreement, dated March 21, 1963, between the New York State Office of Atomic Development and the Authority, executed by their Director and Vice Chairman,

respectively (a copy of which is attached as Appendix B to Amendment No. 1 to the Authority's Application for Licenses) is in the form in which it was submitted to the meeting of the Authority on March 15, 1963 and referred to in the foregoing resolution No. 43.

IN WITNESS WHEREOF, I have hereunto set my hand and the seal of the Authority this 5th day of April, 1963.

Maurice Axelrad
Secretary

STATE OF NEW YORK
EXECUTIVE CHAMBER
ALBANY

NELSON A. ROCKEFELLER
GOVERNOR

So-201

April 4, 1963

Dear Mr. Townsend:

The minutes of the meeting of the New York State Atomic Research and Development Authority held on March 15, 1963, are herewith approved.

Sincerely,

Nelson A. Rockefeller

Mr. Oliver J. Townsend
Chairman
New York State Atomic Research
and Development Authority
230 Park Avenue
New York 17, New York

APPENDIX E 04/08/63

[Letterhead of
New York State
Atomic Research and Development Authority]

April 8, 1963

Mr. Robert Lowenstein
Director
Division of Licensing
and Regulation
Atomic Energy Commission
Washington 25, D. C.

In re: Nuclear Fuel Services, Inc., et al.
Applications for Licenses
AEC Docket No. 50-201

Dear Mr. Lowenstein:

This will refer to your letter of February 13, 1963, relating to the above proceeding, in which you express the position of the AEC staff "that the State of New York should furnish assurance in satisfactory form that the State will be responsible for the proper maintenance of the storage tanks and the burial site in perpetuity in accordance with the Atomic Energy Act of 1954, as amended, and the Atomic Energy Commission's regulations" in the event certain situations arise.

Since the receipt of your letter, my staff and counsel have discussed with you and your counsel the most appropriate way in which the requested assurance might be evidenced. In accordance with those conversations, an agreement, dated March 21, 1963, has been entered into between the New York State Office of Atomic Development and this Authority. A copy of this agreement, as executed by the parties, is enclosed herewith. Also enclosed is a copy of a letter from the Governor of the State of New York evidencing his approval of the minutes of the Authority authorizing the execution of this agreement.

As you will note, the agreement not only recognizes and accepts the responsibility of the State of New York for the perpetual maintenance and monitoring of the site in question and the wastes stored at the site, but, in addition, it provides a mechanism for discharging this basic responsibility of the State.

Contemporaneously with this letter to you, the Authority is amending its application for licenses in the above proceeding to submit, as a part of the formal record, a copy of the agreement in question, as executed.

In view of this formal assurance as to the State's responsibility, we believe that the position of the AEC Staff has been fully satisfied and, accordingly, that it will not be necessary nor desirable to impose any condition in the construction permit to be issued in the above proceeding requiring such assurance prior to the grant of an operating license.

Very truly yours,

Oliver Townsend
Chairman

[The attachments referred to above are filed herewith as Appendices B and D respectively.]

COPY

APPENDIX B

UNITED STATES
ATOMIC ENERGY COMMISSION

LICENSE AMENDMENT
FOR
SPECIAL NUCLEAR MATERIALS SAFEGUARDS

Pursuant to the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, Part 70, the following amendment to the license identified below is hereby issued, incorporating controls for the safeguarding of special nuclear material.

Licensees

Names and Addresses:

Nuclear Fuel Services, Inc.
Box 124
West Valley, New York
14171

and

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

License No. CSF-1 Amendment No. SG-1 Docket No. 50-201

CONDITIONS

1.0 FACILITY ORGANIZATION

1.1 The Plant Manager shall have the responsibility for developing, revising, implementing, and enforcing the nuclear material control procedures and managing an overall system of special nuclear material control.

1.2 Nuclear material control procedures and revisions thereto shall be approved by the Plant Manager. A manual containing all current nuclear material control procedures shall be maintained by the Technical Services Manager.

COPY

Superseded By Amendment 2 Issued 6/30/70

1.3 The Accountability Representative shall assure that the nuclear material control procedures are appropriately reflected in process specifications, manufacturing instructions, standard operating procedures, or similar detailed management instructions.

1.4 All delegations of safeguards responsibilities by the Plant Manager shall be in writing.

2.0 FACILITY OPERATION

2.1 Material Balance Areas (MBA's) shall be established by the Plant Manager.

2.2 The Processing Plant may be maintained as a single Material Balance Area on the basis that responsibility for the special nuclear material within the plant shall not be transferred.

2.3 All operations within the MBA shall be the responsibility of a single employee who shall also be responsible for the custody of special nuclear material within the MBA.

3.0 MEASUREMENTS AND STATISTICAL CONTROLS

3.1 The licensee shall determine the U-235, U-233, and/or Pu content of all receipts, shipments and measured discards. The U-235, U-233, and/or Pu content shall also be determined for all material inventoried. The limits of error* associated with these quantities shall be determined. Sufficient measurements shall be made to substantiate the stated quantities and associated limits of error.

3.2 A program of standardization and calibration of measurement equipment and analytical procedures shall be maintained to provide data to substantiate the limits of error associated with all measurements required for safeguards purposes.

* Limits of error as used herein means the boundaries within which the true (best) value of the parameter being measured lies with a probability of 95%.

3.3 All measurements required by this amendment shall be reviewed annually by the Accountability Representative, including a review of the quantitative calculation of limits of error of the measurement system. The Accountability Representative shall utilize data obtained through calibrations specified in Condition 3.2 to monitor performance of the measurement system to assure calculated limits of error are maintained between reviews. Records of reviews, calculations, and use of calibration data shall be kept.

3.4 After any physical inventory the material unaccounted for (MUF) and the limits of error associated with the material unaccounted for shall be computed promptly. The limits of error associated with MUF shall be calculated by statistically combining the limits of error determined for shipments, receipts, beginning inventory, ending inventory, and measured losses for the period since the last inventory.

3.5 If the quantity of MUF exceeds the associated limits of error, the licensee shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District I, Newark, New Jersey. The licensee shall investigate the MUF and notify the Division of Nuclear Materials Safeguards within thirty (30) days after the initial notice, specifying the probable reasons for the MUF and the corrective action taken or planned.

4.0 SHIPPING AND RECEIVING

4.1 Receipt of special nuclear material may be provisionally accepted at the Processing Plant at the amount shown on the nuclear material transfer document until fuel dissolution and input measurements are made. The book inventory and material transfer forms shall be adjusted to the amounts of special nuclear material measured as input.

4.2 All irradiated fuel assemblies and containers of ruptured or loose assemblies shall be piece counted and verified where practicable by serial number, if any, upon receipt.

4.3 At the end of each processing campaign the Accountability Representative shall compare the measured special nuclear material input of the campaign with the quantity reported by the shipper of the irradiated fuel. If the difference is greater than the combined limits of error of the NFS input measurements and the shipper's calculated or measured values, the shipper shall be notified and the difference investigated. Statistical analyses of past performance and measurement uncertainties shall be kept.

5.0 STORAGE AND INTERNAL TRANSFERS

5.1 A documented system of control over special nuclear material stored and processed within the facility shall be maintained which will provide knowledge of the location, and quantity of all material contained in discrete, identifiable items or containers and within the process.

5.2 In-Plant Transfer Forms shall be issued to document receipts to storage, removals from storage, transfers to waste storage, transfers to shipping containers and shipments.

5.3 Each In-Plant Transfer Form supporting a transfer of material shall be signed by the delegated individual.

6.0 INVENTORY

6.1 A complete physical inventory of all special nuclear material subject to this license shall be conducted at approximately six-month intervals, but in no case shall more than eight months elapse between inventories.

6.2 The physical inventory shall be conducted in accordance with Standard Procedures which shall:

6.2.1 specify the extent to which the plant is to shut down and clean out process equipment;

6.2.2 specify the extent to which the plant or areas thereof are to remain static during the inventory;

6.2.3 identify the basis for accepting for inventory purposes previously made measurements and their limits of error;

6.2.4 designate measurements to be made for inventory purposes to establish the quantity of material on inventory and its associated limits of error; and

6.2.5 identify the manner by which material on inventory will be listed to assure each item is inventoried and there are no duplications or omissions.

6.3 The book inventory shall be reconciled with and adjusted to the results of the physical inventory upon completion of the physical inventory.

6.4 Special physical inventories of the plant shall be conducted whenever there is reason to believe that the plant has experienced losses or gains that are different by a statistically significant amount from those expected.

7.0 RECORDS AND REPORTS

7.1 The licensee shall establish and maintain a records system which will provide sufficient information to maintain a material balance around the total plant. These records shall contain information pertaining to all receipts, shipments, measured discards, inventory, and MUF for each material balance. All entries in the records shall be supported by appropriate documents.

7.2 All measured discards and MUF shall be reported on a campaign basis by the Accountability Representative to the Plant Manager.

8.0 MANAGEMENT OF MATERIALS CONTROL SYSTEM

8.1 The Corporate Manager, Nuclear Material Control, shall conduct, at least once each year, an internal review of the nuclear materials control system, and report the findings to the Plant Manager.

8.2 An estimate of anticipated losses shall be prepared for each campaign, with the concurrence of the Accountability Representative, and shall be based on prior experience, throughput quantities and rates, etc. If losses exceed the estimate of those anticipated, they shall be investigated by the Accountability Representative and the results of his investigation shall be reported to the Plant Manager.

8.3 Any apparent loss of a discrete item or container of special nuclear material which cannot be resolved by an immediate investigation shall be reported to the Accountability Representative, who shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District I, Newark, New Jersey, and shall conduct an investigation of the loss. The Accountability Representative shall report the results of his investigation to the Plant Manager.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
R. F. [illegible]

Date of Amendment SEP 4 1969

Division of Nuclear Materials
Safeguards

[illegible]

[illegible]

NEW YO[illegible] AUTHORITY

DOCK[illegible]

[illegible]

PROVI[illegible] LICENSE

License No. CSF-1

Safeguards
Amendment No. 1

The Atomic Energy Commission (the Commission) has found that:

A. The information provided by the licensees in letters dated August 15, 196[illegible], March 6, 1969, and July 11, 1969, regarding the safeguarding of special nuclear material complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I;

B. The issuance of this amendment will not be inimical to the common defense and security, or to the health and safety of the public; and

C. Prior public notice of proposed issuance of this amendment is not required since the amendment does not involve significant hazard considerations different from those previously evaluated.

Accordingly, License No. CSF-1, issued to the Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority, is hereby amended as follows:

Add a new subparagraph 5.D to read as follows:

"D. Special Nuclear Material [illegible]

The controls for the safeguarding of special nuclear material subject to this license which are contained in Appendix B attached hereto are hereby incorporated in this license."

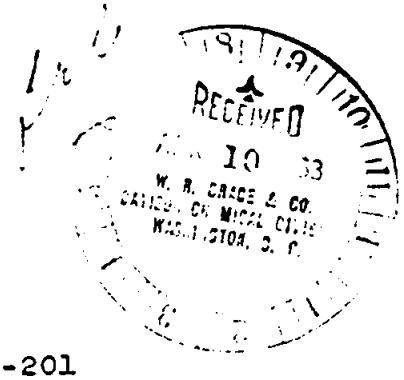
This amendment is effective as of the date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

[illegible]

R. P. Mischow, Director
Division of Nuclear Materials
Safeguards

Date of issuance: [illegible]



Before the
UNITED STATES ATOMIC ENERGY COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC.	)	Docket No. 50-201
and	)	
NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY	)	

NFS'
MOTION
FOR
EXPEDITED EFFECTIVE DATE
FOR INITIAL DECISION
AND PROVISIONAL CONSTRUCTION PERMIT

Nuclear Fuel Services, Inc. (NFS), co-applicant in the above-designated proceeding for a construction permit for a spent fuel reprocessing plant in Cattaraugus County, New York, herewith respectfully requests that the Commission take such procedural steps as are necessary to authorize the Atomic Safety & Licensing Board to make effective immediately, or as soon thereafter as applicable rules and policies permit--and, in any event, by or before April 30, 1963--its Initial Decision and such provisional construction permit as the Board may hereafter order be issued to NFS and to co-applicant ARDA herein. It is submitted that such Commission action would be in the public interest for compelling reasons, as follows:

1. The pending NFS application was filed on July 25, 1962 and, as amended, was (together with that of co-applicant ARDA) heard before an Atomic Safety and Licensing Board in public hearings at Olean, New York on March 4-5, 1963. Further hearing

on the sole issue of NFS' financial qualifications is now scheduled for April 19th. The participating parties in the hearing comprise the co-applicants and the AEC's Regulatory Staff, there being no intervention by any other party in the proceeding. The record of that hearing is now completed on all matters other than the issue of NFS' financial qualifications and the parties' filing of proposed findings and the proposed form of the provisional CP to be issued. Upon completion of the scheduled April 19th hearing, at which time it is anticipated that a stipulation will be entered concerning the matter of NFS' financial qualifications, the record of the hearing will be closed and it is hoped the Board's Initial Decision in the matter will then be issued.

2. It has been established, applicant respectfully submits, that there exists the requisite reasonable assurance that the proposed production facility can be constructed at the proposed site without any undue risk to the public health and safety. In addition, and more particularly with the Board's issuance of the provisional construction permit, favorable conclusions would be called for upon this as well as the other hearing issues on which the applications were heard. Such conclusions rest upon the applications themselves, including the NFS Safety Analysis, and the reports of the Advisory Committee on Reactor Safeguards, the AEC Staff's own Safety Analysis, as well as upon the evidentiary record made at the public hearing. Upon them, it is submitted, the Commission may and should find that all of the prerequisites to the issuance of an immediately effective provisional construction permit have been met.

3. It is essential that NFS be authorized to go forward on an effective construction permit so as to permit the actual commencement of construction in the field no later than May 1, 1963. This is particularly necessary to meet outstanding commitments and to take advantage of a limited construction season without undue risk of delaying the entire project for an inordinate period. Such a construction start-up is further required in order to meet the projected 1965 operational time schedule.

4. It is submitted that all of the requirements for an expedited and immediately effective Initial Decision are present in the instant matter. Upon the Board's issuance of its Initial Decision, it may and should find that no substantial question of fact, law or discretion has been presented by this Motion. Furthermore, the record herein clearly warrants the requested expedition. Finally, it is clear that failure to expedite the Initial Decision (and accordingly the denial of this Motion) will result in substantial economic injury to applicant as well as be detrimental to the public interest.

5. NFS recognizes that on April 3, 1963 the Commission published in the Federal Register its proposals for adoption of a new procedure providing for expediting initial decisions under certain circumstances. It is submitted that the instant Motion and the facts supporting it are fully consistent with the proposed new procedures as well as with those previously existing for an expedited effectiveness, particularly Rule 2.761. Accordingly,

the Commission may determine that such proposed new procedures should be applied here whereby the Board's Initial Decision would become effective ten (10) days after its issuance. Should such Initial Decision issue on April 19--at or immediately after the scheduled hearing session on that date--an order of the Board or the Commission making such Initial Decision final ten (10) days thereafter, or on April 29, would be sufficient in permitting field construction to start prior to the critical date of May 1. On the other hand, should the Initial Decision not be issued on April 19, or for any reason be delayed past April 20, then NFS would request that the Commission take or direct such action as would make the Initial Decision effective immediately or within such period of time which would still make it operative by or before April 30.

6. In view of the pendency of the proposed new rules, it is not wholly clear as to what internal procedures will be followed at the Commission in reviewing and passing upon the instant Motion. At this stage, however, it would appear appropriate that NFS request the Commission to enter an order authorizing the Atomic Safety and Licensing Board, in its discretion, to provide that any Initial Decision and Order for the issuance of a provisional CP in this proceeding shall become effective in 10 days--or, in the indicated circumstances by April 30--subject only to the possible filing of a petition for review under Rule 2.762 or the Commission's own motion within 30 (or 45) days.

Wherefore, the Commission should grant this Motion authorizing the Board in its discretion to make its Initial Decision and the provisional construction permit therein authorized effective immediately, or within 10 days and in all events by April 30, 1963.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By /s/ Arthur Stambler
Arthur Stambler

SCHARFELD, BECHHOEFER, BARON & STAMBLER
Its Counsel

1710 H Street, N. W.
Washington 6, D. C.
April 8, 1963

CERTIFICATE OF SERVICE

I, Arthur Stambler, attorney for applicant Nuclear Fuel Services, Inc. and admitted to practice before the Courts of this jurisdiction, herewith certify that I have this 8th day of April 1963, sent a copy of the foregoing Motion for Expedited Effective Date for Its Provisional Construction Permit, via regular United States mail, postage prepaid, to each of the following:

Troy B. Conner, Jr., Esq., and
Charles M. Farbstein, Esq.
c/o Atomic Energy Commission
Germantown, Maryland
Counsel for AEC Regulatory Staff

Mr. Oliver Townsend
230 Park Avenue
New York 17, New York
New York State Atomic Research & Development Authority and New York Office of Economic Development

Oscar M. Ruebhausen, Esq.
Debevoise, Plimpton, Lyons & Gates
320 Park Avenue
New York 22, New York
Counsel for New York State Atomic Research & Development Authority

Mr. Norman Fagnan
Supervisor, Town of Ashford
West Valley, New York

Mr. E. Scott Smith
County Clerk
Cattaraugus County
Little Valley, New York

/s/ Arthur Stambler
Arthur Stambler

NOTICE OF HEARING

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

IN THE MATTER OF	)	
	)	
NUCLEAR FUEL SERVICES, INC.	)	DOCKET NO. 50-201
AND	)	
NEW YORK STATE ATOMIC RESEARCH	)	
AND DEVELOPMENT AUTHORITY	)	

NOTICE

On March 4 and 5, 1963 a public hearing was held in this matter in Olean, New York. At the hearing the Applicant, Nuclear Fuel Services, Inc., did not submit evidence with respect to its financial responsibility and asked that it be permitted to do so at a later date. Notice is hereby given that a further public hearing in the matter will be held at 12:00 Noon on the 19th day of April 1963 at the Commission's Auditorium in Germantown, Maryland for the purpose of receiving evidence of the financial responsibility of the Applicant, Nuclear Fuel Services, Inc. At the conclusion of the hearing the findings and conclusions will be settled.

/s/ E. Riggs McConnell

E. Riggs McConnell
Chairman of the Atomic
Safety and Licensing Board

Issued:
April 4, 1963
Germantown, Maryland

12/04/63

Law Offices
Scharfeld, Bechhoefer, Baron & Stambler
5th Floor, 1710 H Street, N.W.
Washington 6, D.C.

Arthur W. Scharfeld
Bernhard G. Bechhoefer
Theodore Baron
Arthur Stambler

Telephone
298-6050

December 4, 1963

Mr. T. Charles Runion
Nuclear Fuel Services, Inc.
1730 K Street, N. W.
Tenth Floor
Washington 6, D. C.

Subject: NFS Construction Permit

Dear Charlie:

On November 29th the Atomic Safety and Licensing Board appointed to hear the NFS case, in accordance with our request, modified the construction permit (1) to delete paragraph 5 requiring proof of the final consummation of NFS loan arrangements; (2) modifying paragraph 2E so that the six-months' reports shall be for the periods ending on March 31 and September 30 and shall be filed within twenty days thereafter. Therefore the next report will be due on or before April 20, 1964.

* * * * * * * *

We were likewise informed on December 2nd that the Staff has recommended to the Commission that in determining the amount of fission products which NFS possesses in connection with the operation of the burial ground for low level wastes, no account shall be taken of wastes that have already been buried. If this decision is confirmed--and it probably will be--this means that the Commission will not obtain concurrent jurisdiction with the State of New York over the low level burial ground until spent fuel elements are delivered to the chemical processing plant for storage. A further decision--that the fissionable materials possessed by NFS in connection with the reprocessing plant would not be counted in computing the materials in connection with the operation of the low level burial grounds--would be required to eliminate ultimate AEC jurisdiction over the low level burial grounds. We hope that there will be such a decision.

* * * * * * * *

The Commission on November 25th in release #F240, of which you have a copy, prepared an outline for the conduct of proceedings by an Atomic Safety and Licensing Board. I call your attention to the section on pages 7 and 8, and in particular the last complete paragraph on page 8 dealing with intervention and limited

appearances. This fully sustains the position which we have taken with respect to the status of Eastman Kodak in the NFS case. While it will not prevent an intervention by Eastman at a later stage, it should prevent Eastman from contesting our license except on the basis of newly available evidence.

For your confidential information, the Staff wanted to go considerably farther along these lines. However, at the least this outline establishes that the hearings, while informal, are nevertheless administrative proceedings subject to definite rules and regulations.

Sincerely,

Bernhard G. Bechhoefer

Enclosure

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Copy of the minutes of a meeting of ARDA held on September 18, 1963 authorizing the execution and delivery on behalf of ARDA of the various agreements entered into by it, certified by Maurice Axlerad, Secretary of ARDA.	64
Opinion to the AEC, dated October 11, 1963, of Messrs. Debevoise, Plimpton, Lyons & Gates, counsel for ARDA, to the effect that the above-mentioned Lease, Facilities Contract and Waste Storage Agreement had been duly authorized by ARDA, have been duly executed by the duly authorized officers of ARDA and have been duly	65

NUCLEAR FUEL SERVICES, INC.
WASHINGTON, D.C. 20009

NFS

4

December 5, 1963

Mr. Robert Lowenstein, Director
Division of Licensing and Regulation
United States Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Lowenstein:

The Davison Chemical Division of W. R. Grace and Company presently holds licenses to receive, possess, use and transfer special nuclear and source material as set forth in Annex 1 hereto attached.

On July 25, 1962 Nuclear Fuel Services, Inc. applied to the Commission for a construction permit and license for a spent fuel processing plant, the said application receiving Commission Docket No. 50-201. Nuclear Fuel Services, Inc. is a Maryland corporation, the entire stock of which is owned by W. R. Grace and Company (80%) and American Machine & Foundry Company (20%). After appropriate proceedings and hearings, the Commission on April 30, 1963 issued a provisional construction permit to applicant Nuclear Fuel Services, Inc.

In the application for a construction permit and license Nuclear Fuel Services, Inc. stated "At an appropriate time requests will be submitted separate from this application for the transfer of present source and special nuclear material licenses for the Erwin, Tennessee facility from Grace to Applicant". For further detail reference is made to the said application.

W. R. Grace and Company and Nuclear Fuel Services, Inc. have mutually agreed that the Erwin facility of the Davison Chemical Division of W. R. Grace and Company should be transferred to Nuclear Fuel Services, Inc. on December 31, 1963, subject to the approval of the Atomic Energy Commission. The operating procedures and personnel of the Erwin facility will be the same after the transfer as before.

The transfer of the said facility at Erwin, Tennessee to Nuclear Fuel Services, Inc. was an integral part of the project for a spent fuel processing plant as submitted by Nuclear Fuel

Services, Inc. since such transfer added to he technical qualifications of Nuclear Fuel Services, Inc. (See Application, Part A, page 9 and Annex 8); and also to the financial qualifications of the applicant (See Application, Part A, page 8 and Annex 6 and Annex 7; Amendment No. 1 to Part A page 6 and Amended Annex 6; Amendment No. 2 to Part A and Amended Annex 7; Amendment No. 3 to Part A and Further Amended Annex 7).

It is submitted that the files and records of the Commission in the application of Nuclear Fuel Services, Inc. establish the technical and financial qualifications of Nuclear Fuel Services, Inc. and that the transfer is in accordance with the provisions of the Atomic Energy Act. Therefore pursuant to Commission regulations, W. R. Grace and Company and Nuclear Fuel Services, Inc. request the written consent of the Commission to the transfer of said licenses from W. R. Grace and Company Davison Chemical Division to Nuclear Fuel Services, Inc. effective on December 31, 1963.

Very truly yours,

W. R. GRACE AND COMPANY
Davison Chemical Division

By /s/ Robert D. Goodall
Robert D. Goodall
Executive Vice President

NUCLEAR FUEL SERVICES, INC.

By /s/ T. Charles Runion
T. Charles Runion
President

Law Offices
Scharfeld, Beechhoefer, Baron & Stambler
5th Floor, 1710 H Street, N.W.
Washington 6, D.C.

Arthur W. Scharfeld
Bernhard G. Beechhoefer
Theodore Baron
Arthur Stambler

Telephone
298-6030

January 13, 1964

Mr. T. C. Runion
Nuclear Fuel Services, Inc.
1730 K Street, N. W.
Washington, D. C., 20006

Dear Charlie:

The Division of Licensing and Regulation has now issued the amended construction permit to NFS to reflect the change in filing dates for the bi-annual reports which was previously ordered by the Commission. This also eliminated the typographical error in the recent Order which Beck discussed with you and Walt. As you will see from the enclosed copy of the Register, DL&R saved the Commission further embarrassment by never even referring to the error made in trying to correct the original error.

While a CP certificate of amendment should soon issue to NFS, we will keep the Federal Register statement in our files as formal documentation of the authorization.

Sincerely,

Arthur

Arthur Stambler

Enclosure

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

IN REPLY REFER TO:
Docket No. 50-201

OCT 21 1964

Dr. Walton A. Rodger
Nuclear Fuel Services, Inc.
Box 124
West Valley, New York 14171

Dear Dr. Rodger:

Your letter of October 7, 1964, requests that an AEC license be issued by January 1, 1965, authorizing receipt and storage of irradiated fuel and that a provisional facility operating license be issued in July 1965. In line with our conversations, and taking into account the information in your October 7 letter, we have prepared the attached tentative schedule reflecting the significant events leading to the issuance of these licenses. I am sure you understand that our ability to meet our part of the schedule depends largely on the timely filing by NFS of the submissions identified in the schedule as well as prompt and satisfactory resolution of substantive questions which may arise.

As you are aware, it is necessary that proof of financial protection be submitted by NFS prior to our issuance of a license for receipt and storage of irradiated fuel.

The proposed schedule assumes completion of construction in accordance with the dates in your letter of October 7, 1964, and satisfactory demonstration by appropriate test operations that the facility and plans for its operation conform to safety requirements.

Very truly yours,

A. E. Aikens, Jr., Chief
Irradiated Fuels Branch
Division of Materials Licensing

RECEIVED
OCT 23 1964
NFS

PROPOSED SCHEDULE OF REGULATORY ACTIONS
NUCLEAR FUEL SERVICES, INC.
DOCKET NO. 50-201

Oct. 30, 1964 - Completion of filing by Nuclear Fuel Services, Inc. of "Final Safety Analysis", including plans for pre-operational testing of plant systems and components, a description of management plans and controls for assuring safety in plant operations, and information concerning NFS's technical qualifications for operation of the facility.

Nov. 30, 1964 - Filing by NFS of proposed technical specifications.

Dec. 1964 - Filing by NFS of proof of financial protection and execution of indemnity agreement.

Jan. 1, 1965 - Completion of AEC staff analysis for receipt and storage of irradiated fuel at the plant site and for pre-operational testing with unenriched uranium. Issuance of Part 70, 40 and 30 license to NFS.

Feb. 15, 1965 - Completion of review and analysis of NFS "Final Safety Analysis" by the AEC staff.

March 1965 - ACRS consideration of NFS "Final Safety Analysis."

March 1965 - ACRS Report.

Apr. 1, 1965 - Completion of construction of the facility.

April 1965 - AEC Notice of Proposed Issuance of Provisional Operating License to NFS or, if necessary, AEC Notice of Public Hearing.

May-June 1965 - Period available for public hearing and Intermediate Decision and Order if it should be determined that a hearing will be necessary.

June 1965 - Completion of inspection by the Division of Compliance of those portions of the facility which have undergone pre-operational testing.

June 1965 - Administration of operator licensing examinations.

July 1965 - Issuance of provisional operating license for those sections of the facility in which pre-operational testing has been satisfactorily completed and which are not dependent on non-tested sections for safety.

4a

Law Offices
Scharfeld, Bechhoefer, Baron & Stambler
5th Floor, 1710 H Street, N.W.
Washington, D.C.

Telephone
298-6050

Arthur W. Scharfeld
Bernhard G. Bechhoefer
Theodore Baron
Arthur Stambler

November 30, 1964

Dr. Walton A. Rodger
Nuclear Fuel Services, Inc.
Post Office Box 124
Cattaraugus County
West Valley, New York

Subject: Part A: Information Subsequent to Construction Permit
Submission No. 1

Dear Walt:

After my telephone conversation with Stan Reese I got in touch with Al Aiken concerning the above submission. He reiterated that the technical qualifications of all of the personnel - not only those associated with advance fuel storage - would have to be submitted to the ACRS. He further stated, however, that it was immediately urgent to obtain the technical qualifications of the personnel that would be available to handle the advance fuel storage. This could be handled through a letter and would not require a formal submission with 53 copies. He further suggested that if the more elaborate submission were received by December 15 it would not hold up the licensing schedule. However, this later date should be considered a final deadline.

Sincerely,

Bernhard G. Bechhoefer

04/28/65 REQUEST
FOR AMEND.

4a

April 28, 1965

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

Attention: Mr. A. E. Aikens, Jr.

Docket: 50-201

Gentlemen:

Nuclear Fuel Services, Inc., West Valley, New York, hereby requests that its license to receive and store spent fuel elements applied for October 7, 1964, be amended to include the storage of ruptured fuel elements from the Dresden reactor in the containers in which they are shipped. The safety considerations associated with storage of this canned fuel that differ from standard storage of non-ruptured, non-canned elements are: first, radioactive gas could escape through the rupture; and second, spacing between fuel assemblies will be different in storage. Following is an analysis of these considerations.

The ruptured fuel to be stored is composed of both Type 1 and Type 2 Dresden assemblies. There will be up to 15 encapsulation containers containing from one to three fuel assemblies each. The encapsulation container that holds one assembly is shown in Stanray drawing SK-37-40-G. The container that holds three assemblies is shown in Stanray drawing SK-Y-56007. Prints of these drawings are attached.

A non-valved pigtail vent is located in the cover of each container and is best shown on drawing SK-37-40-G. This vent provides an outlet for radioactive gases as they are formed without restriction. The purpose of the pigtail is to make a torturous path for the water in the container to minimize water movement between the container and the pool. We have been advised by Commonwealth Edison that there is no gas coming from the containers in their pool as evidenced by the absence of bubbles emanating from them. However, should bubbles appear while in storage in the NFS pool, the portable hood, filter, vent system will be employed to remove the gas from the area in the manner discussed in earlier presentations relative to handling fuel elements ruptured in transit.

The canister in which the ruptured fuel container will be stored is shown in NFS drawing IC-T-202-2 which is attached. This canister when placed in the NFS storage racks gives positive 21 inches center to center spacing in all directions. The canister proper is 12 1/8 inches square in order to accomodate the encapsulation container. Consequently, the edge to edge spacing between canisters is 9 inches. Safe storage is provided by storing all of the canisters in line in a single storage rack at one end of the storage pool. The adjacent rack is to be left blank which isolates the storage rack used to store ruptured fuel insofar as neutron interaction with other fuel in the pool is concerned. As a further precaution, even though all fuel placements in the pool are carefully controlled, the entrance to the adjacent storage rack will be blocked to prevent inadvertant occupancy by a canister of fuel. The in-line array of ruptured fuel canisters is safe with the neutron interaction that will occur by reason of the following:

a) It is Commonwealth Edison's practice to store vertically an average of 1.4 fuel assemblies per square foot of pool. In the NFS pool there will be a maximum of three assemblies per canister and the canister takes up an area of 1.75' x 1.75' = 3.06 ft.^{2} resulting in an average of one assembly per square foot.

b) The maximum number of assemblies that could interact with a central assembly in line would be eight; the two in the canister with it and three in each of the canisters immediately adjacent to it. The central assembly is isolated from all other assemblies since the view is obstructed by the adjacent assemblies and the underwater distance is relatively large. Critical experiments were performed in Dresden reactor with both Type 1 and Type 2 clean cold elements in optimum reactor array. The elements were in water and the control rods were out. Twenty eight assemblies of either type were required to go critical. In Storage in the NFS pool, interaction is limited to less than half the critical number of assemblies. The experiments with Type 1 fuel are reported in DNPS-No. 1, dated 12/7/59, and entitled, Initial Loading and Low Level Testing Part No. 1. Loading to Critical and Testing with First Critical Size Core. The experimental work with Type 2 fuel is reported in DNPS-50-87-63, dated 5/8/63 and entitled, Major Outage Report, First Turbine Generator Overhaul and First Partial Refueling of the Reactor, November 7, 1962, to March 7, 1963.

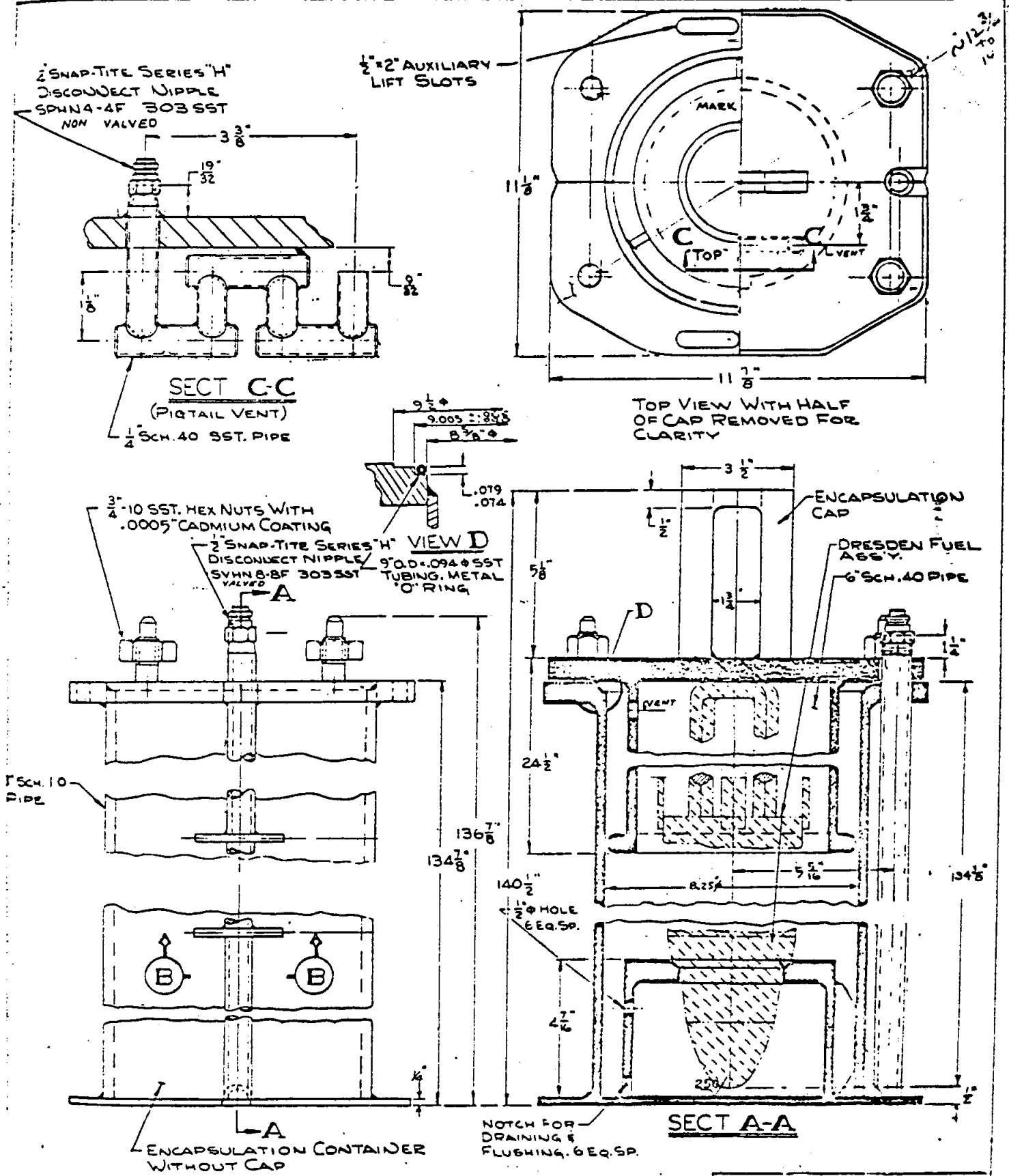
In our judgement storage of Dresden Type 1 and Type 2 ruptured fuel elements in the manner described presents no undue hazard to personnel or the public.

Very truly yours,

S. L. Reese

UCI

AEC Approval Letter of 1/18/65



ENCAPSULATION ASS'Y CONTAINER AND CAP DRESDEN FUEL (8 REQ'D)

ALL METAL = 304 SST.

STANRAY CORPORATION		
ENCAPSULATION ASS'Y. STANRAY S-1 CASK		
3-21-62	G	SK-37-40-G

APPL. FOR CONST.
PERMIT 07/19/65 SUB. 2

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

IN RE MATTER OF THE
APPLICATION OF

Nuclear Fuel Services, Inc.
For Construction Permit and Licenses
For a Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104(b) and 185
Of the Atomic Energy Act

AEC DOCKET NO.: 50-201

NUCLEAR FUEL SERVICES, INC.

Application for

Construction Permit and License

for a

Spent Fuel Processing Plant

Part A. General Corporate Financial and Technical Information

INFORMATION SUBSEQUENT TO CONSTRUCTION PERMIT SUBMISSION NO. 2

Scharfeld, Bechhoefer & Baron
1710 "H" Street, N. W.
Washington, D. C.

Attorneys for Applicant

NUCLEAR FUEL SERVICES, INC.
T. C. Runion, President
P. O. Box 1757
Baltimore, Maryland

Before the
U. S. ATOMIC ENERGY COMMISSION
Washington, D. C.

APPLICATION FOR LICENSE TO CONSTRUCT
AND OPERATE A CHEMICAL PLANT

PART A

Information Subsequent to Construction Permit
Submission No. 2

The Applicant herewith submits the following information amending Paragraph 5 of Applicant's original application as amended by Paragraph 5 of Submission No. 1 of Information Subsequent to Construction Permit dated January 7, 1965, and amending or replacing and superseding Paragraphs 6 and 7 of Applicant's original application dated July 25, 1962, and adding annexes, designated as Revised Annexes 3, 5, and 7, relating to the present financial situation of the Applicant.

The paragraphs and annexes in this submission are numbered as in the application dated July 25, 1962.

Amendment of Paragraph 5 of Information Subsequent to Construction Permit Submission No. 1 - Summary of the Project.

Paragraph 5 is amended by adding immediately before the final sentence a new subparagraph as follows:

NFS hereby incorporates by reference Paragraph 4 of Amendment No. 2 of the Application for Licenses of the New York State Atomic and Space Development Authority, dated January 12, 1965.

Amendment of Paragraph 6 - License Requested. Paragraph 6 is amended by deleting therefrom the following clauses at the end of said paragraph "and requests will be submitted at an appropriate time to Atomic Energy of Canada, Ltd. for authority to assign the Port Hope, Ontario facility to Applicant." This provision no longer is required because of the sale by Applicant of the Port Hope, Ontario facility.

Paragraph 7 - Financial Qualifications. Applicant submits the following information supplementary to that furnished in its application of July 25, 1962, as amended.

The financing of the project has been obtained as set forth in Revised Annex 3. The bank loan agreement between NFS and two banks, referred to in Revised Annex 3, is submitted as Revised Annex 5. Applicant's balance sheet on June 30, 1965, and as projected on December 31, 1965, is submitted as Revised Annex 7.

As set forth in Submission No. 1 herein, dated January 7, 1965, the feed materials plant formerly owned by the Davison Division of W. R. Grace and Company, located at Erwin, Tennessee, has been transferred to the Applicant. Likewise, as set forth in Submission No. 1 herein, the Port Hope, Ontario fuel fabrication facility formerly owned by AMF was transferred to Applicant and certain of its assets were subsequently sold by Applicant. The assets of the Erwin, Tennessee plant and the proceeds from the sale of the Port Hope assets are reflected in the balance sheet in Revised Annex 7.

The estimated cash flow from the Erwin operations for the remainder of 1965 is reflected in Revised Annex 7.

Applicant's estimates of the amounts required to complete the plant and bring it into production are reflected in the projected balance sheet for December 31, 1965, as set forth in Revised Annex 7 and are substantially less than available cash resources. Applicant further estimates that when the plant at West Valley is in operation, cash flow after amortization of bank loans will be approximately $1,000,000 annually.

Therefore Applicant submits that it is financially qualified to bring the facility into operation and to operate the facility.

Respectfully submitted,
NUCLEAR FUEL SERVICES, INC.

By /s/ T. C. Runion
President

Subscribed and sworn to before me this 15th day of July, 1965.

(SEAL)

/s/ Patricia Murchake
Notary Public

My Commission expires October 14, 1967.

CERTIFICATE OF SERVICE

I, Bernhard G. Bechhoefer, attorney for applicant Nuclear Fuel Services, Inc. and admitted to practice before the Courts of this jurisdiction, herewith certify that I have this 19th day of July, 1965, sent a copy of the foregoing Submission No. 2 of Information Subsequent to Construction Permit, via regular United States mail, postage prepaid, to each of the following:

Troy B. Conner, Jr., Esq., and
Paul Siegel, Esq.
c/o Atomic Energy Commission
Bethesda, Maryland
Counsel for AEC Regulatory Staff

Mr. Oliver Townsend
230 Park Avenue
New York 17, New York
New York State Atomic and
Space Development Authority

Oscar M. Ruebhausen, Esq.
c/o Debevoise, Plimpton, Lyons & Gates
320 Park Avenue
New York 22, New York
Counsel for New York State Atomic
and Space Development Authority

Mr. Norman Fagnan
Supervisor, Town of Ashford
West Valley, New York

Mr. E. Scott Smith
County Clerk
Cattaraugus County
Little Valley, New York

Bernhard G. Bechhoefer

NFS APP. CONS. PERM
SUB. 3

120646

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

IN RE MATTER OF THE
APPLICATION OF

Nuclear Fuel Services, Inc.
For Construction Permit and Licenses
For a Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104(b) and 185
Of the Atomic Energy Act

AEC DOCKET NO.: 50-201

NUCLEAR FUEL SERVICES, INC.

Application for

Construction Permit and License

for a

Spent Fuel Processing Plant

Part A. General Corporate Financial and Technical Information

INFORMATION SUBSEQUENT TO CONSTRUCTION PERMIT
SUBMISSION NO. 3

SECOND PART - SUBJECT TO
SECTION 2.790

NUCLEAR FUEL SERVICES, INC.
T. C. Runion, President
P. O. Box 1757
Baltimore, Maryland

Subject to Section 2.790
(Not for Public Disclosure)

New Annex 14

120647

NUCLEAR FUEL SERVICES, INC.

Source and Application of Funds
July 1, 1965 - June 30, 1967

(in $000)

	7/1/65 - 12/31/65	1/1/66 - 12/31/66	1/1/67 - 6/30/67
Source of Funds			
Cash Balance, Beginning of Period	$1,083 (1)	$1,095	$3,631
ESADA Contributions	363	364	-
Bank Loan	4,600	-	-
Net Operating Revenue (2) (5)	355	3,522	1,849
Liquidation of Deposits	69	-	-
Total Funds Available	$6,470	$4,981	$5,480
Application of Funds			
Capital Expenditures:			
West Valley Reprocessing Plant	$ 779 (3)	-	-
Other	770	-	-
	1,549	-	-
Preoperational Expense	2,068 (4)	-	-
Non-Cash Working Capital Increase	1,758	-	-
Repayment of Bank Loan	-	1,350	675
Total Funds Applied	$5,375	$1,350	$ 675
Cash Balance, End of Period	$1,095	$3,631	$4,805

Subject to Section 2.790
(Not for Public Disclosure)

120648

Notes to Source and Application of Funds

(1) Includes $400,000 in bank certificates of deposit.

(2) Net revenues produced by West Valley spent fuel processing and waste burial operations and Erwin fuel material operations. (Detailed cash flow statement attached.)

(3) Includes a contingency provision of $287,000.

(4) Includes a contingency provision of $299,000.

(5) Because of the write-off of preoperational expenses in the year of incurrance for Federal income tax purposes, no such taxes will be payable during the periods covered by this statement.

NUCLEAR FUEL SERVICES, INC.

Cash Flow From Plant Operations
July 1, 1965 - June 30, 1967

(in $000)

	7/1/65 - 12/31/65	1/1/66 - 12/31/66	1/1/67 - 6/30/67
Revenues			
Chemical Reprocessing:			
AEC Contract	$	$6,110	$2,115
Utility Contracts:			
On Hand		940	705
Anticipated		-	705
Waste Burial		220	110
Total Revenue		7,270	3,635
[illegible]rating Costs & Expenses - Cash Basis (1)			
Salaries, Wages & Benefits		1,252	626
Process Chemicals		216	108
Utilities		263	131
Repair and Maintenance		438	219
Insurance		145	73
Local Taxes		60	30
Supplies and Services		202	101
Other		110	55
Home Office Charges		221	110
Rent - ASDA		747	374
Interest on Bank Loan		713	320
Waste Surveillance		177	89
Total Costs & Expenses - Cash Basis		4,544	2,236
Net Cash Flow - West Valley Operations		2,726	1,399
Net Cash Flow - Erwin Operations (2)	355	796	450
	$ 355	$3,522	$1,849

(1) The Applicant expects to operate the facility without exceeding the uranium or plutonium losses allowable under the present processing contracts.

(2) The cash flow from the Erwin, Tenn. operations has averaged $605,000 for the last two years (1963 & 1964). A major expansion program which has almost been completed is expected to significantly increase the cash flow starting in the second half of 1965.

NFS APP. CON. PERMIT
SUB 4

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

IN RE MATTER OF THE
APPLICATION OF

Nuclear Fuel Services, Inc.
For Construction Permit and Licenses
For a Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104(b) and
185 of the Atomic Energy Act

AEC DOCKET NO.: 50-201

NUCLEAR FUEL SERVICES, INC.

Application for

Construction Permit and License

for a

Spent Fuel Processing Plant

Part A. General Corporate Financial and Technical Information

INFORMATION SUBSEQUENT TO CONSTRUCTION PERMIT
SUBMISSION NO. 4

Scharfeld, Bechhoefer & Baron
1710 "H" Street, N. W.
Washington, D. C.

Attorneys for Applicant

NUCLEAR FUEL SERVICES, INC.
T. C. Runion, President
P.O. Box 1757
Baltimore, Maryland

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

APPLICATION FOR LICENSE TO CONSTRUCT
AND OPERATE A CHEMICAL PLANT

PART A

Information Subsequent to Construction Permit
Submission No. 4

Applicant, Nuclear Fuel Services, Inc., a Maryland corporation, submits the following amendment to its original application for a construction permit and license, dated July 25, 1962.

1. Amend paragraph 9 to read:

"9. Completion Date. The earliest date for completion of construction of the facility is January 1, 1965, and the latest date for completion is March 31, 1966."

2. Amend paragraph 2A of the construction permit issued by the AEC on April 30, 1963 to read:

"The earliest date for completion of construction of the facility is January 1, 1965, and the latest date for completion is March 31, 1966."

3. Applicant requests the extension of the completion date because of developmental problems attributable to the experimental nature of the facility and to the waste tank problem. The findings of the Atomic Safety and Licensing Board appointed in this case, dated April 20, 1963, note that the applicants have identified the major features of the components of which further technical information is required and "have proposed and there will be conducted a research and development program reasonably designed to absolve the safety questions with respect to those features or components, i.e., a fuel segmentation process which requires research

and development." The report on status of completion of construction and research and development aspects filed on October 20, 1965, for the period ending October 1, 1965, indicates in essence the following program in connection with the safety of the fuel segmentation process:

The equipment in the mechanical head end process has been installed and is undergoing mechanical checkout. The basic design of the head end mechanical facilities as fabricated is the same as described in earlier reports and as presented in the Final Safety Analysis Report. In checking out this equipment, a considerable number of defects have been discovered. Fortunately, most of these have been of a minor nature. One mechanical problem that appeared was galling of the gibs and liners in the segmentation shear. They are being reworked and a better means of lubrication is being incorporated. Other problems relate to remote maintenance. A number of changes are being made in the equipment ancillaries and in cell connections to better provide for safe remote maintenance which is required in this area of high activity. Consultants from ORNL have been quite helpful in shaking down the segmentation process.

While it is probable that research, development and construction will be completed prior to December 31, 1965, it is unlikely that the testing of the fuel segmentation process and the training of operators can be completed by that time.

4. Therefore, applicant requests the extention of the latest date for completion of the facility to March 31, 1966.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By _____

Subscribed and sworn to before me this _____day of _____, 1965.

(SEAL)

_____
Notary Public

My Commission expires _____.

file

Before the

UNITED STATES ATOMIC ENERGY COMMISSION

Washington, D. C.

IN RE MATTER OF THE
APPLICATION OF

Nuclear Fuel Services, Inc.
For Construction Permit and Licenses
For a Spent Fuel Processing Plant
Under Sections 53, 63, 81, 104(b) and 185
Of the Atomic Energy Act

AEC DOCKET NO. 50-201

NUCLEAR FUEL SERVICES, INC.

Application for

Construction Permit and License

for a

Spent Fuel Processing Plant

Part A. General Corporate Financial and Technical Information

INFORMATION SUBSEQUENT TO CONSTRUCTION PERMIT
SUBMISSION NO. 5

Scharfeld, Bechhoefer & Baron
1710 "H" Street, N. W.
Washington, D. C.

Attorneys for Applicant

NUCLEAR FUEL SERVICES, INC.
T. C. Runion, President
P. O. Box 1757
Baltimore, Maryland

Before the
U. S. ATOMIC ENERGY COMMISSION
Washington, D. C.

APPLICATION FOR LICENSE TO CONSTRUCT AND OPERATE A CHEMICAL PLANT

PART A

Information Subsequent to Construction Permit Submission No. 5

Applicant, Nuclear Fuel Services, Inc., a Maryland corporation, submits the following amendment to its original application for a construction permit and license dated July 25, 1962 as amended by Submission No. 4 of Information Subsequent to Construction Permit dated November 17, 1965.

1. Amend paragraph 9 to read: "Completion Date. The earliest date for completion of the construction of the facility is January 1, 1965, and the latest date for completion is June 30, 1966."
2. Amend paragraph 2A of the construction permit issued by the AEC on April 30, 1963 and as amended by order of the AEC dated December 10, 1965 to read: "The earliest date for completion of construction of the facility is January 1, 1965, and the latest date for completion is June 30, 1966."
3. Applicant requests the extension of the completion date because of developmental problems attributable to the experimental nature of the facility. The nature of

these problems is set forth in detail in Submission No. 4 of Information Subsequent to Construction Permit dated November 17, 1965, reference being made thereto for greater particularity.

4. The remedial measures to deal with the heavy water run-off during installation of waste storage tanks referred to in paragraph 4 of said Submission No. 4 have been completed and tested. Likewise, the research and development program concerning the fuel segmentation process referred to in paragraph 3 of Submission No. 4 has been completed and the fuel segmentation process is being tested.

5. Applicant believes that construction of the facility will be complete and a provisional license will issue prior to March 31, 1966. However, unforeseen delays related to the developmental problems attributable to the experimental nature of the facility might delay completion until after March 31, 1966.

6. Because of the possibility of delay in completion with resulting delays in obtaining income from the operation of the facility, applicant has made the following supplementary financial arrangements to assure the availability of any funds required for the facility during the period from March 31, 1966 to June 30, 1966 even in the absence of revenue from the operations.

The stockholders, W. R. Grace & Co. (Grace), and American Machine and Foundry Company (AMF), have been

notified that additional funds not exeeeding $1,300,000 will be required for the West Valley plant in the event of a delay in startup until June 30, 1966, and have indicated that such funds will be made available if required, though no definite commitment will be made by either AMF or Grace until after the meeting of the Board of Directors of Grace on March 3, 1966. Applicant will notify AEC of such additional commitments prior to March 31, 1966.

Attached hereto as Annex A is a consolidated balance sheet as of January 31, 1966, and as projected for March 31, 1966. The Annex likewise contains a revised statement of sources and application of funds for the chemical processing plant.

As indicated in the attached Annex, net current assets of applicant as projected for March 31, 1966 will be approximately $150,000. Cash flow from the Erwin plant from April 1, 1966 to June 30, 1966 should exceed $150,000. Funds required for the West Valley plant in the absence of revenues from processing operations, during the period from April 1, 1966 to June 30, 1966, will be approximately $900,000.

Therefore, additional funds from the stockholders of $1,300,000 will be more than adequate to meet all expenses and to provide a contingency reserve exceeding $400,000.

7. The extension of the completion date as requested herein is unrelated to and will not affect other matters considered or under consideration by the Commission in this proceeding.

8. Therefore, applicant requests the extension of the latest date for completion of the facility to June 30, 1966.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By /s/ T. C. Runion

Subscribed and sworn to before me this 24 day of February 1966.

/s/ Patricia Murchake
Notary Public

My Commission expires October 14, 1967.

(SEAL)

ANNEX "A"

NUCLEAR FUEL SERVICES, INC.

Consolidated Balance Sheet

(in $000)

Assets	Actual Jan. 31, 1966	Projected Mar. 31, 1966
Current Assets:		
Cash	$ 534	$ 979
Receivables - Net	887	967
Inventories	601	1,207
Other Current Assets	918	562
Total Current Assets	2,936	3,715
Fixed Assets (Note 1)	22,226	22,638
Less: Reserve for Depreciation	1,194	1,243
Fixed Assets - Net	21,032	21,395
Other Assets:		
Pre-Operational Costs - Reprocessing Plant	2,701	3,401
Other	78	80
Total Other Assets	2,779	3,481
	$26,747	$28,591
Liabilities & Stockholders' Equity		
Current Liabilities:		
Bank Loans Payable - Current (Note 2)	1,195	1,358
Accounts Payable	1,052	1,200
Other Current Liabilities	365	290
Total Current Liabilities	2,612	2,848
Deferred Taxes on Income	368	381
Deferred Credit - Research Grant (Note 3)	1,636	1,818
Long-Term Debt - Bank Loans (Note 2)	10,158	11,545
Total Liabilities	14,774	16,592
Stockholders' Equity:		
Capital Stock - Issued (Note 4)	11,105	11,105
Paid-In Surplus (Note 5)	500	500
Earned Surplus	368	394
Total Equity	11,973	11,999
	$26,747	$28,591

NUCLEAR FUEL SERVICES, INC.

Notes to the Balance Sheet

Note 1 - Fixed assets do not include $8,500,000 in land and facilities at West Valley, New York, leased to NFS by ASDA. The detail of NFS-owned facilities by location is as follows:

($000)	Actual Jan. 31, 1966	Projected Mar. 31, 1966
West Valley, New York:		
Spent Fuel Processing Plant	$18,829	$19,208
Other	180	180
Total West Valley, N.Y.	19,009	19,388
Erwin, Tennessee:	3,217	3,250
Total	$22,226	$22,638

Note 2 - The availability of funds under the bank loan agreement was extended to March 31, 1966, from December 31, 1965. One-twentieth ($597,500) of the amount outstanding as of December 31, 1965, was repaid to the banks on January 1, 1966. The balance of the loan will be repaid in nineteen equal semi-annual installments beginning July 1, 1966.

Note 3 - ESADA is contributing $2,000,000 toward the research and development costs associated with the reprocessing plant. Two of the eleven equal quarterly payments of $181,818.18 remain to be received in 1966, one on March 31 and the final one on June 30. The total contribution will be amortized against the cost of the plant over its depreciable life.

Note 4 - In accordance with the stockholders' agreement, W. R. Grace & Co. and American Machine and Foundry Company have made the following contributions in return for eighty (80) and twenty (20) percent ownership respectively:

($000)	Grace (80%)	AMF (20%)	Total
Cash	$6,000	$2,000	$ 8,000
Existing Facilities - at book value	2,466	639	3,105
	$8,466	$2,639	$11,105

Note 5 - Funds have been contributed by the stockholders for use in expanding the facilities at the Erwin, Tennessee plant.

NUCLEAR FUEL SERVICES, INC.

Sources and Application of Funds for the Chemical Processing Plant

(in $000)

	Received Thru 1/31/66	Balance to be Received	Total
SOURCES			
W. R. Grace & Co.	$ 6,000	$ -	$ 6,000
American Machine & Foundry Co. (AMF)	2,000	-	2,000
New York State Atomic & Space Development Authority (ASDA)	7,704	796	8,500
Bank Loan - Manufacturers and Traders Trust Company and Morgan Guaranty Trust Company	11,950	1,550	13,500
Empire State Atomic Development Associates, Inc. (ESADA)	1,636	364	2,000
ds Obtained From Liquidation of Wholly-Owned Subsidiary, AMF Atomics Canada Co., Ltd.	500	-	500
Total	$29,790	$2,710	$32,500

APPLICATION	
Facility Costs:	
Bechtel - Constructed Facilities	$24,011
NFS - Provided Related Facilities	2,062
	26,073
Plant Site (ASDA Provided)	500
Expenses Related to Construction	1,135
Working Capital	1,260
Preoperational Costs (estimated through 3/31/66)	3,401
Available for Contingencies	131
	$32,500

09/09/65

AEC

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

No. H-204
Tel. 973-3335 or
973-3446

FOR IMMEDIATE RELEASE
(Thursday, September 9, 1965)

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cc: Ya

AEC CONSIDERS ISSUANCE OF LICENSE FOR OPERATION OF CHEMICAL PROCESSING PLANT IN NEW YORK

The Atomic Energy Commission is considering the issuance of a license to Nuclear Fuel Services, Inc., and the New York State Atomic and Space Development Authority for initial operation of a nuclear fuel reprocessing plant in New York State.

The plant is located at the Western New York Nuclear Service Center in Cattaraugus County, about 30 miles south of Buffalo. It is the first privately owned plant for processing irradiated fuels discharged from power reactors.

The plant will chemically process fuel removed from power reactors to separate and recover the unburned portion of the fuel and any other fissionable material produced during irradiation. The recovered material can be used for making new fuel elements or in other phases of the atomic energy program.

The AEC Division of Materials Licensing has reviewed the application for an operating license and has concluded that there is reasonable assurance that the plant can be operated without endangering the health and safety of the public. The Commission's Advisory Committee on Reactor Safeguards reported favorably on the application in its letter of July 19.

Copies of the safety analysis prepared by the Division of Materials Licensing are available for inspection at the Commission's Public Document Room, 1717 H Street NW, Washington, D.C., and may be obtained by writing to the Director, Division of Materials Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545.

(more)

Petitions to intervene or requests for public hearing may be filed with the Secretary, U S. Atomic Energy Commission, Washington, D.C. 20545, within 30 days after publication of notice in the Federal Register on September 10, 1965.

#

(NOTE TO EDITORS AND CORRESPONDENTS: This information also is being issued by the Commission's Operations Office in New York City.)

9/9/65

09/28/65 PROPOSED
PROV. OP. LOC.

C O P Y

September 28, 1965

Mr. Harold L. Price
Director of Regulation
United States Atomic Energy
Commission
Washington, D. C. 20545

Dear Mr. Price:

Nuclear Fuel Services, Inc. and
New York State Atomic and Space
Development Authority, Docket No.
50-201 -- Proposed Provisional
Operating License

Thank you again for your letter of September 3. We have now examined the proposed provisional operating license and the Safety Evaluation done by the Irradiated Fuels Branch. The only comment we might have of any continuing significance comes from Dr. Charles R. Fordyce and relates to assurance that there will be effective and reliable removal of particulate matter from the dissolver and vessel off-gas systems.

Believing that Dr. Fordyce's comments, based on Kodak's experience in the operation of high-efficiency filter installations, may be of assistance to the Commission and Nuclear Fuel Services in establishing operating procedures, I quote from a memorandum he wrote after study of the proposed license and the Safety Evaluation.

"The primary concern of the Eastman Kodak Company in this connection is the question of whether or not there is any likelihood of particulate radioactive contamination from the plant reaching our photographic manufacturing operations. We have therefore been interested in the sections of the proposed provisional

operating license dealing with release of material to the stack and operating regulations to insure that the high efficiency air filters installed to remove particulate material from the exhaust air will not develop leaks during use.

"It is stated on page 40 of the Safety Evaluation that 'To assure removal of particulate matter....The pressure drop across the filter and the pressure upstream of the filter will be measured, and will actuate alarms if a low pressure drop (filter rupture) or a high pressure (plugged filter) occurs.'

"This would be a reliable warning system for sudden gross failure of a filter bank. However, it has consistently been our experience in our own high efficiency filter installations that more gradual deterioration of filter units through development of torn filter sheets or cracks will not result in changes in pressure drop to give proper warning of the trouble. This is because the gradual change in pressure drop, as cracks or tears accumulate, is being counterbalanced by accumulation of dirt on the filters. One of the worst cases of filter failure we experienced gave no indication of misperformance from the pressure drop measurements.

"We would much prefer the use of a daily air sampling test in which a reasonable volume of air from the downstream side of the high efficiency filters is passed through a test filter and the test filter measured for radioactivity after a six or eight hour decay period. In this way, not only can large leaks be detected readily, but also gradual development of small leaks can be followed before they become serious.

"We are aware that the Safety Analysis reports submitted by Nuclear Fuel Services include a provision for a stack monitoring system for particulate matter. However, as described in the Nuclear Fuel Service Submission of June 30, 1964, on ventilation, the particulate filter would be a moving tape filter on which the sample collected would represent a quite small volume of

C O P Y

air. We believe the larger air sample, taken immediately after the high efficiency filters and measured after a decay period, would provide more reliable monitoring data for the filter performance."

Very truly yours,

Vice President and General Counsel

Harmar Brereton;pwb

cc: Mr. T. C. Runion, President
Nuclear Fuel Services, Inc.
P. O. Box 1757
Baltimore, Maryland 21203

Bernhard G. Bechhoefer, Esq.
Scharfeld, Bechhoefer and Baron
5th Floor 1710 H Street, N. W.
Washington, D. C. 20006

Mr. Oliver Townsend
New York State Atomic and
Space Development Authority
State of New York
P. O. Box 7036
Albany, New York

Oscar M. Ruebhausen, Esq.
c/o Debevoise, Plimpton, Lyons and Gates
320 Park Avenue
New York 22, New York

Legal Department
Eastman Kodak Company

04/19/66 PROV. OP. LIC

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

AEC License File

APR 19 1966

IN REPLY REFER TO:

Docket No. 50-201

Nuclear Fuel Services, Inc.
Box 124
West Valley, New York 14171

Attention: Mr. W. H. Lewis
Vice President and General Manager

AND

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

Attention: Mr. Oliver Townsend
Chairman

Gentlemen:

Enclosed is Provisional Operating License No. CSF-1, together with a copy of a notice being published in the Federal Register concerning this license. Also enclosed are three copies of Amendment No. 3 to Indemnity Agreement No. B-29 for your acceptance and return of one signed copy.

In accordance with the amendment to your application dated January 25, 1965, you are hereby authorized to maintain the specified criticality alarm system in lieu of the devices specified in 10 CFR 70.24(a)(1).

Sincerely yours,

J. A. McBride, Director
Division of Materials Licensing

Enclosures:
As stated above

cc: C. R. Braun
B. G. Bechhoefer

(2) Specification 4.13.1 was changed to permit waste burial at a more convenient location on the site and to specify minimum earth cover requirements.

(3) Specification 5.3.1 was changed to require that all off-gas from shear or dissolution operations be processed through a chemical scrubber and to specify that the off-gas from a fuel batch containing less than 160 millicuries of I-131 need not be processed through the silver nitrate reactor.

(4) Specification 6.6.1 was changed to assure that sufficient air shall be added to keep the hydrogen gas concentration below its lower explosive limit.

(5) Specification 7.1 was expanded to identify with greater particularity the management organization and responsibility and to specify situations requiring corrective actions and plant shut down.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

J. A. McBride, Director
Division of Materials Licensing

Dated at Bethesda, Maryland
this 19th day of April, 1966

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

NUCLEAR FUEL SERVICES, INC.
AND
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

PROVISIONAL OPERATING LICENSE

License No. CSF-1

The Atomic Energy Commission having found that:

a. The application for license complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in Title 10, CFR;

b. Construction of the facility has been completed in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission;

c. As an intermediate procedure prior to issuance of an operating license pursuant to Title 10, CFR, § 50.56, a provisional operating license should be issued because there are involved features, characteristics or components of the proposed facility as to which it appears desirable to obtain actual operating experience before issuance of an operating license for the full term requested in the application;

d. There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in Title 10, CFR;

e. The applicants are technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the regulations in Title 10, CFR;

f. The applicable provisions of Part 140, Title 10, CFR, have been satisfied; and

g. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;

Provisional Operating License No. CSF-1 is hereby issued as follows:

1. This license applies to the irradiated nuclear fuel processing plant (the "facility") located at the Western New York Nuclear Service Center, Cattaraugus and Erie Counties, New York, and described in

Part B of the revised license application, as amended, filed by Nuclear Fuel Services, Inc. ("NFS") and incorporated by reference in the revised license application, as amended, of the New York State Atomic and Space Development Authority ("ASDA"). Volumes 1 and 2 of said Part B of the revised license application, as amended, entitled "Final Safety Analysis Report" are considered to be the "Hazards Summary Report".

2. Subject to the conditions and requirements incorporated herein the Commission hereby licenses NFS -- as lessee of the site; as owner of those portions of the facility in which actual chemical processing will take place; and as the party responsible for the operation of the facility, including storage of irradiated fuel elements, storage of radioactive wastes and burial of radioactive waste --

   A. Pursuant to Section 104.b of the Atomic Energy Act of 1954, as amended (the "Act"), and Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities", to possess, use and operate the facility as a production facility;

   B. Pursuant to the Act and Title 10, CFR, Part 70, "Special Nuclear Material", to receive, acquire, possess and use that amount of special nuclear material in or from irradiated solid nuclear fuel elements, and that amount of special nuclear material contained in auxiliary sources such as calibration and laboratory standards, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license;

   C. Pursuant to the Act and Title 10, CFR, Part 30, "Licensing of Byproduct Material", to receive, separate, possess and use that amount of byproduct material in or from irradiated solid nuclear fuel elements, and to receive, possess and use that amount of byproduct material contained in auxiliary sources such as calibration and laboratory standards, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license;

   D. Pursuant to the Act and Title 10, CFR, Part 40, "Licensing of Source Material", to receive, possess and use that amount of source material in or from irradiated solid nuclear fuel elements, and that amount of source material contained in fuel element prototypes and other auxiliary forms, the receipt, storage or processing of which is authorized by Section 2 of the technical specifications appended to this license; and

E. Pursuant to the Act and Title 10, CFR, Parts 20, 30, 40, and 70 to dispose of solid radioactive waste generated in the operation of the facility by burial in the soil in accordance with the technical specifications.

3. Subject to the conditions and requirements incorporated herein the Commission hereby licenses ASDA -- as owner and lessor of the site, of those portions of the facility in which the preprocessing storage of irradiated fuel elements and the storage and burial of radioactive wastes will take place, and of other site improvements -- to possess title to those portions of the facility not owned by NFS and to permit NFS to perform those acts which NFS is authorized to do by paragraph 2 of this license.

4. A. Notwithstanding any expiration, modification, cancellation or termination of the contractual arrangements between NFS and ASDA, NFS shall, so long as this license shall be in force with respect to NFS, be responsible for assuring that the provisions of this license and Commission regulations for protection of health and safety from radiation hazards are observed with respect to the facility and materials covered by this license. In the event of any expiration, modification, cancellation or termination of the contractual arrangement between NFS and ASDA or any other change in the relationship between them, including any proposed transfer from NFS to ASDA of responsibility for the operation and care of those portions of the facility in which the storage and burial of radioactive wastes will take place, NFS or ASDA may apply to the Commission for an appropriate amendment of this license reflecting the future responsibilities of NFS and ASDA with respect to satisfying Commission regulatory requirements. Until such amendment is issued, ASDA shall in no way prevent NFS from observing the requirements set forth in this condition.

B. To the extent that the operation of the facility under this license results in the production of radioactive wastes to be stored in portions of the facility or in improvements hereafter constructed at the site, or otherwise to be managed at the site, beyond the term of this license or any superseding license, NFS or ASDA may apply to the Commission for an appropriate amendment of this license or any superseding license with respect to such continued storage or management in accordance with Commission regulations.

5. Except as specifically otherwise provided by the Commission, this license shall be deemed to contain and be subject to the conditions specified in Section 50.54 of Part 50, Section 70.32 of Part 70, Section 40.41 of Part 40 and Section 30.34 of Part 30 of the Commission's regulations; is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect, including Part 20; and is subject to the additional conditions specified below:

A. Technical Specifications

The technical specifications for operation of the facility contained in Appendix A attached hereto are hereby incorporated in this license. Except as hereinafter provided, the facility shall be operated in accordance with the technical specifications. Changes may be made in the technical specifications only when authorized by the Commission in accordance with the provisions of Section 50.59 of the Commission's regulations (Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities").

B. Records

In addition to those otherwise required under this license and applicable regulations, NFS shall keep the following records:

(1) Records showing the radioactivity released or discharged to unrestricted areas as measured at or prior to the point of such release or discharge.

(2) Records of radioactivity measurements at on-site and off-site monitoring stations described in the technical specifications.

(3) Records of the radioactive material received, transferred, stored as high-level liquid waste or disposed of as solid waste.

(4) Records of facility tests, measurements and calculations performed pursuant to the requirements of the technical specifications.

(5) Records of major repairs or substitution or replacement of major equipment listed in Equipment List, Appendix 5.2 of the Final Safety Analysis Report.

(6) Letters of authorization, run sheets, operating logs and check-off lists of the mechanical processing and chemical processing operations performed in the plant.

NFS is hereby authorized to dispose of the records described in 5.B.(4), (5) and (6) after a retention period of two years from the date of occurrence of the activity recorded. Records described in 5.B.(1), (2) and (3) shall be retained until disposal is authorized by the Commission.

C. Reports

In addition to reports otherwise required by this license and applicable regulations:

(1) Any operation outside the limits established by the technical specifications, and any operation of the facility in the "ready condition" as defined in the technical specifications, shall be promptly reported by telephone or telegraph to the Director of the appropriate Atomic Energy Commission Regional Compliance Office listed in Appendix D of 10 CFR 20. NFS shall submit within 10 days a complete report of the causes and corrective actions taken. This report shall be submitted to the Director, Division of Materials Licensing, with a copy to the Regional Compliance Office.

(2) NFS shall report to the Commission in writing within 30 days of its occurrence any change in the plant organization indicated in the amendment to the application by NFS dated October 19, 1965.

(3) NFS shall report to the Commission in writing within 30 days of the time it is observed any change in the validity of the assumptions used in the accident analyses, as described in Section VII of the Final Safety Analysis Report.

(4) NFS shall submit to the Commission, at least quarterly, during the period of this provisional operating license, a written report covering the following matters:

a. A summary of the processing operations performed during the period, including their duration.

b. The amount of radioactive material received, transferred, stored as high-level liquid waste, disposed of as solid waste, and released as liquid, gaseous and solid effluent.

c. The levels of radioactivity measured at the stack, the site-perimeter monitoring stations and in the milk from the cows on the NFS-operated farm.

d. A brief explanation of the cause of each unplanned process shutdown.

e. A description of major repairs performed in the facility with reasons therefor.

f. A description of changes, tests, and experiments performed pursuant to Paragraph 50.59(a) of the Commission's rules and regulations.

g. A description of malfunctions of any equipment listed in Appendices 5.2, 9.51, 9.53, and 9.56 of the Final Safety Analysis Report which is important to safety.

h. The results of periodic testing performed in accordance with Section 6 of the technical specifications.

Such reports shall be submitted within 30 days after the end of each reporting period.

6. This license is effective as of the date of issuance and shall expire eighteen months from the date of issuance (unless extended for good cause shown), or upon the earlier issuance of a superseding operating license.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

Director
Division of Materials Licensing

Attachment:
Appendix A

Date of Issuance: APR 19 1966

110015

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
UNITED STATES ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

JUL 19 1965

Honorable Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington, D. C.

Subject: REPORT ON NUCLEAR FUEL SERVICES, INC.

Dear Dr. Seaborg:

At its sixty-fourth meeting, July 8-10, 1965, the Advisory Committee on Reactor Safeguards considered the application of Nuclear Fuel Services, Inc., for a provisional operating license for its Springville, New York irradiated nuclear fuel processing plant. The Committee commented on the suitability of this site for the proposed operation in its October 11, 1962 report and provided a brief description of the proposed plant design and operation in its report of December 26, 1962.

Subcommittee meetings were held at the Springville site on June 1, 1965 and in Washington on July 7, 1965. During its present review, the Committee had the benefit of discussion with representatives of Nuclear Fuel Services, Inc., Bechtel Corporation, and the New York State Atomic and Space Development Authority, and considered the reports listed.

Construction of the NFS irradiated fuel processing plant is nearly complete. Spent fuel is now being received and stored under license, and chemical processing operations are expected to begin near the end of this year. The chemical processing operations involved are basically the same as those that have been conducted on a production basis at Commission-owned plants for many years. Fuel elements will be mechanically chopped into small pieces prior to dissolution, an operation that has been studied for several years on a prototype basis at Oak Ridge.

The NFS processing operations are organized in such a way that major adjustments and shifts in the process streams will be made between processing of different types of fuel batches. This will require considerable reliance to be placed on administrative control to achieve safe plant operation, and the Committee has accordingly reviewed examples of administrative procedures in some detail. The applicant has placed limitations on the kinds and enrichment of fuel elements that will be processed.

It is the opinion of the Committee that this facility can be operated as proposed without undue hazard to health and safety of the public.

Mr. D. A. Rogers did not participate in the review of this project.

Sincerely yours,

ORIGINAL SIGNED BY
W. D. MANLY

W. D. Manly
Chairman

References:

1. Amendment #3 dated December 10, 1962.
2. Amendment #1 to Part A, dated February 12, 1963.
3. Letter dated July 1, 1963 from Walton A. Rodger, Nuclear Fuel Services, Inc. with attached Submission No. 1 Final Safety Analysis Report, dated July 1, 1963.
4. Letter dated October 10, 1963 from Scharfeld, Bechhoefer, Baron & Stambler with attached Submission No. 2 Final Safety Analysis Report, dated October 10, 1963.
5. Letter dated December 6, 1963 from Walton A. Rodger, NFS with attached Submission No. 3 Final Safety Analysis Report, dated December 9, 1963.
6. Letter dated February 25, 1964 from Walton A. Rodger, NFS with attached Submission No. 4 Final Safety Analysis Report, dated February 25, 1964.
7. Submission No. 5 - Final Safety Analysis Report, dated March 23, 1964.
8. Submission No. 6 - Final Safety Analysis Report, dated April 20, 1964.
9. Submission No. 7 - Final Safety Analysis Report, dated April 29, 1964.
10. Submission No. 8 - Final Safety Analysis Report, dated June 12, 1964.
11. Letter dated July 3, 1964 from W. A. Rodger, NFS to Mr. Alexander E. Aikens, Jr., AEC.
12. Submission No. 9 - Final Safety Analysis Report, dated June 30, 1964.
13. Submission No. 10 - Final Safety Analysis Report, dated June 30, 1964.
14. Letter dated July 20, 1964 from W. A. Rodger, NFS to Mr. Alexander E. Aikens, Jr., AEC.
15. Submission No. 11 - Final Safety Analysis Report, dated June 30, 1964.
16. Submission No. 12 - Final Safety Analysis Report, Revision 2, dated August 1, 1964.
17. Submission No. 13 - Final Safety Analysis Report, Revision 1, dated May 30, 1964.

References - Nuclear Fuel Services, Inc.

18. Submission No. 14 - Final Safety Analysis Report, Revision 2, dated August 15, 1964.
19. "Table 6.36a - Accountability Sample Summary", single page, Revision 1, dated May 30, 1964.
20. Submission No. 15 - Final Safety Analysis Report, Revision 2, dated August 20, 1964.
21. Submission No. 16 - Final Safety Analysis Report, Revision 2, dated August 20, 1964.
22. Submission No. 17 - Final Safety Analysis Report, Revision 2, dated September 23, 1964.
23. Submission No. 18 - Final Safety Analysis Report, undated, received October 14, 1964.
24. Submission No. 19 - Final Safety Analysis Report, Revision 3, dated October 2, 1964.
25. Letter dated October 19, 1964 from S. L. Reese, NFS with attached Submission No. 20 - Final Safety Analysis Report, dated October 20, 1964.
26. Submission No. 21 - Final Safety Analysis Report, dated October 26, 1964.
27. Submission No. 22 - Final Safety Analysis Report, dated October 31, 1964.
28. Submission No. 23 - Final Safety Analysis Report, Revision 1, dated October 31, 1964.
29. Letter dated January 15, 1965 from Walton A. Rodger, NFS; letter dated January 11, 1965 from Scharfeld, Bechhoefer, Baron & Stambler with attached "Part A, General Corporate Financial and Technical Information - Information Subsequent to Construction Permit Submission No. 1."
30. Submission No. 24 - Final Safety Analysis Report, dated April 9, 1965.
31. Letter dated January 25, 1965 from Walton A. Rodger, NFS to Mr. A. E. Aikens, Jr., AEC.
32. Letter dated February 17, 1965 from Walton A. Rodger, NFS to Mr. A. E. Aikens, Jr., AEC.
33. Letter dated February 15, 1965 from W. A. Rodger, NFS to Alexander E. Aikens, Jr., AEC.
34. Letter dated March 31, 1965 from Walton A. Rodger, NFS to Mr. A. E. Aikens, Jr., AEC.
35. Letter dated May 3, 1965 from W. A. Rodger, NFS to Mr. Alexander E. Aikens, Jr., AEC, with attachment.
36. Letter dated May 24, 1965 from W. A. Rodger, NFS to Mr. Alexander E. Aikens, Jr., AEC, with attachment.

02/28/66

110374

February 20, 1956

Mr. Bernard G. Bechhoefer
Scharfeld, Bechhoefer, & Baron
1710 "H" Street, N. W.
Washington, D. C.

Dear Bech:

Enclosed please find sections 4, 5, and 6 of the Tech Specs as redone by W. A. Hodges. Sections 1, 2, and 3 have also been redone based on discussions held with Dr. McBride and Mr. Aikens and will be mailed to you shortly.

The graphs referred to in section 4.4.1, 4.5.1, and 4.11.1 have not as yet been reproduced and will also be mailed to you shortly. These curves in essence duplicate those which had previously been submitted and actually constitute only a very minor change.

Assuming the favorable reception to the submission of these specifications, the master sheets are being numbered prior to their reproduction.

Very truly yours,

J. W. Loeding
Administrative Services, Manager

JWL:lek

Enclosures

cc: W. H. Lewis

DRAFT OF 7/29 FOLLOWING DISCUSSION WITH NFS AND

ASDA ATTORNEYS ON 7/28

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

PROPOSED PROVISIONAL OPERATING LICENSE

License No. CSF-1

The Atomic Energy Commission having found that:

a. The application for license complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's Regulations set forth in Title 10, CFR;

b. Construction of the facility has been completed in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission;

c. There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in Title 10, CFR;

d. The applicants are technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the regulations in Title 10, CFR;

e. The applicable provisions of Part 140, Title 10, CFR have been satisfied;

f. There is reasonable assurance that the facility will be ready for initial processing of nuclear fuel within ninety (90) days from the date of issuance of this provisional license; and

g. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public.

h. As an intermediate procedure prior to issuance of an operating license pursuant to Title 10, CFR, §50.56, a provisional operating license should be issued because there are involved features, characteristics or components of the proposed facility as to which it appears desirable to obtain actual operating experience before issuance of an operating license for the full term requested in the application.

Provisional operating license No. CSF-1 is hereby issued as follows:

1. This license applies to the irradiated nuclear fuel processing plant (the "facility") located at the Western New York Nuclear Service Center, Cattaraugus and Erie Counties, New York, and described in Part B of the revised license application, as amended, filed by Nuclear Fuel Services, Inc. ("NFS") and incorporated by reference in the revised license application, as amended, of the New York State Atomic and Space Development Authority ("ASDA"). Volumes 1 and 2 of said Part B of the revised license application, as amended, are considered to be the "Hazards Summary Report".

2. Subject to the conditions and requirements incorporated herein the Commission hereby licenses NFS -- as lessee of the site; as owner of those portions of the facility in which actual chemical processing will take place; and as the party responsible for the operation of the facility, including storage of irradiated fuel elements, storage of radioactive wastes and burial of radioactive waste --

   A. Pursuant to Section 104 b. of the Atomic Energy Act of 1954, as amended (the "Act"), and Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities", to possess, use and operate the facility as a production facility;

B. Pursuant to the Act and Title 10, CFR, Part 70, "Special Nuclear Material" to receive, possess and use that amount of special nuclear material in or from irradiated solid nuclear fuel elements the receipt, storage or processing of which is authorized by Section II of the technical specifications appended to this license;

C. Pursuant to the Act and Title 10, CFR, Part 30 "Licensing of Byproduct Material", receive, produce, possess and use that amount of byproduct material in or from irradiated solid nuclear fuel elements the receipt, storage or processing of which is authorized by Section II of the technical specifications appended to this license;

3. Subject to the conditions and requirements incorporated herein the Commission hereby licenses ASDA -- as owner and lessor of the site, of those portions of the facility in which the pre-processing storage of irradiated fuel elements and the storage and burial of radioactive wastes will take place, and of other site improvements -- to possess title to those portions of the facility not owned by NFS and to permit NFS to perform those acts which NFS is authorized to do by paragraph 2 of this license.

4. A. Notwithstanding any expiration, modification, cancellation or termination of the contractual arrangements between NFS and ASDA, NFS shall, so long as this license shall be in force with respect to NFS, be responsible for assuring that the provisions of this license and Commission regulations for protection of health and safety from radiation hazards are observed with respect to the facility and materials covered by this license. In the event of any expiration, modification, cancellation or termination of the contractual arrangement between NFS and ASDA or any other change in the relationship between them, including any proposed transfer from NFS to ASDA of responsibility for the operation and care of those protions of the facility in which the storage and burial of radioactive wastes will take place, NFS or ASDA may apply to the Commission for an appropriate amendment of this license reflecting the future responsibilities of NFS and ASDA with respect to satisfying Commission regulatory requirements. Until such amendment is issued, ASDA shall in no way prevent NFS from observing the requirements set forth in this condition.

B. Since the operation of the facility under this license will result in the production of radioactive wastes which will be stored in portions of the facility or in improvements hereafter constructed at the site, or which will be otherwise managed at the site, authorizations, by amendment of this license or any superseding license, will on application be granted to NFS and ASDA on terms deemed appropriated by the Commission pursuant to, and in accordance with the requirements of, the Act and the Commission's regulations in order to permit the continued storage and management of such wastes at the site within or beyond the terms of such license or superseding license.

5. This license shall be deemed to contain and be subject to the conditions specified in the following Commission Regulations (Title 10 CFR): Sections 50.54 and 50.59 of Part 50, Section 70.32 of Part 70, Section 40.41 of Part 40 and Section 30.34 of Part 30, and is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect, including Part 20 and is subject to the additional conditions specified below:

A. Technical Specifications

The technical specifications for operation of the facility contained in Appendix A attached hereto are hereby incorporated in this license. Except as hereinafter provided, the facility shall be operated

in accordance with the technical specifications. Changes may be made in the technical specifications only when authorized by the Commission in accordance with the provisions of Section 50.59 of the Commission's Regulations (Title 10, CFR, Part 50, "Licensing of Production and Utilization Facilities").

B. Records

In addition to those otherwise required under this license and applicable regulation, NFS shall keep the following records.

(1) Records showing the radioactivity released or discharged into the air or water beyond the effective control of the licensee as measured at or prior to the point of such release or discharge.

(2) Records of radioactivity measurements at on-site and off-site monitoring stations.

(3) Records of facility tests, measurements and calculations performed pursuant to the requirements of the Technical Specifications.

(4) Records of principal maintenance operations involving substitution or replacement of facility equipment or components and the reasons therefor.

(5) Mechanical and chemical processing operating records including the rate of processing and any non-standard operating conditions that may have occurred.

(6) Records of the radioactive material received, shipped, in-process, stored as high-level liquid waste or buried as solid waste.

C. Reports

In addition to reports otherwise required under this license and applicable regulations:

(1) NFS shall inform the Commission of any occurrence or indication of a condition relating to the operation of the facility which prevented or could have prevented a system from performing its safety function as described in the Technical Specifications or in the Final Safety Analysis Report. For each such occurrence, NFS shall promptly notify by telephone or telegraph, the Director of the appropriate

Atomic Energy Commission Regional Compliance Office listed in Appendix D of 10 CFR 20 and shall submit within 10 days a report in writing to the Director, Division of Materials Licensing, with a copy to the Regional Compliance Office.

(2) NFS shall report to the Commission in writing within 30 days of its observed occurrence any substantial variance disclosed by operation of the facility from performance specifications contained in the Final Safety Analysis Report.

(3) NFS shall report to the Commission in writing within 30 days of its occurrence any significant change in plant organization or any of the accident analyses, as described in Section VII of the Final Safety Analysis Report.

(4) NFS shall submit to the Commission, at least quarterly, a written report including the following:

a. A summary of the processing operations performed during the period, including their duration.

b. The amount of radioactive material received, stored as liquid waste, buried as solid waste, released as liquid, gaseous and solid effluent, and shipped.

c. The levels of radioactivity measured at stack and site perimeter monitoring stations.

d. A brief explanation of the cause of each unplanned process shutdown.

e. A description of the principal maintenance performed on the facility with reasons therefor.

f. A description of changes, tests, and experiments performed pursuant to Paragraph 50.59(a) of the Commission's Rules and Regulations.

g. An explanation of malfunctions of any equipment important to safety and the results of periodic testing performed in accordance with the Technical Specifications.

h. Any other operating experience pertinent to safety.

Such reports shall be due within 30 days after the end of each reporting period.

6. This license is effective as of the date of issuance and shall expire eighteen months from the date of issuance (unless extended for good cause shown), or upon the earlier issuance of a superseding operating license.

FOR THE ATOMIC ENERGY COMMISSION

Direccor
Division of Materials Licensing

Attachment:
Appendix A

Date of Issuance:

12/16/66

110724

December 15, 1966

Mr. J. L. Aikens, Jr., Chief
Irradiated Fuels Branch
Division of Material Licensing
U. S. Atomic Energy Commission
Washington, D. C.

Dear Mr. Aikens:

Under the BASIS of Technical Specification 4.12 "WASTE STORAGE TANK CAUSTIC ADDITION", we stated that 100,000 gallons of water plus excess caustic would be added to the waste tank (8D-2) before the addition of hot waste. In addition, 300,000 gallons of water was added per agreement with ASDA so that the circulators would function properly. This was done as described. It has become apparent that the waste tank (8D-2) will not boil by itself before being filled because of the original water addition and the low heat generation rate of the fuel being processed.

We propose to install a heat exchanger through one of the 12" hatches to boil-off the excess water contained in the waste tank. The attached print 8C-I-377 and heat exchanger data sheet are submitted for your information. The condensate produced will be treated in the same manner as the normal condensate. The heat exchanger will be left in the tank upon completion of its use.

The heat exchanger installation procedures will be approved by the Safety Committee to insure the safety of personnel before installation is started. Administrative procedures will be enforced during installation to insure against over-exposure to personnel.

The above material is submitted for your review and approval. Should questions arise, we shall be happy to supply any additional information necessary.

Very truly yours,

W. H. Lewis
General Manager
Vice President

WHL/BEK/sk
Enc: 2

bcc: M. E. Weech
W. A. Oldham
S. Dennis
J. D. Anderson w/attachments (2)
J. Merkley w/attachments

02/23/67

4a

February 23, 1967

Mr. B.G. Bechhoefer
Scharfeld, Bechhoefer and Baron
5th Floor - 1710 H Street, N.W.
Washington, D.C. 20006

Dear Mr. Bechhoefer:

Our Provisional Operating License (CSF-1) expires October 19, 1967, and will presumably be followed by our operating license. What requirements, if any, are necessary on our part to assure the license is issued without difficulty, assuming of course, that our present licensing problems are cleared up in the near future.

There are many changes being made in the Technical Specifications, some being only of an editorial nature. With, or prior to the issuance of our operating license, we would like to up-date the Technical Specifications to reflect all these changes--both editorial and operational.

I would appreciate your thoughts and recommendations on how we can most expeditiously proceed on this matter.

Incidentally, we have made some progress in putting the concern of the AEC-DML into a better perspective. I should like to get together with you in about another week or so to review our present situation.

Very truly yours,

R. P. Mischow
Assistant General Manager

RPM:bm
cc: T.C. Runion
W.H. Lewis
B.E. Knight

Law Offices
Scharfeld, Bechhoefer & Baron
5th Floor 1710 H Street, N.W.
Washington, D.C. 20006

Telephone
298-6030

Arthur W. Scharfeld
Bernhard G. Bechhoefer
Theodore Baron
Michael Finkelstein

March 3, 1967

Company Confidential

Dr. R. P. Wischow
Assistant General Manager
Nuclear Fuel Services, Inc.
P. O. Box 124
Cattaraugus County
West Valley, New York 14171

Dear Russ:

This will refer to your letter of February 23, 1967, concerning the procedures for converting the provisional operating license into a permanent license.

If everything had gone smoothly in the operations of the West Valley plant, the Commission would issue a license for the full term upon a finding that the operations had shown that the "features, characteristics, or components of the proposed facility as to which it appears desirable to obtain actual operating experience before issuance of operating license for the full term requested in the application" had been satisfactorily tested. (I am quoting from paragraph (c) of the preamble to the provisional operating license.)

In the case of reactors, the issuance of such a license for the full term requires practically no formalities. In some of the cases, a letter requesting the license appears in the files. In other instances, the license is issued without any written request. It goes without saying that whether or not there is a written request, negotiation and discussion take place between the Director of Licensing and the licensee to work out the exact terms of the license, including an up-to-date revision of the Technical Specifications.

In view of the AEC letter of February 7th, I can visualize four possible procedures to take care of the situation after October 19, 1967.

1. The Commission might automatically issue a license for the full term as set forth above. A Federal Register notice would follow the issuance of the license.

2. The Commission might automatically extend the provisional license on the ground that there continue to be features

Dr. R. P. Wischow
Nuclear Fuel Services, Inc.
West Valley, New York

of the proposed facility where further actual operating experience is required before issuance of an operating license for the full term. A Federal Register notice would follow the extension.

3. The Commission might designate for public hearing the matter of issuance of a license for the full period.

4. The Commission might designate for hearing the renewal of the provisional license.

Of course, we are aiming towards the first course of action. I am inclined to believe that it would be preferable to have a renewal of the provisional license without a hearing than the possible issuance of a permanent license with a hearing.

I had planned to discuss informally with the representatives of the General Counsel's office the proposed procedures early this spring. However, it would be premature to bring up the question until after we have taken the steps required by the Commission's letter of February 7th. I should like to discuss this matter further when you come to Washington next Tuesday.

Sincerely,

Bernhard G. Bechhoefer

cc: Messrs. T. C. Runion
W. H. Lewis

Law Offices
Scharfeld, Bechhoefer & Baron
Suite 512, 1725 K Street, N.W.
Washington, D.C. 20006

Telephone
(202) 223-2945

r W. Scharfeld (1903-1966)
nhard G. Bechhoefer
Theodore Baron
Michael Finkelstein

June 22, 1967

Mr. T. C. Runion, President
Nuclear Fuel Services, Inc.
906 Wheaton Plaza Building
Wheaton, Maryland 20902

Subject: Preparations and Time Schedule for Obtaining Final License

Dear Charlie:

The provisional license of NFS expires on October 9, 1967. In the meeting yesterday with Dr. McBride and Mr. Aikens, Dr. McBride indicated that we would not be required to file a formal application for a permanent license. However, he anticipated a series of meetings to work out the details of a permanent license which he believed would be more satisfactory both for the AEC and NFS than the present license. Mr. Aikens suggested that the first meeting could commence somewhere around July 15th. I suggest:

(1) That you, Mr. Lewis, Dr. Wischow, and I each review separately the provisions of the operating license including revised technical specifications and make notes concerning sections that are unsatisfactory either for technical or legal reasons. My own review obviously would not involve the technical specifications other than 7.1, Administrative Requirements. However, it would cover the entire remainder of the license. Dr. McBride indicated that if I find any specific legal problems it would be satisfactory to him if I took them up directly with Troy Conner prior to further meetings with him.

(2) I suggest that we have a preliminary meeting within NFS no later than the 10th of July to consider suggestions which we may have concerning the final license.

(3) Immediately after July 4th, I shall talk again to Al Aikens to work out an exact date for the first meeting. Aikens, McBride, Conner, Runion, Lewis, Wischow, and Bechhoefer are essential. With AEC vacations it may be difficult to find a date when all can be present.

Mr. T. C. Runion, President
Nuclear Fuel Services, Inc.
Wheaton, Maryland

The first meeting should enable us to separate the purely technical problems from those which involve a combination of legal and technical factors.

Dr. McBride indicated both during our meeting and earlier that we are "off the hook" on the violations. Nevertheless, I think that there should be some further letters no later than the 15th of July--(1) a letter on the changes in organization; (2) a letter on the administrative procedures and health procedures (including Dr. Monroe's visits); and (3) a progress report on the changes in the plant bringing up to date your excellent oral statement in yesterday's meeting.

Sincerely,

Bernhard G. Bechhoefer

cc: Dr. R. P. Wischow

file

July 26, 1967

Mr. B. G. Bechhoefer
Scharfeld, Bechhoefer and Baron
1725 K Street N. W.
Washington, D. C. 20006

Dear Mr. Bechhoefer:

I am enclosing a proposed draft describing the reasons for requesting an extension of the provisional operating license. This insert is suggested as a replacement for the last paragraph of page one of your draft of the proposed extension submitted with your letter of July 14.

I have discussed this draft with West Valley personnel; I would appreciate your early review and suggestions because of the short time schedule to submit the official request for extension.

Very truly yours,

ORIGINAL SIGNED BY R. P. WISCHOW

R. P. Wischow
Assistant General Manager

RPW:ah

cc: T. C. Runion
W. H. Lewis
J. P. Duckworth
J. R. Clark

INSERT I

The extension of the provisional operating license is requested because actual operating experience has not been obtained to date in reference to several features, characteristics and component of the facility; namely:

1. The facility has demonstrated the capability of processing power reactor fuels; however, short-cooled fuels containing measurable quantities of radioactive iodine have not been processed. During the extension period of the provisional operating license, such fuels will be available for processing to demonstrate this capability.
2. NFS has successfully processed power reactor fuels having a maximum exposure of 21,900 Mwd/T and an average exposure of 11,600 Mwd/tonne uranium. During the next several months, fuels having a maximum exposure of 30,140 Mwd/T and an average exposure of 16,500 Mwd/tonne uranium will be processed, thereby demonstrating the capability of processing fuels with exposures of or greater than 20,000 Mwd/tonne uranium. We will report this operating experience at the conclusion of the existing campaign; these data will be available early in the period of the proposed extension of the provisional operating license.

3. The revised interceptor system for discharge of low level effluents to the lagoons will provide additional protection in depth; operating experience on this system will be obtained during the next six months.

4. NFS has processed Yankee and Dresden fuel assemblies and has scheduled the processing of the Consolidated Edison Indian Point reactor assemblies during the first quarter of 1968. Completion of the processing of the Indian Point assemblies will more fully demonstrate the projected capabilities of the facility.

REQUEST FOR LICENSE EXT.
08/21/67

AUG 28 1967

August 16, 1967

Dr. John A. McBride, Director
Division of Materials Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. McBride:

Attached is the request of Nuclear Fuel Services, Inc. for extension of the expiration date of its provisional operating license. The financial information in connection with this request is submitted in two parts. The first part brings up to date the information concerning financial responsibility previously furnished, and the second part contains statements of the cash flow, actual and projected, for operating the facility for the period from May 1, 1966, to December 31, 1972, and a statement, actual and projected, of the source and application of the funds for the operation of the facility from May 1, 1966, to and including December 31, 1972. Pursuant to the provisions of Title 10, Chapter 1, Section 2.790, Code of Federal Regulations, it is requested that the information contained in the second part of the submission (each sheet being designated "Subject to Section 2.790") be withheld from public disclosure on the following bases:

1. Disclosure of detailed operating costs would be detrimental to the competitive efforts of the applicant in bidding for spent fuel processing contracts against domestic and foreign competition. The loss of such business to domestic competition would adversely affect the operations of the applicant and the loss of such business to foreign competition would adversely affect the operations of applicant as well as other potential domestic processors, and might affect the United States balance of payments.

2. The licensing procedure has evolved primarily around the utility industry and does not take due cognizance of the competitive elements of the chemical industry.

Information contained in the second part of this submission could be detrimental to the interests of the applicant

if access thereto is not restricted, at the discretion of the Commission, to persons properly and directly concerned with the issuance of the license requested by the applicant.

Very truly yours,

Bernhard G. Bechhoefer

Attorney for
Nuclear Fuel Services, Inc.

Enclosure

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	Docket No. 50-201

REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE

- PART A -

August 21, 1967

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	)	Docket No. 50-201

REQUEST FOR EXTENSION OF EXPIRATION DATE
OF PROVISIONAL OPERATING LICENSE
- PART A -

In accordance with the provisions of Sections 104(b) and 187 of the Atomic Energy Act, as amended, and of Section 50.57(d) of the Commission's Regulations (10 CFR Section 50.57(d)), Nuclear Fuel Services, Inc., hereby requests that its provisional operating license No. CSF-1, as amended, be renewed and that the expiration date thereof be extended from October 19, 1967, until April 19, 1969, by amending Section 6 of said license to read as follows:

> "This license is effective as of the date of issuance and shall expire on April 19, 1969, eighteen months from the effective date of its renewal and the extension of the prior expiration date (unless extended for good cause shown), or upon the earlier issuance of a superseding operating license."

Good cause exists for the extension of the expiration date of the provisional license in that, before issuance of a final operating license for the full term, forty (40) years, requested by the applicant it is desirable to obtain actual operating experience in connection with the following features, charac-

teristics, and components of the facility, though no substantial problems are anticipated in connection with any of these features:

1. The facility has demonstrated the capability of processing power reactor fuels of intermediate burn-up; however, high burn-up fuels, or fuels containing measurable quantities of radioactive iodine have not been processed. During the extension period of the provisional operating license, such fuels will be available for processing to demonstrate this capability. NFS has successfully processed power reactor fuels having a maximum exposure of 21,800 Mwd/T and an average exposure of 11,600 Mwd/tonne uranium. During the next several months, fuels having a maximum exposure of 30,140 Mwd/T and an average exposure of 16,500 Mwd/tonne uranium will be processed, thereby demonstrating the capability of processing fuels with exposures of or greater than 20,000 Mwd/tonne uranium. We will report this operating experience at the conclusion of the existing campaign; these data will be available early in the period of the proposed extension of the provisional operating license.
2. The revised interceptor system for discharge of low level effluents to the lagoons will provide additional protection in depth; operating experience on this system will be obtained during the next six months.
3. NFS has processed Yankee and Dresden fuel assemblies and has scheduled the processing of the Consolidated Edison

thorium-bearing Indian Point reactor assemblies during the first quarter of 1968. Completion of the processing of the Indian Point assemblies will more fully demonstrate the projected capabilities of the facility.

Financial Data

Exhibit 1 attached hereto is a copy of the Consolidated Balance Sheet of Nuclear Fuel Services, Inc. as of December 31, 1966, excerpted from the certified statement of NFS for the year ending December 31, 1966, and a copy of the Consolidated Balance Sheet of Nuclear Fuel Services, Inc. as of June 30, 1967, excerpted from the statement prepared by NFS for the six-month period ending June 30, 1967.

Reference is made to Submission No. 2 of information subsequent to the construction permit dated July 15, 1965, and Submission No. 3 dated August 25, 1965, furnishing information concerning the financial qualifications of applicant, Nuclear Fuel Services, Inc. The information contained in such submissions as to sources of funds, cost of completion of plant, and insurance coverage and requirements, are unchanged except as follows:

1. The construction of the plant is 100% completed. Actual costs of the plant were as follows: structures, equipment, site, and improvements - $27,664,000; working capital - $1,260,000; preoperational costs - $3,960,000; total - $32,884,000. The estimated costs for completion of the plant as set forth in Submission No. 2 on July 15, 1965, were $32,000,000.

2. An open line of credit from Manufacturers and Traders Trust Company of Buffalo amounting to $1,500,000 was made available and has been extended to April 1, 1970.
3. W. R. Grace and Company has extended credit to applicant to borrow up to $750,000 as required for working capital.
4. W. R. Grace and Company has purchased 42 additional shares of common stock of Nuclear Fuel Services, Inc. and paid therefor $506,940 in cash.

Exhibit 1 indicates, as of December 31, 1966, and June 30, 1967, the extent of use of the sources of funds set forth above.

In Part B applicant is submitting information showing the cash flow, actual and projected, from reprocessing plant operations for the period from May 1, 1966, (operations having commenced April 19, 1966) to December 31, 1972. Part B likewise contains a statement, actual and projected, of the source and application of funds for the operation of the facility from May 1, 1966, to and including December 31, 1972.

Applicant estimates that the cost of shutting down the nuclear facility and placing it in a safe condition, in the event this became necessary, would be between $400,000 and $600,000. This estimate represents the cost of operating the plant for a period of from four to six weeks necessary for decontamination at a cost of not to exceed $100,000 per week. This estimate does not cover decontamination or other expenses arising other than from normal operations of the facility since

applicant is fully protected by insurance from NEPIA for additional costs in excess of $50,000 arising as a result of an accident.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By T. C. Runion
T. C. Runion

Bernhard G. Bechhoefer
Scharfeld, Bechhoefer & Baron
1725 K Street, N. W.
Washington, D. C. 20006
Attorneys for
Nuclear Fuel Services, Inc.

Dated: August 21, 1967

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the 21st day of August, 1967, before me T. C. RUNION, to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

James Darrell Campbell
Notary of
Howard County, Md.
My Commission expires 7/1/69

Exhibit I

NUCLEAR FUEL SERVICES, INC.

Consolidated Balance Sheet
As of December 31, 1966

(in $000)

ASSETS	
Current Assets:	
Cash	$ 1,037
Receivables - Net (1)	2,814
Inventories	910
Other Current Assets	116
Total Current Assets	4,877
Fixed Assets (Note 2)	22,785
Less: Reserve for Depreciation	2,335
Fixed Assets - Net	20,450
Other Assets:	
Preoperational Costs - Reprocessing Plant	2,822
Other	239
Total Other Assets	3,061
	$28,388
LIABILITIES & STOCKHOLDERS' EQUITY	
Current Liabilities:	
Loans Payable - Current (Note 3)	$ 2,183
Accounts Payable	987
Other Current Liabilities	796
Total Current Liabilities	3,966
Deferred Taxes on Income	363
Deferred Credit - Research Grant (Note 4)	1,124
Long-Term Debt - Bank Loans (Note 5)	10,865
Total Liabilities	16,318
Stockholders' Equity:	
Capital Stock - Issued (Note 6)	11,102
Paid-in Surplus (Note 7)	500
Earned Surplus	468
Total Equity	12,070
	$28,388

NUCLEAR FUEL SERVICES, INC.

Notes to the Balance Sheet

Note 1:

In August 1966 the company's West Valley, New York for approximately two months by contamination of the plan following a truck accident. Costs and expenses during th ing $1,007,423 have been segregated and offset against th recovery of $1,045,000 and the remaining balance is inclu in the 1966 income statement. The costs and expenses for be summarized as follows:

Plant costs and operating expenses	$
Depreciation and amortization	
Selling, general & administrative expenses	
Amortization of preoperating expenses	-
	$

The estimated insurance recovery of $1,045,000 is net" in the December 31, 1966 balance sheet.

Note 2:

Plant and equipment included in the balance sheet is summarized by major classes as follows:

Land	$
Buildings	
Machinery and equipment	
Projects under construction	-
Depreciation and amortization	-
	$

Note 3:

Loans payable consist of the following obligations

($000)

Current portion of long-term bank debt	$
Borrowings against bank line of credit which expires April 1, 1967	
Loans from stockholders	-
	$

Notes to balance sheet (continued)

Note 4:

The company received a $2,000,000 research grant from Empire State Atomic Development Associates, Inc. A portion of this grant ($822,000) was applicable to research and development of a preoperating nature and is being amortized over five years. The remainder of the grant, which is reflected as a deferred credit, is being amortized over fifteen years.

Note 5:

The total amount borrowed under the bank loan agreement was $13,500,000. Two semi-annual repayments have been made totaling $1,277,000. The balance of the loan will be repaid in eighteen equal semi-annual installments beginning January 1, 1967.

Note 6:

W. R. Grace & Co. and American Machine and Foundry Co. have made the following contributions in exchange for NFS stock:

	Grace	AMF	Total
Percentage of ownership	80%	20%	100.00%
Cash ($000)	$6,000	$2,000	$8,000
Existing facilities @ book value	2,466	636	3,102
	$8,466	$2,636	$11,102

Note 7:

Funds have been contributed by the stockholders for use in expanding the facilities at the Erwin, Tennessee plant.

NUCLEAR FUEL SERVICES, INC.

Consolidated Balance Sheet
As of June 30, 1967

($000)

ASSETS

Current Assets:	
Cash	$ 1,129
Receivables - Net	2,193
Inventories	1,027
Other Current Assets	251
Total Current Assets	4,600
Fixed Assets (Note 1)	23,144
Less: Reserve for Depreciation	3,133
Fixed Assets - Net	20,011
Other Assets:	3,065
Preoperational Costs - Reprocessing Plant	263
Other	3,328
Total Other Assets	$27,939

LIABILITIES & STOCKHOLDERS' EQUITY

Current Liabilities:	
Loans Payable - Current (Note 2)	$ 3,058
Accounts Payable	761
Other Current Liabilities	825
Total Current Liabilities	4,644
Deferred Taxes on Income	(433)
Deferred Credit - Research Grant (Note 3)	1,714
Long-Term Debt - Banks Loans (Note 4)	10,186
Other Liabilities	4
Total Liabilities	16,115
Stockholders' Equity:	
Capital Stock - Issued (Note 5)	11,612
Paid-In Surplus (Note 6)	500
Earned Surplus	(288)
	11,824
	$27,939

NUCLEAR FUEL SERVICES, INC.

Notes to the Balance Sheet

Note 1 - Fixed assets do not include $8,500,000 in land and facilities at West Valley, New York leased to NFS by ASDA. The detail of NFS-owned facilities by location is as follows:

($000)	
West Valley, New York:	
Spent Fuel Processing Plant	$19,164
Other	180
Total West Valley, N.Y.	19,344
Erwin, Tennessee and Wheaton, Maryland	3,800
Total	$23,144

Note 2 - Loans payable consist of the following obligations:

($000)	
Current portion of long-term bank debt	$ 1,358
Borrowings against bank line-of-credit which expires April 1, 1970	1,500
Loans from stockholders	200
	$ 3,058

Note 3 - ESADA contributed $2,000,000 toward the research and development costs associated with the reprocessing plant. A portion of the grant ($822,000) was applicable to preoperating expense and is being amortized over five years. The balance of the grant is being amortized over fourteen years and eight months.

Note 4 - The total amount borrowed under the bank loan agreement was $13,500,000. Three semi-annual repayments have been made totaling $1,956,000. The balance of the load will be repaid in seventeen equal semi-annual installments beginning July 1, 1967.

Note 5 - W. R. Grace & Co. and American Machine and Foundry Company have made the following contributions in exchange for NFS stock:

	Grace
Percentage of ownership	80.81%
Cash ($000)	$6,507
Existing facilities at book value	2,466
	$8,973

Note 6 - Funds have been contributed by the stockholders for use in expanding the facilities at the Erwin, Tennessee plant.

CERTIFICATE OF SERVICE

The undersigned, Bernhard G. Bechhoefer, Attorney for the Applicant, Nuclear Fuel Services, Inc., does hereby certify that he caused the attached Request for Extension of Expiration Data of Provisional Operating License - Part A to be served on each of the following persons by causing a conformed copy of the same to be deposited today in the United States mail properly stamped for first class mail and addressed to each of the following:

(a) Mr. E. Scott Smith
County Clerk
Cattaraugus County
West Valley, New York

(b) Mr. Norman Fagnan
Supervisor, Town of Ashford
West Valley, New York

(c) Mr. Oliver Townsend
230 Park Avenue
New York 17, New York
New York State Atomic and
Space Development Authority

(d) Oscar M. Ruebhausen, Esquire
c/o Debevoise, Plimpton, Lyons & Gates
320 Park Avenue
New York 22, New York
Counsel for New York State Atomic
and Space Development Authority

(e) Maurice Axelrad, Esquire
230 Park Avenue
New York 17, New York
New York State Atomic and Space Development Authority

(f) Troy B. Conner, Jr., Esquire
c/o Atomic Energy Commission
Bethesda, Maryland
Counsel for AEC Regulatory Staff

Dated: August 21, 1967

Bernhard G. Bechhoefer

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	Docket No. 50-201

REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE

- PART B -

(Subject to Section 2.790)

August 21 , 1967

Subject to Section 2.790

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	Docket No. 50-201

REQUEST FOR EXTENSION OF EXPIRATION DATE
OF PROVISIONAL OPERATING LICENSE
- PART B (Subject to Section 2.790) -

Applicant herewith submits a statement of cash flow, actual and projected, from reprocessing plant operations for the period from May 1, 1966, (operations having commenced April 19, 1966) to December 31, 1972--Exhibit 2; and a statement, actual and projected, of the source and application funds for the operation facility for May 1, 1966, to and including December 31, 1972--Exhibit 3.

The small positive cash flow of plant operations during its first fourteen months is largely attributable to the fact that the plant actually operated about 50 percent of the time in contrast to 81 percent of the time as projected for normal operations. The periods of shutdown in excess of those anticipated for normal operations, in general, arose from problems inherent in a novel operation--problems which applicant believes have been surmounted.

The projected cash flow from the Erwin operations of applicant for years subsequent to 1967 does not exceed the cash

Subject to Section 2.790

contribution which would have been available from the Erwin operations for preceding years except 1967 when changes in its method of operations including extensive plant changes prevented a positive cash flow.

It will be apparent from the schedules that if NFS obtains additional fuel load as requested from the AEC, its cash flow will be adequate to insure operations through December 31, 1972. If NFS should not obtain such additional load, it will be apparent that the cash flow will be sufficient to permit operations at least until April 1969, the date to which the provisional license would be extended, since available load would not have been processed by then, and would permit shutting down the facility and placing it in a safe condition upon the completion of processing of available fuel load.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By T. C. Runion

T. C. Runion

Bernhard G. Bechhoefer
Scharfeld, Bechhoefer & Baron
1725 K Street, N. W.
Washington, D. C. 20006
Attorneys for
Nuclear Fuel Services, Inc.

Dated: August 21 , 1967

Subject to Section 2.790

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the 21st day of August, 1967, before me personally came T. C. RUNION, to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

James Darrell Campbell

JAMES DARRELL CAMPBELL
NOTARY OF
HOWARD COUNTY, MD.
MY COMMISSION EXPIRES 7/1/69

NUCLEAR FUEL SERVICES, INC.

Cash Flow from Reprocessing Plant Operations (1)

(in $000) May 1, 1966 - December 31, 1972

	May 1966 - June 1967	July - Dec 1967
Revenues	$4,867	$4,416
Operating Costs and Expenses - Cash Basis		
Salaries, Wages & Benefits	1,076	790
Process Chemicals & Shipping Supplies	101	139
Plant Utilities	252	132
Insurance	283	130
Local Taxes	62	30
Operating & Maintenance Supplies & Services	737	410
Home Office Charges	367	175
Rent - ASDA	486	330
Waste Surveillance - ASDA	227	148
Interest on Bank Loan	808	340
	4,399	2,624
Net Cash Flow - Reprocessing	$ 468	$1,792

(1) Revenues and costs based upon availability of additional fuel load.

Exhibit II

1968	1969	1970	1971	1972
$7,200	$7,200	$7,200	$7,200	$7,200
1,679	1,679	1,679	1,679	1,679
276	291	273	245	230
272	277	271	261	255
272	272	272	272	272
59	59	59	59	59
838	854	834	802	786
367	367	367	367	367
660	660	660	660	660
294	302	292	276	268
542	467	392	317	242
5,259	5,228	5,099	4,938	4,818
$1,941	$1,972	$2,101	$2,262	$2,382

NUCLEAR FUEL SERVICES, INC.

Source and Application of Funds - Consolidated

July 1, 1967 - December 31, 1972

(in $000)

	July - Dec. 1967	1968
Source of Funds		
Reprocessing Operations (Exhibit II)	$ 1,792	$ 1,941
Other Operations - West Valley (net)	39	78
Erwin Operations (net)	-	892
Total	1,831	2,911
Application of Funds		
Repayment of Advances from Stockholders	200	-
Repayment of Bank Line of Credit	625	875
Repayment of Term Loan	679	1,358
Total	1,504	2,233
Funds Available for Contingencies and Expansion	$ 327	$ 678

Exhibit III

1969	1970	1971	1972
$ 1,972	$ 2,101	$ 2,262	$ 2,382
78	78	78	78
866	1,002	1,030	1,030
2,916	3,181	3,370	3,490
-	-	-	-
-	-	-	-
1,358	1,358	1,358	1,358
1,358	1,358	1,358	1,358
$ 1,558	$ 1,823	$ 2,012	$ 2,132

10/16/67 LETTER

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

110895

IN REPLY REFER TO:

Docket No. 50-201

OCT 16 1967

Nuclear Fuel Services, Inc.
Wheaton Plaza Building, Suite 900
Wheaton, Maryland 20902

Attention: Mr. W. C. Redpath, President

Gentlemen:

This will acknowledge receipt of your application dated August 21, 1967, as supplemented by your letter of August 31, 1967, for extension of the October 10, 1967 expiration date of Provisional Operating License No. 1 for operation of the West Valley Nuclear Processing Facility of Nuclear Fuel Services, Inc.

As provided by the Atomic Energy Commission's rules and regulations, in 10 CFR 2.109, your application is considered a timely request for renewal, and License No. 1 will remain in effect until the Commission has taken action on your application.

We are reviewing the technical [illegible] of this license, and are evaluating the results of an [illegible] investigation into the plutonium exposure incident of September 9, 1967, at the West Valley facility, reported to Compliance, Region 1 in your letter of dated Sept 21, 1967. When these evaluations have been completed, we will wish to discuss the results with you prior to taking the requested licensing action.

Sincerely yours,

Original Signed By
B. A. McBride

B. A. McBride, Director
Division of Materials Licensing

cc: Mr. C. W. Blackwood, Vice President
W. R. Grace and Company

PART 50

PART 50

LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

GENERAL PROVISIONS

GENERAL PROVISIONS

§ 50.1 *Basis purpose, and procedures applicable.* The regulations in this part are promulgated by the Atomic Energy Commission, pursuant to the Atomic Energy Act of 1954 (68 Stat. 919), to provide for the licensing of production and utilization facilities.

21 FR 355

§ 50.2 *Definitions.* As used in this part,

(a) "Production facility" means:

(1) Any nuclear reactor designed or used primarily for the formation of plutonium or uranium 233; or

(2) Any facility designed or used for the separation of the isotopes of uranium or the isotopes of plutonium, except laboratory scale facilities designed or used for experimental or analytical purposes only; or

26 FR 4989

(3) Any facility designed or used for the processing of irradiated materials containing special nuclear material, except (i) laboratory scale facilities designed or used for experimental or analytical purposes, and (ii) facilities in which the only special nuclear materials contained in the irradiated material to be processed are uranium enriched in the isotope U-235 and plutonium produced by the irradiation, if the material processed contains not more than 10^{-4} grams of plutonium per gram of U-235 and has fission product activity not in excess of 0.25 millicuries of fission products per gram of U-235.

(b) "Utilization facility" means any nuclear reactor other than one designed or used primarily for the formation of plutonium or U-233.

21 FR 355

Note: Pursuant to subsections 11v. and 11cc., respectively, of the Act, the Commission may from time to time add to, or otherwise alter, the foregoing definitions of production and utilization facility. It may also include as a facility an important component part especially designed for a facility, but has not at this time included any component parts in the definitions.

December 12, 1967

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

(c) "Act" means the Atomic Energy Act of 1954 (68 Stat. 919) including any amendments thereto.

(d) "Agreement for cooperation" means any agreement with another nation or regional defense organization, authorized or permitted by sections 54, 57, 64, 82, 103, 104, or 144 of the act, and made pursuant to section 123 of the act.

(e) "Atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(f) "Atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device.

(g) "By-product material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

(h) "Commission" means the Atomic Energy Commission or its duly authorized representatives.

(i) "Common defense and security" means the common defense and security of the United States.

(j) "Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government. 21 FR 355

(k) "Nuclear reactor" means an apparatus, other than an atomic weapon, designed or used to sustain nuclear fission in a self-supporting chain reaction.

(l) "Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission, any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

(m) "Produce," when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce special nuclear material.

(n) "Research and development" means (1) theoretical analysis, exploration or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes.

(o) "Restricted Data" means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the act.

(p) "Source material" means source material as defined in subsection 11z. of the Act and in the regulations contained in Part 40 of this chapter.

(q) "Special nuclear material" means (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the act, determines to be special nuclear material, but does not include source material, or (2) any material artificially enriched by any of the foregoing, but does not include source material.

(r) "Testing facility" means a nuclear reactor which is of a type described in § 50.21(c) and for which an application has been filed for a license authorizing operation at: 25 FR 1072

(1) A thermal power level in excess of 10 megawatts; or

(2) A thermal power level in excess of 1 megawatt, if the reactor is to contain:

(i) A circulating loop through the core in which the applicant proposes to conduct fuel experiments; or

(ii) A liquid fuel loading; or

(iii) An experimental facility in the core in excess of 16 square inches in cross-section.

(s) "United States," when used in a geographical sense, includes all Territories and possessions of the United States, the Canal Zone, and Puerto Rico. 21 FR 355

(t) "Controls" when used with respect to nuclear reactors means apparatus and mechanisms, the manipulation of which directly affects the reactivity or power level of the reactor. "Controls" when used with respect to any other facility means apparatus and mechanisms, the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in such a manner as to affect the protection of health and safety against radiation. 28 FR 3196

§ 50.3 *Interpretations.* Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission. 21 FR 355

§ 50.4 Communications. 31 FR 4668

Except where otherwise specified in this part, all communications and reports concerning the regulations in this part, and applications filed under them, should be addressed to the Director, Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C., 20545. Communications and reports may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C.; at 4915 St. Elmo Avenue, Bethesda, Md.; or at Germantown, Md.

REQUIREMENT OF LICENSE, EXCEPTIONS

§ 50.10 *License required.* (a) Except as provided in § 50.11, no person within the United States shall transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any production or utilization facility except as authorized by a license issued by the Commission. 25 FR 8712

(b) No person shall begin the construction of a production or utilization facility on a site on which the facility is to be operated until a construction permit has been issued. As used in this paragraph, the term "construction" shall be deemed to include pouring the foundation for, or the installation of, any portion of the permanent facility on the site, but does not include: 33 FR 2381

(1) Site exploration, site excavation, preparation of the site for construction of the facility, including the driving of piles, and construction of roadways, railroad spurs, and transmission lines;

(2) Procurement or manufacture of components of the facility;

(3) Construction of non-nuclear facilities (such as turbo-generators and turbine buildings) and temporary buildings (such as construction equipment storage sheds) for use in connection with the construction of the facility; and 25 FR 8712

(4) With respect to production or utilization facilities, other than testing facilities, required to be licensed pursuant to section 104 a. or section 104 c. of the Act, the construction of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility. (For example, the construction of a college laboratory building with space for installation of a training reactor is not affected by this paragraph.)

§ 50.11 Exceptions and exemptions from license.

Nothing in this part shall be deemed to require a license for:

(a) The manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91 of the Act, or the use of such facility by the Department of Defense or by a person under contract with and for the account of the Department of Defense;

(b) The processing, fabrication, or refining of special nuclear material, or the separation of special nuclear material, or the separation of special nuclear material from other substances, by a prime contractor of the Commission under a prime contract for: 29 FR 14401

(1) The performance of work for the Commission at a United States Government-owned or controlled site;

(2) Research in, or development, manufacture, storage, testing or transportation of, atomic weapons or components thereof; or

(3) The use or operation of a production or utilization facility in a United States Government-owned vehicle or vessel; or by a prime contractor or subcontractor of the Commission under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accom-

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

(c) The construction or operation of a production or utilization facility for the Commission at a United States Government-owned or controlled site, including the transportation of the production or utilization facility to or from such site and the performance of contract services during temporary interruptions of such transportation; or the construction or operation of a production or utilization facility in the performance of research in, or development, manufacture, storage, testing, or transportation of, atomic weapons or components thereof; or the use or operation of a production or utilization facility in a United States Government-owned vehicle or vessel: *Provided*, That such activities are conducted by a prime contractor of the Commission under his prime contract with the Commission;

(d) The construction or operation of a production or utilization facility by a prime contractor or subcontractor of the Commission under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety;

(e) The transportation or possession of any production or utilization facility by a common or contract carrier or warehouseman in the regular course of carriage for another or storage incident thereto.

29 FR 14401

Any person exempt from licensing under this part prior to the effective date of this amendment who would otherwise be required by virtue of paragraph (b), (c) or (d) of this section to obtain a license shall continue to be so exempt on an interim basis. Such interim exemption shall expire 60 days from the effective date of this amendment, unless within said 60-day period either an application for a license covering the activity or an application for an appropriate exemption under this section is filed with the Commission. If either such application is filed within such 60-day period, the interim exemption shall remain in effect until final action in the matter is taken by the Commission.

§ 50.12 *Specific exemptions.* The Commission may, upon application by any interested person, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

§ 50.13 Attacks and destructive acts by * enemies of the United States; and defense activities.**

An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required to provide for design features or other measures for the specific purpose of protection against the effects of (a) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (b) use or deployment of weapons incident to U.S. defense activities.

21 FR 355

CLASSIFICATION AND DESCRIPTION OF LICENSES

§ 50.20 *Two classes of licenses.* Licenses will be issued to named persons applying to the Commission therefor, and will be either class 104 or class 103.

§ 50.21 *Class 104 licenses; for medical therapy and research and development facilities.* A class 104 license will be issued, to an applicant who qualifies, for any one or more of the following: to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation:

(a) A utilization facility for use in medical therapy; or

(b) A production or utilization facility involved in the conduct of research and development activities leading to the demonstration of the practical value of the facility for industrial or commercial purposes; or

(c) A production or utilization facility, which is useful in the conduct of research and development activities of the types specified in section 31 of the act, and which is not a facility of the type specified in * paragraph (b) of this section.

§ 50.22 *Class 103 licenses; for commercial and industrial facilities.* A class 103 license will be issued, to an applicant who qualifies, for any one or more of the following: to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation, a production or utilization facility which is of a type found in writing by the Commission, to have been sufficiently developed to be of practical value for industrial or commercial purposes.

§ 50.23 *Construction permits.* A construction permit for the construction of a production or utilization facility will be issued prior to the issuance of a license if the application is otherwise acceptable, and will be converted upon due completion of the facility and Commission action into a license as provided in § 50.56. A construction permit for the alteration of a production or utilization facility will be issued prior to the issuance of an amendment of a license, if the application for amendment is otherwise acceptable, as provided in § 50.91.

§ 50.24 *Effect of finding of practical value upon licenses previously issued.* The making of a finding of practical value pursuant to section 102 of the act will not be regarded by the Commission as grounds for requiring:

21 FR 9354

(a) The conversion to a Class 103 license of any Class 104 license prior to the date of expiration contained in the license; or

(b) The conversion to a Class 103 license of any construction permit, issued under section 104 of the act, prior to the date designated in the permit for expiration of the license.

APPLICATIONS FOR LICENSES, FORM, CONTENTS, INELIGIBILITY OF CERTAIN APPLICANTS

§ 50.30 Filing of applications for licenses; oath or affirmation.

31 FR 4668

(a) *Place of filing.* Each application for a license, including whenever appropriate a construction permit, or amendment thereof, should be filed with the Director, Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C., 20545; except that applications for export licenses should be filed with the Director, Division of State and Licensee Relations. Communications, reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C.; at 4915 St. Elmo Avenue, Bethesda, Md.; or at Germantown, Md.

23 FR 3115

(b) *Oath or affirmation.* Each application for a license, including whenever appropriate a construction permit or amendment thereof, should be executed in three signed originals by the applicant or duly authorized officer thereof under oath or affirmation.

(c) *Number of copies of applications.* Each filing of an application for license authorizing export only or amendment thereof should include, in addition to the three originals, three copies of the application. Each filing of any other application under this section should include, in addition to the three signed originals, 19 copies of the application, except that with respect to that portion of the application containing the information required by § 50.34 (safety and ... is report) the filing should include 40 copies.

§ 50.31 *Combining applications.* An applicant may combine in one his several applications for different kinds of licenses under the regulations in this chapter.

§ 50.32 *Elimination of repetition.* In his application, the applicant may incorporate by reference information contained in previous applications, statements or reports filed with the Commission: *Provided*, That such references are clear and specific.

§ 50.33 *Contents of applications; general information.* Each application shall state:

(a) Name of applicant;

(b) Address of applicant;

(c) Description of business or occupation of applicant;

(d) (1) If applicant is an individual, state citizenship.

*Changed 31 FR 12776

***§50.13 added, 32 F.R. 13445, Sept. 26, 1967

* Corrected 31 FR 15145

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

21 FR 355

2) If applicant is a partnership, state ..ne, citizenship and address of each ..artner and the principal location where the partnership does business.

(3) If applicant is a corporation or an unincorporated association, state:

(i) The state where it is incorporated or organized and the principal location where it does business;

(ii) The names, addresses and citizenship of its directors and of its principal officers;

(iii) Whether it is owned, controlled, or dominated by an alien, a foreign corporation, or foreign government, and if so, give details.

(4) If the applicant is acting as agent or representative of another person in filing the application, identify the principal and furnish information required under this paragraph with respect to such principal.

(e) The class of license applied for, the use to which the facility will be put, the period of time for which the license is sought, and a list of other licenses, except operator's licenses, issued or applied for in connection with the proposed facility.

(f) The financial qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter. ...

g) The technical qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter.

(h) If the applicant proposes to construct or alter a production or utilization facility, the application shall state the earliest and latest dates for completion of the construction or alteration.

(i) If the proposed activity is the generation and distribution of electric energy under a class 103 license, a list of the names and addresses of such regulatory agencies as may have jurisdiction over the rates and services of the proposed activity, and of those municipalities, private utilities, public bodies, and cooperatives, which are within transmission distance and which are authorized to engage in the distribution of electric energy within the area.

(j) If the application contains Restricted Data or other defense information, it shall be prepared in such manner that all Restricted Data and other defense information are separated from the unclassified information.

21 FR 355

§ 50.34 Contents of applications; technical information safety analysis report.

Each application shall state the following technical information:

(a) A description of the chemical, ..sical, metallurgical, or nuclear proc..o be performed, and a statement of ..e kind and quantity of any radioactive effluent expected to result from the process. The description of the process should be sufficiently detailed to permit evaluation of the radioactive hazards involved. The magnitude of the proposed operation should be indicated in terms of the amount and radioactivity of source, special nuclear, or by-product material to be handled per unit of time, and thermal power to be generated if any.

(b) A description of the facility. The description should be based on the design criteria for the facility as a whole and for those major component parts which are essential to the safe operation of the facility, and should be presented in sufficient detail to allow an evaluation of the adequacy of the various means proposed to minimize the probability of danger from radioactivity to persons both on and off-site. The description should also cover any activities, other than those subject to license, proposed to be carried on in the building which will house the facility and on the balance of the site.

(c) A description of the site on which the facility is to be located. This should include a map of the area showing the location of the site and indicating the use to which the surrounding land is put, i. e., industrial, commercial, agricultural, residential; location of sources of potable or industrial water supply, watershed areas and public utilities; and a scale plot plan of the site showing the proposed location of the facility.

(d) A description of proposed procedures for: routine and non-routine operations, start-up and shut-down, maintenance, storage, training of employees, minimizing operational mishaps (such as locked controls, checklists, and close supervision), investigating unusual or unexpected incidents; and a description of such other details as may be useful in evaluating the existence and effectiveness of safeguards against the radioactive hazards in the operation of the facility.

(e) A description of plans or proposals in the event that acts or accidents occur which would create radioactive hazards. The description should relate the various operational procedures, the protective devices, and the pertinent features of the site, to such happenings as operational mistakes, equipment or instrument failure or malfunction, fire, electric power failure, flood, earthquake, storm, strike, and riot.

(f) meteorological; hydrological, geological, and seismological data necessary for evaluating the measures proposed for protecting the public against possible radioactive hazards.

(g) An evaluation of the proposed measures and devices to prevent acts or accidents which would create radioactive hazards or to protect against the consequences should such acts or accidents occur.

(h) A description of procedures for disposal of radioactive solid waste and the final disposal of liquid waste effluent.

(i) A description of means provided to sample atmosphere discharges through stacks where such stacks may emit by-product material or special nuclear material.

31 FR 12774

§ 50.35 Issuance of provisional construction permits.

(a) When an applicant has not supplied initially all of the technical information required to complete the application and support the issuance of a construction permit which approves all proposed design features, the Commission may issue a provisional construction permit if the Commission finds that (1) the applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public; (2) such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report; (3) safety features or components, if any, which require research and development have been described by the applicant and the applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and that (4) on the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facility and (ii) taking into consideration the site criteria contained in Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

27 FR 12915

(b) A provisional construction permit will constitute an authorization to the applicant to proceed with construction but will not constitute Commission approval of the safety of any design feature or specification unless the applicant specifically requests such approval and such approval is incorporated in the permit. The applicant, at his option, may request such approvals in the provisional construction permit or, from time to time, by amendment of his construction permit. The Commission may, in its discretion, incorporate in any provisional construction permit provisions requiring the applicant to furnish periodic reports of the progress and results of research and development programs designated to resolve safety questions.

(c) Any construction permit will be subject to the limitation that a license authorizing operation of the facility will not be issued by the Commission until (1) the applicant has submitted to the Commission, by amendment to the application, the complete final safety analysis report, portions of which may be submitted and evaluated from time to time, and (2) the Commission has found that the final design provides reasonable assurance that the health and safety of the public will not be endangered by operation of the facility in accordance with the requirements of the license and the regulations in this chapter.

* Corrected 31 FR 15145

*Changed 31 FR 12774

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

§ 50.36 Designation of technical specifications.

(a) Each applicant for a license authorizing operation of a production or utilization facility shall, and each applicant for a construction permit may, designate those provisions of his safety analysis report which he proposes be incorporated as technical specifications in the license or construction permit.

(b) Each license authorizing operation of a production or utilization facility of a type described in § 50.21 or § 50.22 will include technical specifications. The technical specifications incorporated in a license will be designed to include those significant design features, operating procedures and operating limitations which are considered important in providing reasonable assurance that the facility will be constructed and operated without undue hazard to public health and safety. Appendix A is provided as a guide to the type of matters which the Commission would generally expect to be covered by the technical specifications. The Commission may include technical specifications on such additional matters as the Commission finds appropriate to provide reasonable assurance that the facility will be constructed and operated without undue hazard to public health and safety; and may omit items listed in Appendix A if such omission is consistent with the protection of the health and safety of the public.

(c) This section shall not be deemed to modify the technical specifications included in any license issued prior to the effective date of this section. A license issued prior to the effective date of this section in which technical specifications have not been designated, shall be deemed to include the entire hazards summary report as technical specifications. At the initiative of the Commission or the licensee, any license may be amended to include technical specifications of the scope and content which would be required if a new license were being issued.

§ 50.37 *Agreement limiting access to Restricted Data.* As part of his application and in any event prior to the receipt of Restricted Data or the issuance of a license or construction permit, the applicant shall agree in writing that he will not permit any individual to have access to Restricted Data until the Civil Service Commission shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual, and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. The agreement of the applicant in this regard shall be deemed part of the license or construction permit, whether so stated therein or not.

§ 50.38 *Ineligibility of certain applicants.* Any person who is a citizen, national or agent of a foreign country, or any corporation, or other entity which the Commission knows or has reason to believe is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, shall be ineligible to apply for and obtain a license except a license authorizing export only pursuant to an agreement for cooperation

§ 50.39 *Public inspection of applications.* Applications and documents submitted to the Commission in connection with applications may be made available for public inspection in accordance with the provisions of the regulations contained in Part 2 of this chapter.

STANDARDS FOR LICENSES AND CONSTRUCTION PERMITS

§ 50.40 *Common standards.* In determining that a license will be issued to an applicant, the Commission will be guided by the following considerations:

(a) The processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the regulations in this chapter, including the regulations in Part 20, and that the health and safety of the public will not be endangered.

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulations in this chapter.

(c) The issuance of a license to the applicant will not, in the opinion of the Commission, be inimical to the common defense and security or to the health and safety of the public.

§ 50.41 *Additional standards for class 104 licenses.* In determining that a class 104 license will be issued to an applicant, the Commission will, in addition to applying the standards set forth in § 50.40 be guided by the following considerations:

(a) The Commission will permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes.

(b) The Commission will permit the conduct of widespread and diverse research and development.

(c) In the event that applications for special nuclear material for use in activities licensed by the Commission pursuant to section 104b of the act exceed the amount of special nuclear material available the Commission will give priority to those activities which will, in the opinion of the Commission, lead to major advances in the application of atomic energy for industrial purposes.

NOTE: The Commission has determined, in accordance with section 104b of the Atomic Energy Act of 1954, that the regulations and terms of license applicable to a production or utilization facility in the conduct of research and development activities leading to the demonstration of practical value of such facility for industrial or commercial purposes are compatible with the regulations and terms of license which will apply in the event that a class 103 license were later to be issued for that type of facility.

§ 50.42 *Additional standards for class 103 licenses.* In determining whether a class 103 license will be issued to an applicant, the Commission will, in addition to applying the standards set forth in § 50.40, be guided by the following considerations:

(a) The proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized.

(b) Due account will be taken of the advice provided by the Attorney General, pursuant to subsection 105c of the act. For this purpose, before issuing the license, the Commission will notify the Attorney General of the proposed license, and the terms and conditions thereof, and request the advice of the Attorney General as to whether or not the proposed license would tend to create or maintain a situation inconsistent with the antitrust laws, as specified in subsection 105a of the act: *Provided*, That this requirement will not apply with respect to the types of class 103 licenses which the Commission, with the approval of the Attorney General, may determine would not significantly affect the applicant's activities under the antitrust laws. Upon receipt of the Attorney General's advice, the Commission will cause such advice to be published in the FEDERAL REGISTER.

§ 50.43 *Additional standards and provisions affecting class 103 licenses for commercial power.* In addition to applying the standards set forth in §§ 50.40 and 50.42, in the case of a class 103 license for a facility for the generation of commercial power:

(a) The Commission will give notice in writing of each application of such regulatory agency as may have jurisdiction over the rates and services of the proposed activity, and to municipalities, private utilities, public bodies, and cooperatives which are within transmission distance and which are authorized to engage in distribution of electric energy; and the Commission will publish notice of the application once each week for four consecutive weeks in the FEDERAL REGISTER. No license will be issued by the Commission prior to the giving of such notices and until four weeks after the last publication in the FEDERAL REGISTER.

(b) If there are conflicting applications for a limited opportunity for such license, the Commission will give preferred consideration in the following order: First, to applications submitted by public or cooperative bodies for facilities to be located in high cost power areas in the United States; second, to applications submitted by others for facilities to be located in such areas; third, to applications submitted by public or cooperative bodies for facilities to be located in other than high cost power areas, and, fourth, to all other applicants.

(c) The licensee who transmits electric energy in interstate commerce, or sells it at wholesale in interstate commerce, shall be subject to the regulatory provisions of the Federal Power Act.

(d) Nothing herein shall preclude any government agency, now or hereafter authorized by law to engage in the production, marketing, or distribution of electric energy, if otherwise qualified, from obtaining a license for the construction and operation of a utilization facility for the primary purpose of producing electric energy for disposition for ultimate public consumption.

27 FR 5491

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

§ 50.44 *Standards for licenses authorizing export only.* Where a license is sought solely to authorize the export of production or utilization facilities, the Commission will determine whether the issuance of the license to the applicant for the facility involved is within the scope of and consistent with the terms of an agreement for cooperation with the nation to which the facility is to be exported.

§ 50.45 *Standards for construction permits.* An applicant for a license or an amendment of a license who proposes to construct or alter a production or utilization facility will be initially granted a construction permit, if the application is in conformity with and acceptable under the criteria of §§ 50.31 through 50.38 and the standards of §§ 50.40 through 50.43.

ISSUANCE, LIMITATIONS, AND CONDITIONS OF LICENSES AND CONSTRUCTION PERMITS

§ 50.50 *Issuance of licenses and construction permits.* Upon determination that an application for a license meets the standards and requirements of the act and regulations, and that notifications, if any, to other agencies or bodies have been duly made, the Commission will issue a license, or if appropriate a construction permit, in such form and containing such conditions and limitations including technical specifications, as it deems appropriate and necessary.

§ 50.51 *Duration of license, renewal.* Each license will be issued for a fixed period of time to be specified in the license but in no case to exceed 40 years from the date of issuance. Where the operation of a facility is involved, the Commission will issue the license for the term requested by the applicant or for the estimated useful life of the facility if the Commission determines that the estimated useful life is less than the term requested. Where construction of a facility is involved, the Commission may specify in the construction permit the period for which the license will be issued if approved pursuant to § 50.56. Licenses may be renewed by the Commission upon the expiration of the period.

§ 50.52 *Combining licenses.* The Commission may combine in a single license the activities of an applicant which would otherwise be licensed severally.

21 FR 355

§ 50.53 *Jurisdictional limitations.* No license under this part shall be deemed to have been issued for activities which are not under or within the jurisdiction of the United States except insofar as the export of production or utilization facilities is authorized.

§ 50.54 *Conditions of licenses.* Whether stated therein or not, the following shall be deemed conditions in every license issued:

**

(b) No right to the special nuclear material shall be conferred by the license except as may be defined by the license.

(c) Neither the license, nor any right thereunder, nor any right to utilize or produce special nuclear material shall be transferred, assigned, or disposed of in any manner, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of the act and give its consent in writing.

(d) The license shall be subject to suspension and to the rights of recapture of the material or control of the facility reserved to the Commission under section 108 of the act in a state of war or national emergency declared by Congress.

(e) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided in the act and regulations, in accordance with the procedures provided by the act and regulations.

(f) The licensee will at any time before expiration of the license, upon request of the Commission submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(g) The issuance or existence of the license shall not be deemed to waive, or relieve the license from compliance with, the antitrust laws, as specified in subsection 105a of the act. In the event that the licensee should be found by a court of competent jurisdiction to have violated any provision of such antitrust laws in the conduct of the licensed activity, the Commission may suspend or revoke the license or take such other action with respect to it as shall be deemed necessary.

(h) The license shall be subject to the provisions of the act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall be subject to amendment, revision, or modification, by reason of amendments of the act or by reason of rules, regulations, and orders issued in accordance with the terms of the act.

(i) Except as provided in § 55.9 of this chapter, the licensee shall not permit the manipulation of the controls of any facility by anyone who is not a licensed operator or senior operator as provided in Part 55 of this chapter.

(j) Apparatus and mechanisms other than controls, the operation of which may affect the reactivity or power level of a reactor shall be manipulated only with the knowledge and consent of an operator or senior operator licensed pursuant to Part 55 of this chapter present at the controls.

(k) An operator or senior operator licensed pursuant to Part 55 of this chapter shall be present at the controls at all times during the operation of the facility.

28 FR 3196

(l) The licensee shall designate individuals to be responsible for directing the licensed activities of licensed operators. These individuals shall be licensed as senior operators pursuant to Part 55 of this chapter.

(m) A senior operator licensed pursuant to Part 55 of this chapter shall be present at the facility or readily available on call at all times during its operation, and shall be present at the facility during initial start-up and approach to power, recovery from an unplanned or unscheduled shut-down or significant reduction in power, and refueling, or as otherwise prescribed in the facility license.

*(n) The licensee shall not, except as authorized pursuant to a construction permit, make any alteration in the facility constituting a change from the technical specifications previously incorporated in a license or construction permit pursuant to § 50.36.

§ 50.55 *Conditions of construction permits.* Each construction permit shall be subject to the following terms and conditions:

(a) The permit shall state the earliest and latest dates for completion of the construction or modification. If the construction or modification is completed before the earliest date specified, the holder of the permit shall promptly notify the Commission for the purpose of accelerating final inspection. ***

(b) If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: *Provided, However,* That upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

21 FR 355

(c) Except as modified by this section, the construction permit shall be subject to the same conditions to which a license is subject.

(d) At or about the time of completion of the construction or modification of the facility, the applicant will file any additional information needed to bring the original application for license up to date.

§ 50.56 *Conversion of construction permit to license; or amendment of license.* Upon completion of the construction or alteration of a facility, in compliance with the terms and conditions of the construction permit and subject to any necessary testing of the facility for health or safety purposes, the Commission will, in the absence of good cause shown to the contrary issue a license of the class for which the construction permit was issued or an appropriate amendment of the license, as the case may be.

§ 50.57 **Provisional operating license.**

25 FR 8712

(a) As an intermediate procedure prior to issuance of an operating license pursuant to § 50.56, the Commission may issue a provisional operating license in a proceeding where findings required for the issuance of a final operating license cannot be made because (1) construction of the facility has not been completed, or (2) there are involved features, char-

*Redesignated 28 FR 3196
** Deleted 32 FR 2562
*** Deleted 32 FR 4055

acteristics, or components of the proposed facility as to which it appears desirable to obtain actual or further operating experience before issuance of an operating license for the full term, up to forty (40) years, requested in the application.

(b) In any case subject to paragraph (a) of this section, a provisional operating license will be issued by the Commission upon finding that:

(1) Construction of the facility has proceeded, and there is reasonable assurance that the facility will be completed, in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(2) There is reasonable assurance (i) that the activities authorized by the provisional operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter; and

(3) The applicant is technically and financially qualified to engage in the activities authorized by the provisional operating license in accordance with the regulations in this chapter; and

(4) The applicable provisions of Part 140 of this chapter have been satisfied; and

(5) There is reasonable assurance that the facility will be ready for initial loading with nuclear fuel within ninety (90) days from the date of issuance of such provisional license.

(c) Each provisional operating license will include appropriate provisions with respect to any uncompleted items of construction and such limitations or conditions as are required to assure that operations during the period of the provisional operating license will not endanger public health and safety.

(d) The duration of each provisional operating license will be specified therein, not to exceed eighteen (18) months from the date of issuance; provided, however, that, upon good cause shown, the expiration date of the provisional operating license may be extended.

25 FR 8712

(e) In a case where a hearing has been held in connection with a proceeding under this section the presiding officer may, upon written motion and upon good cause shown, provide that any initial decision issued pursuant to this section shall become effective ten (10) days after issuance subject to (1) the review thereof and further decision by the Commission upon exceptions filed by any party, and (2) such order as the Commission may enter upon such exceptions or upon its own motion within forty-five (45) days after the issuance of such initial decision. In the absence of a Commission order pursuant to the foregoing, and in the absence of exceptions to the initial decision, the initial decision shall become the final decision of the Commission at the end of such forty-five (45) day period. If any party opposes the motion for expedited effectiveness of the initial decision, the presiding officer may stay its effectiveness pending filing within five (5) days after its issuance of an exception to the provision for expedited effectiveness, and thereafter until decision by the Commission on the exception.

31 FR 4339

§ 50.58 Hearings and report of the Advisory Committee on Reactor Safeguards.

(a) Each application for a construction permit or an operating license for a facility which is of a type described in § 50.21(b) or § 50.22, or for a testing facility, shall be referred to the Advisory Committee on Reactor Safeguards for a review and report. Each application for an amendment to such a construction permit or operating license shall be referred to the Advisory Committee on Reactor Safeguards for review and report, unless the Commission finds that no significant hazards consideration is presented. Any report shall be made part of the record of the application and available to the public, except to the extent that security classification prevents disclosure.

(b) The Commission will hold a hearing after 30 days' notice and publication once in the FEDERAL REGISTER on each application for a construction permit for a production or utilization facility which is of a type described in § 50.21(b) or § 50.22 or which is a testing facility. When a construction permit has been issued for such a facility following the holding of a public hearing and an application is made for an operating license or for an amendment to a construction permit or operating license, the Commission may hold a hearing after 30 days' notice and publication once in the FEDERAL REGISTER or, in the absence of a request therefor by any person whose interest may be affected, may issue an operating license or an amendment to a construction permit or operating license without a hearing, upon 30 days' notice and publication once in the FEDERAL REGISTER of its intent to do so. If the Commission finds that no significant hazards consideration is presented by an application for an amendment to a construction permit or operating license, it may dispense with such notice and publication and may issue the amendment.

27 FR 12184

§ 50.59 **Authorization of changes, tests and experiments.**

(a) The holder of a license authorizing operation of a production or utilization facility may (1) make changes in the facility as described in the** safety analysis report, (2) make changes in the procedures as described in the** safety analysis report and (3) conduct tests or experiments not described in the safety analysis report**, unless the proposed change, test or experiment involves a change in the technical specifications incorporated in the license or an unreviewed safety question, as defined in paragraph (c) of this section. If the proposed change, test or experiment involves a change in the technical specifications or an unreviewed safety question, it shall not be carried out unless authorized by the Commission pursuant to the procedures set forth in this section.

27 FR 8825

(b) The licensee shall maintain records of changes in the facility and of changes in procedures made without prior Commission approval pursuant to this section, to the extent that such changes constitute changes in the facility as described in the safety analysis report** or constitute changes in procedures as described in the** safety analysis report. The licensee shall also maintain records of tests and experiments carried out without prior Commission approval pursuant to this section. The licensee shall furnish annually to the Commission, or at such shorter intervals as may be specified in the license, a report containing a brief description of such changes, tests and experiments.

(c) A proposed change, test or experiment shall be deemed to involve an unreviewed safety question if (1) the probability of occurrence of an accident previously analyzed in the** safety analysis report may be increased; or (2) if consequences of an accident previously analyzed in the** safety analysis report may be increased; or (3) if a possibility for a nuclear accident of a different type than any analyzed in the safety analysis** report may be created.

27 FR 5491

(d) The licensee shall file a request for authorization of a change in technical specifications or of any change, test or experiment which requires authorization by the Commission pursuant to paragraph (a) of this section. The request shall include an appropriate safety analysis report**. Each such request shall be filed with the

• Director, Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C., 20545.

The licensee shall file three signed originals and 19 additional copies.

(e) With respect to request for changes, tests or experiments or for changes in technical specifications for a facility of a type described in § 50.21(b) or § 50.22, or a testing facility:

27 FR 12184

(1) If the Commission determines that the proposed change, test or experiment presents significant hazards consideration not described or implicit in the** safety analysis report it will refer the request to the Advisory Committee on Reactor Safeguards. The Commission will promptly notify the licensee of any referral to the Advisory Committee on Reactor Safeguards.

27 FR 5491

(2) If the Commission determines that the proposed change, test or experiment does not present significant hazards considerations not described or implicit in the** safety analysis report, it may authorize such change, test or experiment, without referral to the Advisory Committee on Reactor Safeguards for a report and without a prior public hearing, upon finding that there is reasonable assurance that the health and safety of the public will not be endangered.

(f) With respect to requests for changes, tests or experiments or for changes in technical specifications for a production or utilization facility which is not of a type described in § 50.21(b) or § 50.22 or a testing facility, the Commis-

*Revised 31 FR 3990
**Revised 31 FR 12[illegible]

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sion may authorize the proposed change, test or experiment upon finding that there is reasonable assurance that the health and safety of the public will not be endangered.

(g) Any report or request for authorization submitted by a licensee, and any determination by the Commission, or authorization issued by the Commission, pursuant to this section, will be made a part of the public record of the licensing proceeding. An authorization issued by the Commission will include appropriate changes in the technical specifications.

27 FR 5491

§ 50.60 Allocation of special nuclear material.

(a) The Commission will not incorporate in construction permits or licenses issued after April 14, 1967, provisions allocating quantities of special nuclear material: *Provided, however,* That such provisions may be incorporated in a license if they have been incorporated in the construction permit for the facility. Any allocation granted by the Commission shall be deemed to be satisfied to the extent that (1) the Commission contracts to provide special nuclear material to a permittee or licensee under a contract for the supply of special nuclear material, whether by toll enrichment services, sale, lease, or otherwise, and/or (2) the Commission determines that special nuclear material is available, whether by toll enrichment services, sale, lease, or otherwise, from a source or sources other than the Commission on terms and conditions and at charges which are considered by the Commission to be reasonable and nondiscriminatory. Subject to paragraph (b) of this section, provisions allocating quantities of special nuclear material in construction permits and licenses issued prior to April 14, 1967, shall remain in effect in accordance with their terms.

(b) The Commission may, in accordance with the procedures provided in Part 2 of this chapter, reduce the quantities of special nuclear material allocated to a permittee or licensee pursuant to this part, upon the ground that the quantities allocated exceed those reasonably required, or estimated to be required, for use by the facility. Except as provided in paragraph (a) of this section, the expiration, revocation or other termination of a construction permit or license shall terminate all allocations incorporated in such permit or license.

NOTE: With respect to quantities of special nuclear material allocated to construction permittees and licensees prior to April 14, 1967, and pursuant to the provisions of this part, the Commission will continue its practice of not distributing the material to the permittee or licensee until the material is needed.

* Revised 32 FR 4055

INSPECTION, RECORDS, REPORTS

§ 50.70 *Inspections.* Each licensee and each holder of a construction permit shall permit inspection, by duly authorized representatives of the Commission, of his records, premises, activities, and of licensed materials in possession or use, related to the license or construction permit as may be necessary to effectuate the purposes of the act, including section 105 of the act.

21 FR 355

§ 50.71 *Maintenance of records, making of reports.* Each licensee and each holder of a construction permit shall maintain such records and make such reports, in connection with the licensed activity, as may be required by the conditions of the license or permit or by the rules, regulations, and orders of the Commission in effectuating the purposes of the act, including section 105 of the act.

TRANSFERS OF LICENSES—CREDITORS' RIGHTS—SURRENDER OF LICENSES

§ 50.80 Transfer of licenses.

(a) No license for a production or utilization facility, or any right thereunder, shall be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall give its consent in writing.

26 FR 9546

(b) An application for transfer of a license shall include as much of the information described in § 50.33 with respect to the identity and technical and financial qualifications of the proposed transferee as would be required by that section if the application were for an initial license. The Commission may require additional information such as data respecting proposed safeguards against hazards from radioactive materials and the applicant's qualifications to protect against such hazards. The application shall include also a statement of the purposes for which the transfer of the license is requested, the nature of the transaction necessitating or making desirable the transfer of the license, and an agreement to limit access to Restricted Data pursuant to § 50.37. The Commission may require any person who submits an application for license pursuant to the provisions of this section to file a written consent from the existing licensee or a certified copy of an order or judgment of a court of competent jurisdiction attesting to the person's right (subject to the licensing requirements of the Act and these regulations) to possession of the facility involved.

(c) After appropriate notice to interested persons, including the existing licensee, and observance of such procedures as may be required by the Act or regulations or orders of the Commission, the Commission will approve an application for the transfer of a license, if the Commission determines:

(1) That the proposed transferee is qualified to be the holder of the license; and

(2) That transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

§ 50.81 Creditor regulations.

(a) Pursuant to section 184 of the Act, the Commission consents, without individual application, to the creation of any mortgage, pledge, or other lien upon any production or utilization facility not owned by the United States which is the subject of a license or upon any leasehold or other interest in such facility: *Provided:*

(1) That the rights of any creditor so secured may be exercised only in compliance with and subject to the same requirements and restrictions as would apply to the licensee pursuant to the provisions of the license, the Atomic Energy Act of 1954, as amended, and regulations issued by the Commission pursuant to said Act; and

(2) That no creditor so secured may take possession of the facility pursuant to the provisions of this section prior to either the issuance of a license from the Commission authorizing such possession or the transfer of the license.

(b) Any creditor so secured may apply for transfer of the license covering such facility by filing an application for transfer of the license pursuant to § 50.80(b). The Commission will act upon such application pursuant to § 50.80 (c).

(c) Nothing contained in this regulation shall be deemed to affect the means of acquiring, or the priority of, any tax lien or other lien provided by law.

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(d) As used in this section:

(1) "License" includes any license or construction permit which may be issued by the Commission with regard to the facility;

(2) "Creditor" includes, without implied limitation, the trustee under any mortgage, pledge or lien on a facility made to secure any creditor, any trustee or receiver of the facility appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by such mortgage, pledge or lien, any purchaser of such facility at the sale thereof upon foreclosure of such mortgage, pledge, or lien or upon exercise of any power of sale contained therein, or any assignee of any such purchaser. 26 FR 9546

§ 50.82 Applications for termination of licenses.

(a) Any licensee may apply to the Commission for authority to surrender a license voluntarily and to dismantle the facility and dispose of its component parts. The Commission may require information, including information as to proposed procedures for the disposal of radioactive material, decontamination of the site, and other procedures, to provide reasonable assurance that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public. 32 FR 3090

(b) If the application demonstrates that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public, and after notice to interested persons, the Commission may issue an order authorizing such dismantling and disposal, and providing for the termination of the license upon completion of such procedures in accordance with any conditions specified in the order. 26 FR 9546

AMENDMENT OF LICENSE OR CONSTRUCTION PERMIT AT REQUEST OF HOLDER

§ 50.90 *Application for amendment of license or construction permit.* Whenever a holder of a license or construction permit desires to amend the license or permit, application for an amendment shall be filed with the Commission, fully describing the changes desired, and following as far as applicable the form prescribed for original applications.

§ 50.91 *Issuance of amendment.* In determining whether an amendment to a license or construction permit will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses or construction permits, to the extent applicable and appropriate. If the application involves the material alteration of a licensed facility, a construction permit will be issued prior to the issuance of the amendment to the license. 21 FR 355

REVOCATION, SUSPENSION, MODIFICATION, AMENDMENT OF LICENSES AND CONSTRUCTION PERMITS, EMERGENCY OPERATIONS BY THE COMMISSION

§ 50.100 *Revocation, suspension, modification of licenses and construction permits for cause.* A license or construction permit may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application for license or in the supplemental or other statement of fact required of the applicant; or because of conditions revealed by the application for license or statement of fact or any report, record, inspection, or other means, which would warrant the Commission to refuse to grant a license on an original application (other than those relating to §§ 50.51, 50.42 (a), and 50.43 (b)); or for failure to construct or operate a facility in accordance with the terms of the construction permit or license, provided that failure to make timely completion of the proposed construction or alteration of a facility under a construction permit shall be governed by the provisions of § 50.55 (b); or for violation of, or failure to observe, any of the terms and provisions of the act, regulations, license, permit, or order of the Commission.

§ 50.101 *Retaking possession of special nuclear material.* Upon revocation of a license, the Commission may immediately retake possession of all special nuclear material held by the licensee.

§ 50.102 *Commission operation after revocation.* Whenever the Commission finds that the public convenience and necessity, or the production program of the Commission, requires continued operation of a production or utilization facility, the license for which has been revoked, the Commission may, after consultation with the appropriate federal or state regulatory agency having jurisdiction, order that possession be taken of such facility and that it be operated for a period of time as, in the judgment of the Commission, the public convenience and necessity or the production program of the Commission may require, or until a license for operation of the facility shall become effective. Just compensation shall be paid for the use of the facility.

§ 50.103 *Suspension and operation in war or national emergency.* (a) Whenever Congress declares that a state of war or national emergency exists, the Commission, if it finds it necessary to the common defense and security, may,

(1) Suspend any license it has issued.

(2) Order the recapture of special nuclear material *

(3) Order the operation of any licensed facility.

(4) Order entry into any plant or facility in order to recapture special nuclear material or to operate the facility.

(b) Just compensation shall be paid for any damages caused by recapture of special nuclear material or by operation of any facility, pursuant to this section.

ENFORCEMENT

§ 50.110 *Violations.* An injunction or other court order may be obtained prohibiting any violation of any provision of the act or any regulation or order issued thereunder. Any person who wilfully violates any provision of the act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

APPENDIX A—GUIDE TO CONTENTS OF TECHNICAL SPECIFICATIONS FOR NUCLEAR REACTORS

1. This Appendix is a guide to matters which are typical of those the Commission would generally expect to be covered by technical specifications in operating licenses for nuclear reactors. The generalized form of the guide results in inclusion of items not common to all reactors, and should be used in preparation of technical specifications for a particular facility only to the extent the matters listed are applicable. Conversely, technical specifications are expected to include items other than those listed if such matters could have an effect on the safety of operations comparable in significance to the effect of the following items.

A. *Site.* 1. Physical location of the reactor plant.

2. Minimum distance to boundary of the exclusion area.

3. Principal activities carried on within the exclusion area.

B. *Containment.* 1. Design pressure and maximum total leakage rate at design pressure of the containment vessel (including penetrations).

2. Overall dimensions, materials of construction and approximate free volume of containment barrier.

3. Principal types of containment vessel penetrations, and for each type, the approximate number and methods of closure and sealing (including piping, duct work, and access openings).

4. Shell maximum design pressure under minimum temperature conditions and methods of protection against the cold.

5. Frequency, pressure, and methods of testing of the containment vessel and penetrations. 27 FR 5491

C. *Primary coolant system.* 1. General system specifications, and major primary system components including:

(a) Number of loops.

(b) Number of isolation and check valves per loop.

(c) Number of steam generators per loop.

(d) Method of coolant circulation and heat removal.

(e) Number of pumps per loop.

(f) Reactor coolant piping material and size.

(g) Volume of primary coolant.

2. Principal reactor vessel design features including:

(a) Temperature and pressure rating (design and operating).

(b) Materials of construction (base metal and cladding).

(c) Overall dimensions.

(d) Types and locations of nozzle connections with respect to core.

* Deleted 32 FR 4055

265-855 O - 67 - 3

PART 50 - LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

(e) Number of and types of penetrations.
(f) Type of closure and any limiting features.
3. Primary coolant specifications:
(a) Materials.
(b) Method of pressurization.
(c) Coolant chemistry limits.
(d) Impurity limits.
4. Operating variables, including:
(a) Minimum core inlet pressure.
(b) Maximum and minimum flow rate through the core.
(c) Maximum core exit bulk temperature.
(d) Maximum heat up and cool down rates of major components.
(e) Reactor vessel pressure limitations as a function of temperature and integrated neutron flux.
5. Principal design features of major components, including:
(a) Primary heat exchanger type and rating.
(b) Type of pump and pump drive.
(c) Isolation valve type and modes of operation.
(d) Check valve type and pressure design.
6. Materials and general configuration of primary system shielding.
D. *Primary plant auxiliary systems.* 1. Principal design features of major components including:
(a) Relief valve types, minimum capacity, relief settings, points for pressure discharge.
(b) Demineralizer type and product specifications.
(c) Pressurizer type and surge capacity.
(d) Coolant charging pump, number, charging rate and pressure design.
(e) Core water injection and containment spray system pumps, number, capacity, injection rate and design pressure.
(f) Reactor plant component cooling system pumps and heat exchanger, number, capacity and pressure design.
(g) Reactor plant control air design pressure, compressor type and rating.
2. Operating limitations, including:
(a) Water chemistry.
(b) Minimum reserve capacity of core water injection and containment spray systems.
(c) Maximum and minimum ambient operating temperature of reactor room.
(d) Minimum level of primary shield tank water level.
E. *Secondary coolant system.* 1. General system design specifications, including:
(a) Coolant.
(b) Maximum pressure, operating and design.
(c) Maximum temperature, operating and design.
(d) Coolant flow rate—maximum and minimum.
(e) Minimum makeup coolant temperature.
(f) Maximum differential temperature and pressure between primary and secondary systems.
(g) Coolant chemistry limits.
2. Principal operating limitations established from considerations of nuclear safety, including:
(a) Loading.
(b) Turbine control.
(c) Steam dumping or bypassing.
(d) Power network interconnections.
(e) Maximum radioactivity.
F. *Reactor core.* 1. Principal core design features, including:
(a) Moderator material.
(b) Reflector material and thickness.
(c) Fuel material, enrichment, and melting or boiling point.
(d) Minimum number of fuel thermocouples, where provided as a safeguard.
(e) Clad material and method of bonding.
(f) Minimum number of clad thermocouples where provided as a safeguard.
(g) Brief fuel element description including nominal dimensions, overall and internal element supports and orificing.
(h) Maximum total mass of core and of fuel in the core.
(i) Maximum number of fuel elements in the core.
(j) Maximum fuel burnup (MWD).
(k) Maximum or minimum void coefficient of reactivity, and maximum operating void fraction.
(l) Temperature and pressure reactivity coefficients, ambient to operating.
(m) Form of burnable poison and method of attachment.
(n) Maximum and minimum reactivity worth of burnable poison.
(o) Brief description of source including minimum initial strength and type.
(p) Number of passes and flow direction through the core.
2. Principal design core temperatures and thermal characteristics, including:
(a) Maximum thermal power.
(b) Maximum local core heat flux (maximum with respect to all variables at rated power).
(c) Minimum burnout safety factor (on heat flux) and correlation method used.
(d) Maximum fuel surface and central temperatures at designated points.
G *Control and safety systems.* 1. Reactivity control system design and operating limits, including:
(a) Number installed and minimum number of operative control elements and drives.
(b) Principal design features including control element materials, control rod guides, minimum operating clearances, use of followers, limits on allowable operating temperatures and pressures and rod coupling method
(c) Maximum reactivity worth of automatic control systems and of entire control system for both operating temperatures (hot) and cold plant conditions.
(d) Maximum reactivity worth of any individual control system component or gang, for hot and cold conditions.
(e) Minimum shutdown control margin for hot and cold conditions.
(f) Minimum number of least reactive control elements corresponding to minimum shutdown margin.
(g) Maximum reactivity addition rate by control elements.
(h) Maximum excess reactivity above cold clean critical.
(i) Automatic modes of reactivity insertion and shutdown and maximum total scram, delay time and safety element insertion time.
(j) Type, minimum reactivity worth, conditions of use, and principal design features of auxiliary poison systems.
(k) Rod position indication method and minimum accuracy limits.
(l) Minimum worth of safety control elements cocked during startup, fuel loading and other core manipulations.
(m) Minimum reactor power for automatic control.
2. Nuclear instrumentation system design and operating limits including:
(a) Brief description of the system including ranges, types, and sensitivities of instrument channels and detectors, their degree of independence of operation, and use of redundancy or coincidence circuitry.
(b) Minimum number and ranges of operative level safety and period safety channels during startup and power operation.
(c) Setting of scram points.
(d) Automatic control system inputs.
3. Characteristics of safety control systems auxiliary to the reactivity control and nuclear instrumentation systems including:
(a) Emergency power supply availability, and total loading with respect to minimum capacity.
(b) Devices which are activated on automatic building closure.
(c) Type, functions, and conditions of use of interlocks.
(d) Items which may be bypassed, method of bypassing, and conditions under which bypassing will be used.
(e) Conditions which would automatically cause reactor scram or building closure and activation points for these actions.
(f) Devices causing scram or partial insertion of rods and scram point settings.
(g) Instrumentation primarily or solely provided for analysis of conditions following an accident.
H. *Monitoring systems.* General design features and specific operating limits, including:
1. Stack, activity discharge rate averaged over a year and minimum number and sensitivity of operating monitors.
2. Maximum instantaneous stack activity discharge rate.
3. Fuel element failure detection equipment sensitivity, localization and sampling interval (if not continuous).
4. Minimum number and sensitivity of monitors for radiation level detection in accessible areas.
5. Minimum number and sensitivity of monitors of liquid radioactive effluents including primary coolant leak detectors.
6. Criticality monitors in fuel storage areas.
I. *Waste disposal systems.* Design and operating features including:
1. Principal features of equipment for removal of gases or other materials from primary and secondary coolant, moderator, reflector, or shield; equipment capacity and mode of use (continuous or intermittent).
2. Stack height.
3. Minimum waste holdup capacities, storage and processing methods and maximum radioactivity inventories during normal operations, maintenance and refueling.
J. *Ventilation systems.* 1. Brief description of principal features of systems providing safeguards functions, including:
(a) Fans used, capacities and approximate numbers.
(b) Direction of atmospheric pressure gradient across walls, doorways, and other important barriers of the facility and minimum atmospheric pressure differentials across principal barriers where pertinent to contamination control.
(c) Minimum ventilation rates where applicable.
(d) Provisions for ventilation system closure.
(e) Provisions for relief of positive or negative pressures within the enclosed areas upon ventilating system closure.
(f) Location of ventilation system inlets and outlets
(g) Location, type, and procedures for maintenance of filtering or other air cleaning systems.
K. *Emergency cooling and decay heat removal systems.* 1. Principal system design features.
2 Minimum capacity of emergency heat exchangers
3. Type, minimum coolant supply, flow rate, and power requirement of emergency cooling systems.
4. Total cooling time made available by emergency cooling systems.
5. Conditions which would automatically cause emergency actions.
6. Source and availability of emergency power.
L. *Fuel storage.* 1. Brief descriptions of physical means by which fuel elements are to be transported within the facility, and conditions under which they are stored.
2 Amount and arrangement (spacing) of special nuclear material to be stored.
3. Basic method or methods by which nuclear safety against inadvertent criticality is assured (mass, geometry).
4 Procedural limitations on quantities to be removed or inserted in storage area at any one time.

27 FR 549

5. Means of providing personnel protections against radiation hazards from spent fuel

M *Experimental facilities including.* 1. Brief description of principal design features of experimental facilities.

2. Maximum excess reactivity allowed for experiments.

3 Maximum individual reactivity increase to be allowed for any experiment or experimental facility by flooding, draining, poison removal, fueled experiment addition, or other method.

4. For each loop or other experimental facility:

(a) Types of sensors for process variables, output actions, and redundant or coincidence provisions.

(b) Minimum cooling capacity to each experiment, method of cooling, and emergency cooling provisions.

(c) General geometry, minimum pressure resistance, and maximum leak rate of experiment containment barriers.

(d) Significant controls, signals, or other safety mechanisms by which experiments or experimenters (manually or automatically) may shutdown the reactor.

(e) Types of experiments to be conducted and limits on experimental programs, considering such effects as corrosion, explosion, and instrument shadowing.

5. Argon and other activation product limitations.

N. *Administrative and procedural safeguards.* 1. Brief coverage of the following:

(a) The availability of detailed written procedures for operations that might affect nuclear safety and for emergencies.

(b) The manner whereby operating procedures are reviewed and approved for use.

2. Brief description of the following controls procedures and tests:

(a) Administrative organization and controls to the extent that these have potential effect on safety.

(b) General operating principles having a potential effect on safety, including those for initial startup, routine operation, maintenance, refueling, conduct and operation of experiments, power escalation from criticality to full design power, and emergencies; minimum staffing requirements for such operations where applicable.

(c) Postcritical schedule of maintenance and recalibrating tests of safety system components, monitors, and other equipment having a potential safeguards function including items such as reactor control instruments, control rod systems, effluent release monitors, personnel protection monitors, portable detectors, building leakage and emergency systems.

(d) Procedures for the review within the licensee's organization of proposed modifications in the facility or in operating procedures, and of the design and conduct of experiments.

27 FR 5491

NOTE: The reporting and recordkeeping requirements contained herein have been approved by the Bureau of the Budget in accordance with The Federal Reports Act of 1942.

110894

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

IN REPLY REFER TO:
Docket No. 50-201

NOV 8 1967

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

Attention: Mr. Oliver Townsend
Chairman

Gentlemen:

This will acknowledge receipt of your application dated September 15, 1967, for extension of the expiration date of Provisional Operating License CSF-1 of the West Valley Nuclear Fuel Processing Facility of Nuclear Fuel Services, Inc.

As provided by the Atomic Energy Commission's rules and regulations in 10 CFR 2.109, your application is considered a timely request for renewal, and License CSF-1 will remain in effect until the Commission has taken action on your application.

As you will note from the attached copy of a letter we sent to Nuclear Fuel Services, Inc., on October 16, 1967, we are currently reviewing the technical specifications of this license and are evaluating the results of an investigation into the plutonium exposure of September 9, 1967, at the West Valley Facility.

Sincerely yours,

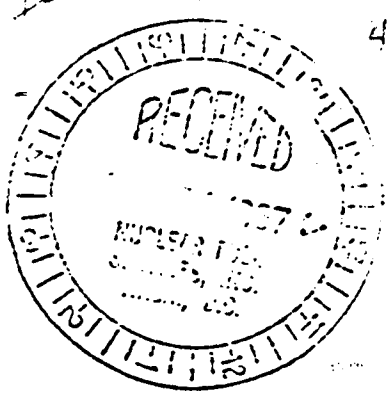
Lyall Johnson, Acting Director
Division of Materials Licensing
J. A. McBride, Director
Division of Materials Licensing

Enclosure:
Cy ltr to NFS dtd 10-16-67

cc: Mr. T. C. Runion
Mr. W. H. Lewis
Mr. O. M. Ruebhausen, w/encl.
Mr. Jon D. Anderson, w/encl.

11/28/67 RECEIPT
OF APPLICATION

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545



IN REPLY REFER TO:
Docket No. 50-201

NOV 28 1967

Nuclear Fuel Services, Inc.
Wheaton Plaza Office Building
Suite 906
Wheaton, Maryland 20902

Attention: Mr. T. C. Runion, President

AND

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

Attention: Mr. Oliver Townsend, Chairman

Gentlemen:

Enclosed for your information is a copy of the Federal Register notice concerning your applications for an amendment to Provisional Operating License No. CSF-1 to authorize construction and operation of an addition to the irradiated nuclear fuel processing plant for the purpose of recovering neptunium from plant waste streams.

Sincerely yours,

for J. A. McBride, Director
Division of Materials Licensing

Enclosure:
Federal Register notice

cc: (See attached list)

cc: Bernhard G. Bechhoefer, Esq., w/encl.
Scharfeld, Bechhoefer and Baron
Suite 512, 1725 K Street, NW.
Washington, D. C. 20006

Oscar M. Ruebhausen, Esq., w/encl.
Debevoise, Plimpton, Lyons and Gates
320 Park Avenue
New York, New York 10022

Maurice Axelrad, Esq., w/encl.
New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

UNITED STATES ATOMIC ENERGY COMMISSION

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

NOTICE OF RECEIPT OF APPLICATIONS

TO AUTHORIZE CONSTRUCTION AND OPERATION OF A PLANT

ADDITION FOR RECOVERY OF NEPTUNIUM

IN PROVISIONAL OPERATING LICENSE NO. CSF-1

Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority filed applications on November 15, 1967, for the issuance of such amendment to Provisional Operating License No. CSF-1 (including any necessary construction permit, special nuclear material, source material or byproduct material license, or amendment to any of the foregoing) as may be required to authorize, as part of the licensed operation of the production facility, the recovery of neptunium from the waste streams of the West Valley Reprocessing Plant. The proposed plant addition, designated by the applicants as the Neptunium Recovery Facility (NRF), will be located at the Western New York Nuclear Service Center, West Valley, New York, within the fenced area of the existing reprocessing plant from which unneutralized wastes could be piped to the NRF. Following extraction of neptunium, the wastes would be neutralized and piped to the existing waste storage tanks.

Copies of the applications are available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D. C.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
J. A. McBride

J. A. McBride, Director
Division of Materials Licensing

Dated at Bethesda, Maryland,
this 21 day of Nov, 1967

REQUEST FOR LICENSE EXT.
03/17/69

111317

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating License No. CSF-1	)	
	)	

REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE

March 17, 1969

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating License No. CSF-1	)	
	)	

REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE

In accordance with the provisions of Sections 104(b) and 187 of the Atomic Energy Act, as amended, and of Section 50.57(d) of the Commission's Regulations (10 CFR Section 50.57(d)), Nuclear Fuel Services, Inc., hereby requests that its provisional operating license No. CSF-1, as amended, be renewed and that the expiration date thereof be extended until October 19, 1970, by amending Section 6 of said license to read as follows:

> "This license is effective as of the date of issuance and shall expire on October 19, 1970, eighteen months from the date for which timely requests have been made for the extension of the provisional license dated April 19, 1966 (unless extended for good cause shown), or upon the earlier issuance of a superseding operating license."

Good cause exists for the extension of the expiration date of the provisional license in that, before issuance of a final operating license for the full term, forty (40) years, requested by the applicant it is desirable to obtain actual operating experience in connection with the following features, characteristics, and components of the facility, though no substantial problems are anticipated in connection with any of these features:

1. The facility has demonstrated the capability of processing power reactor fuels of intermediate burn-up; however, high burn-up fuels, or fuels containing measurable quantities of radioactive iodine have not been processed. During the extension period of the provisional operating license, such fuels will be available for processing to demonstrate this capability. NFS has successfully processed power reactor fuels having a maximum exposure of 30,140 Mwd/T and an average exposure of 16,500 Mwd/tonne uranium. NFS anticipates processing within the next year fuels with average exposure up to 22,000 Mwd/tonne uranium. We will report this operating experience at the conclusion of the campaigns; these data will be available early in the period of the proposed extension of the provisional operating license.

2. During the past three years of operating NFS has successfully demonstrated that the confinement of liquid waste can be maintained at ten to fifteen per cent of the maximum permissable concentration pursuant to Commission regulations. However, at the request of the Commission studies are being conducted to further reduce liquid concentration released to the environs. These studies may result in substantial changes to the facility. It is anticipated that the studies will be completed and any required changes will be made during the period of the requested extension.

Financial Data

Applicant filed with the Commission on February 27, 1969 an application for transfer of control of its licenses from W. R. Grace & Co. to Getty Oil Company, reference being had thereto for greater particularity. This applicant contained as Annex D, applicant's balance sheet as of December 31, 1968. There has been no substantial change in the financial position of the applicant since December 31, 1968.

Annex C attached to said application for transfer of control indicates the intention of Skelly Oil Company to purchase $6,000,000 in principal amount of 7% subordinated convertible debentures due January 1, 1979. Applicant estimates that cash generated after all operating expenses but excluding any applications for capital improvements and debt repayments over the next five years will

amount to approximately $13,000,000. In view of the $6,000,000 additional funds which will be available from Skelly Oil Company as set forth above, it is submitted that adequate funds will be available to insure the operation of the facility for at least five years from April 19, 1969.

Applicant estimates that the cost of shutting down the nuclear facility and placing it in a safe condition, in the event this became necessary, would be between $400,000 and $600,000. This estimate represents the cost of operating the plant for a period of from four to six weeks necessary for decontamination at a cost of not to exceed $100,000 per week. This estimate does not cover decontamination or other expenses arising other than from normal operations of the facility since applicant is fully protected by insurance from NEPIA for additional costs in excess of $50,000 arising as a result of an accident.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

Dated: March 17, 1969

By _____
Wesley H. Lewis
Vice President

Bernhard G. Bechhoefer
Scharfield, Bechhoefer & Baron
1725 K Street, N.W.
Washington, D.C. 20006
Attorneys for
Nuclear Fuel Services, Inc.

Dated: March 17, 1969

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the 17th day of March, 1969, before me W. H. Lewis, to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

James Darrell Campbell

James Darrell Campbell

Notary of
Howard County, Md.
My Commission expires 7/1/69

CERTIFICATE OF SERVICE

The undersigned, Bernhard G. Bechhoefer, attorney for the Applicant, Nuclear Fuel Services, Inc., does hereby certify that he caused the attached Request for Extension of Expiration Date of Provisional Operating License to be served on each of the following persons by causing a conformed copy of the same to be deposited today in the United States mail properly stamped for first class mail and addressed to each of the following:

(a) Mrs. Mynetta F. Fluker
County Clerk
Cattaraugus County
Little Valley, New York 14755

(b) Mr. Arnold C. Proctor
Supervisor, Town of Ashford
135 Depot Street
West Valley, New York 14171

(c) Mr. Oliver Townsend
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(d) Oscar M. Ruebhausen, Esquire
c/o Debevoise, Plimpton, Lyons & Gates
320 Park Avenue
New York, New York 10022

(e) Maurice Axelrad, Esquire
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(f) Troy B. Conner, Jr., Esquire
c/o Atomic Energy Commission
Bethesda, Maryland 20014
Counsel for AEC Regulatory Staff

Dated: March 17, 1969

B. G. Bechhoefer

NFS

NUCLEAR FUEL SERVICES, INC.

BOX 124 — WEST VALLEY, N.Y. 14171
AREA CODE 716 TELEPHONE 942-3235

111907

April 22, 1969

Dr. John A. McBride, Director
Division of Materials Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. McBride:

In a submittal dated April 1, 1969, Nuclear Fuel Services requested approval and appropriate modification to the Technical Specifications of Operating License CSF-1 so that unirradiated fuel could be stored in a specified area of the Processing Plant other than the fuel storage pool. Subsequent to that submittal, NFS has been informed by the Security Division, USAEC, SROO, that unirradiated NPR fuel must be stored in sealed shipping containers when stored in a location other than the Fuel Receiving and Storage Area. NFS will comply with this security requirement by storing the unirradiated NPR fuel only in the Model 44 shipping containers when in the facility area described in our letter of April 1, 1969. When inside the Processing Plant, the fuel will be stored in either the shipping containers or in canisters in the storage pool of the FRS.

We believe that the modification to Technical Specification 4.3, which was proposed by our Submittal of April 1, 1969, is still appropriate and we request your earliest possible approval. Criticality analyses of the storage techniques have been presented to your staff. Should additional information be required, please contact me.

Very truly yours,

W. H. Lewis
Vice President

WHL:JRC:slk

cc: R. P. Wischow
E. D. North
D. H. Shafer
B. G. Bechhoefer

111908

NFS

NUCLEAR FUEL SERVICES, INC.

A SUBSIDIARY OF W R GRACE & CO
BOX 124 · WEST VALLEY, N.Y. 14171
AREA CODE 716 TELEPHONE 942-3235

April 1, 1969

Dr. John A. McBride, Director
Division of Materials Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. McBride:

Nuclear Fuel Services has been advised by the Savannah River Operations Office, USAEC Division of Production that unirradiated NPR fuel assemblies will be made available to NFS for processing under the NFS-AEC Processing Contract. NFS will be licensed to receive, store and process such unirradiated material subsequent to Commission approval of previously requested Change No. 10 and 11 to the Technical Specifications of Provisional Operating License CSF-1. In addition, NFS hereby requests a change in technical specifications to allow storage of unirradiated fuel in a controlled area other than the storage pool. The methods of control are described in the attached report. Since the fuel is unirradiated and will be subject to the same nuclear safety criteria as other fuels stored at the processing plant, NFS does not believe that such a change presents any significant hazard consideration not described or implicit in the NFS Final Safety Analysis Report submitted under Docket 50-201.

Very truly yours,

W. H. Lewis
Vice President and
General Manager

WHL:JRC:ah

Attachment

cc: R. P. Wischow
E. D. North
D. H. Shafer
B. G. Bechhoefer

RECEIPT AND STORAGE OF UNIRRADIATED FUEL

Nuclear Fuel Services has been advised that the USAEC will make approximately thirty-two metric tonnes of unirradiated fuel available for processing under the NFS-AEC contract. The fuel will be NPR assemblies (Category 9) with the following enrichments:

Approximate Amount MTU	Enrichment w/o U-235
12	1.25
4	1.95
16	2.10

The fuel has been in storage at National Lead Company, Fernald, Ohio, (NLO) for periods in excess of six months under essentially the same storage conditions as proposed herein.

A. Transport

The fuel will be transported from NLO to NFS in Model 44 shipping containers which have been approved for fissile radioactive shipment by Richland Operations Office and by the Department of Transportation (Special Permit No. 5739). The shipments are Fissile Class I with a maximum of 540 lbs. per drum (seventeen 27-inch long assemblies). The shipping container details are provided in "Model 44 Shipping Container, Basis for DOT Special Permit," C. L. Brown, BNWL-CC-1148, May, 1968 (Official Use Only).

B. Receipt

It is anticipated that one hundred and fifty shipping container loads will be required for transport to NFS. Since only eighty shipping drums are expected to be available, some of the drums will be unloaded at the Processing Plant and returned. To the maximum extent possible, the fuel will be stored in the sealed shipping container until processing, which is expected about two months after receipt of the first shipment. The fuel unloaded from the shipping containers will be piece counted by NFS and a USAEC contract inspector and then tied down to the storage pallets.

C. Storage

The loaded shipping containers and any unloaded fuel will be stored with a fenced-in area adjacent to the southwest corner of the existing warehouse building (a plot plan is attached). Written procedures will be developed to assure security and nuclear criticality safety of the stored fuel.

1. Security

Since the fuel is classified, a security plan will be developed and implemented as approved by the USAEC, Security Division, Savannah River Operations. This security plan can be described in general as including:

a. An asphalt-surfaced area about twenty-one by sixty feet adjacent to the southwest corner of the existing warehouse building will be used exclusively for palletized storage of the fuel as well as drum storage of the fuel remaining in the shipping containers. The area will be permanently fenced as provided in AEC Appendix 2401, Part 2, Section C. The fencing will enclose three sides of the area, the fourth being the wall of the warehouse proper.

b. Mercury lights will be installed to illuminate the area during the night-time hours.

c. The area will be included as a security check-point on the Plant Security Guard's regular rounds of the plant.

d. The proposed area is within full view of the Guard's House which provides, in effect, 24-hour surveillance except for those times when the Guard is on his regular security rounds (approximately forty-five minutes twice per shift).

e. The fuel will be unloaded from the drums to the pallets by personnel having USAEC "L" clearances only, under the direct supervision of the NFS Shift Supervisor or his designate. When reprocessing begins, the fuel will be transported from the storage area to the FRS by cleared personnel only, under the direct supervision of the Shift Supervisor or his designate.

2. Nuclear Criticality

It is anticipated that the unirradiated fuel will be stored both within the shipping container and upon pallets. As described below, the storage arrays will be substantially subcritical even in the unlikely event that the arrays become flooded with water.

As described in the safety evaluation[1] of the shipping container, no safety problem exists even when the shipping container is flooded while containing a maximum loading of 2.1 w/o U-235. The k_{eff} of one loaded drum under flooded conditions has been calculated as 0.4. Even under optimum moderation and geometry, such fully loaded containers would contain less than 80% of a minimum critical mass. Flooded drums are neutronically isolated from any other such drums in any array.

---

[1] BNWL-CC-1148

This is emphasized by assignment of the container as Fissile Class I.

The height of fuel on the pallets will be controlled to limit the k_{eff} of an infinite array of such pallets to less than 0.85 (the criteria for irradiated fuel in the storage pool per Technical Specification 4.3) even if the fuel array should become flooded. Flooding is highly unlikely since (1) the storage area is open to surface runoff, (2) the fuel will be covered to minimize exposure to moisture and (3) the fuel will be in storage during the summer months. Specifically, the stacked heights of fuel will be limited to two tubes (about 4.8 inches) for fuel with 2.1 w/o or 1.95 w/o enrichments and to three tubes (7.2 inches) for 1.25 w/o U-235 fuel. Where the enrichment is not clearly marked or is uncertain, the stacked height will be limited to two tubes. These criteria equal or are at least as stringent as those used at NLO[2].

Based upon data supplied by Hanford, NFS has calculated (see attachment) the k_{eff} to be less than 0.43 for 2.1% (or 1.95%) enrichment when an infinite slab of the proposed stack height is submerged in water while at optimum lattic spacing. The critical thickness of fuel has been determined experimentally as 7.2 inches for 2.1% enrichment[3] and 12.1 inches for 1.25% enrichment[4].

In compliance with 70.24 of 10 CFR, an area radiation monitor will be installed. This monitor will be identical to those already in use at the Processing Plant. Any monitor alarms will be annunciated in either the Guard House or the Plant Control Room.

---

2 Private communication with D. L. Duraway, NLO

3 "Material Buckling Experiments with 2.1 w/o U-235 Uranium Tubes in Light Water," C. L. Brown, L. E. Hanson and H. Toffer, BNWL-SA-1090.

4 "Measurement of Material Buckling of 1.02, 1.25 and 1.95 Enriched Uranium Tube Lattices in Light Water," C. L. Brown and R. C. Lloyd, Nuclear Physics Research Quarterly Report (1965).

3. Procedures

Standard Operating Procedures will be developed and approved by the Plant Safety Committee for the receipt, storage and transfer to process of the unirradiated fuel. Emergency procedures will be developed by the Director of Health and Safety and approved by the Safety Committee.

D. Technical Specifications

Based upon the above evaluation, NFS proposes the following modifications to Technical Specification 4.3:

Add

4.3.5 UNIRRADIATED NUCLEAR FUEL SHALL BE STORED SUCH THAT EVEN IF THE STORAGE ARRAY SHOULD BECOME TOTALLY IMMERSED IN WATER, THE K_{eff} OF THE ARRAY SHALL NOT EXCEED 0.85.

Add new paragraph to Bases:

Infrequently, unirradiated fuel will be processed. The storage of such fuel may be either in the storage pool and therefore subject to specifications 4.3.1 - 4.3.4 or in another secured area of the Processing Plant. The secured storage area will be approved by the Plant Safety Committee prior to receipt of the fuel and subsequent to both the installation of a criticality monitor required by 70.24 and the development of emergency plans, standard operating procedures and security measures adequate to safeguard the special nuclear material.

CALCULATION OF K_{eff} FOR NPR FUEL STORAGE

IN AN INFINITE PLANE

The following parameters were obtained from Ronald Chitwood, Richland Operations, Richland, Washington:

L^2 = 2.10 diffusion length squared
τ = 28.84 fermi age
ε = 1.19 fast fission factor
ρ = .626 resonance escape probability
λ = 6.58 extrapolation length
f = .88 thermal utilization

Assumptions:

1. No credit taken for burnup of U-235
2. No credit taken for fission poison

Fuel element size = 2.406" O.D., 1.764" I.D., 23.2" Length

Buckling for an infinite plane:

$$B^2 = \left(\frac{\pi}{a^1}\right)^2$$

$$a^1 = a + \lambda$$

$$a = (4.31")\ (2.54) = 10.95 \text{ cm}$$

$$a^1 = 10.95 + 6.58 = 17.53$$

$$B^2 = \left(\frac{\pi}{17.53}\right)^2 = (.179)^2 = .032$$

η = 1.74 (see previous memo)

$$\omega_{th} = \frac{1}{1 + L^2 B^2} = \frac{1}{1 + (2.10)\ (.032)} = \frac{1}{1.0677} = .937$$

$$\omega_f = \exp - (B^2 \tau)$$

$$\omega_f = \frac{1}{e^{(.032)\ (28.84)}} = \frac{1}{2.52} = .395$$

$$k_{eff} = \eta\ f\ \varepsilon\ \rho\ \omega_{th}\ \omega_f$$

$$k_{eff} = (1.74)\ (.88)\ (1.19)\ (.626)\ (.937)\ (.395)$$

$$k_{eff} = .421$$

SAFEGUARDS AMEN. 1
09/04/69

COPY

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

AMENDMENT TO

PROVISIONAL OPERATING LICENSE

License No. CSF-1

Safeguards
Amendment No. 1

The Atomic Energy Commission (the Commission) has found that:

A. The information provided by the licensees in letters dated August 15, 1968, March 6, 1969, and July 11, 1969, regarding the safeguarding of special nuclear material complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I;

B. The issuance of this amendment will not be inimical to the common defense and security, or to the health and safety of the public; and

C. Prior public notice of proposed issuance of this amendment is not required since the amendment does not involve significant hazard considerations different from those previously evaluated.

Accordingly, License No. CSF-1, issued to the Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority, is hereby amended as follows:

Add a new subparagraph 5.D to read as follows:

COPY

"D. Special Nuclear Materials Safeguards

The controls for the safeguarding of special nuclear material subject to this license which are contained in Appendix B attached hereto are hereby incorporated in this license."

This amendment is effective as of the date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
R. P. Wischow

R. P. Wischow, Director
Division of Nuclear Materials
Safeguards

Date of issuance: SEP 4 1969

124931

APPENDIX B

UNITED STATES
ATOMIC ENERGY COMMISSION

LICENSE AMENDMENT
FOR
SPECIAL NUCLEAR MATERIALS SAFEGUARDS

Pursuant to the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, Part 70, the following amendment to the license identified below is hereby issued, incorporating controls for the safeguarding of special nuclear material.

Licensees

Names and Addresses:

Nuclear Fuel Services, Inc.
Box 124
West Valley, New York
14171

and

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

License No. CSF-1 Amendment No. SG-1 Docket No. 50-201

CONDITIONS

1.0 FACILITY ORGANIZATION

1.1 The Plant Manager shall have the responsibility for developing, revising, implementing, and enforcing the nuclear material control procedures and managing an overall system of special nuclear material control.

1.2 Nuclear material control procedures and revisions thereto shall be approved by the Plant Manager. A manual containing all current nuclear material control procedures shall be maintained by the Technical Services Manager.

1.3 The Accountability Representative shall assure that the nuclear material control procedures are appropriately reflected in process specifications, manufacturing instructions, standard operating procedures, or similar detailed management instructions.

1.4 All delegations of safeguards responsibilities by the Plant Manager shall be in writing.

2.0 FACILITY OPERATION

2.1 Material Balance Areas (MBA's) shall be established by the Plant Manager.

2.2 The Processing Plant may be maintained as a single Material Balance Area on the basis that responsibility for the special nuclear material within the plant shall not be transferred.

2.3 All operations within the MBA shall be the responsibility of a single employee who shall also be responsible for the custody of special nuclear material within the MBA.

3.0 MEASUREMENTS AND STATISTICAL CONTROLS

3.1 The licensee shall determine the U-235, U-233, and/or Pu content of all receipts, shipments and measured discards. The U-235, U-233, and/or Pu content shall also be determined for all material inventoried. The limits of error* associated with these quantities shall be determined. Sufficient measurements shall be made to substantiate the stated quantities and associated limits of error.

3.2 A program of standardization and calibration of measurement equipment and analytical procedures shall be maintained to provide data to substantiate the limits of error associated with all measurements required for safeguards purposes.

---

* Limits of error as used herein means the boundaries within which the true (best) value of the parameter being measured lies with a probability of 95%.

3.3 All measurements required by this amendment shall be reviewed annually by the Accountability Representative, including a review of the quantitative calculation of limits of error of the measurement system. The Accountability Representative shall utilize data obtained through calibrations specified in Condition 3.2 to monitor performance of the measurement system to assure calculated limits of error are maintained between reviews. Records of reviews, calculations, and use of calibration data shall be kept.

3.4 After any physical inventory the material unaccounted for (MUF) and the limits of error associated with the material unaccounted for shall be computed promptly. The limits of error associated with MUF shall be calculated by statistically combining the limits of error determined for shipments, receipts, beginning inventory, ending inventory, and measured losses for the period since the last inventory.

3.5 If the quantity of MUF exceeds the associated limits of error, the licensee shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District I, Newark, New Jersey. The licensee shall investigate the MUF and notify the Division of Nuclear Materials Safeguards within thirty (30) days after the initial notice, specifying the probable reasons for the MUF and the corrective action taken or planned.

4.0 SHIPPING AND RECEIVING

4.1 Receipt of special nuclear material may be provisionally accepted at the Processing Plant at the amount shown on the nuclear material transfer document until fuel dissolution and input measurements are made. The book inventory and material transfer forms shall be adjusted to the amounts of special nuclear material measured as input.

4.2 All irradiated fuel assemblies and containers of ruptured or loose assemblies shall be piece counted and verified where practicable by serial number, if any, upon receipt.

4.3 At the end of each processing campaign the Accountability Representative shall compare the measured special nuclear material input of the campaign with the quantity reported by the shipper of the irradiated fuel. If the difference is greater than the combined limits of error of the NFS input measurements and the shipper's calculated or measured values, the shipper shall be notified and the difference investigated. Statistical analyses of past performance and measurement uncertainties shall be kept.

5.0 STORAGE AND INTERNAL TRANSFERS

5.1 A documented system of control over special nuclear material stored and processed within the facility shall be maintained which will provide knowledge of the location, and quantity of all material contained in discrete, identifiable items or containers and within the process.

5.2 In-Plant Transfer Forms shall be issued to document receipts to storage, removals from storage, transfers to waste storage, transfers to shipping containers and shipments.

5.3 Each In-Plant Transfer Form supporting a transfer of material shall be signed by the delegated individual.

6.0 INVENTORY

6.1 A complete physical inventory of all special nuclear material subject to this license shall be conducted at approximately six-month intervals, but in no case shall more than eight months elapse between inventories.

6.2 The physical inventory shall be conducted in accordance with Standard Procedures which shall:

6.2.1 specify the extent to which the plant is to shut down and clean out process equipment;

6.2.2 specify the extent to which the plant or areas thereof are to remain static during the inventory;

6.2.3 identify the basis for accepting for inventory purposes previously made measurements and their limits of error;

6.2.4 designate measurements to be made for inventory purposes to establish the quantity of material on inventory and its associated limits of error; and

6.2.5 identify the manner by which material on inventory will be listed to assure each item is inventoried and there are no duplications or omissions.

6.3 The book inventory shall be reconciled with and adjusted to the results of the physical inventory upon completion of the physical inventory.

6.4 Special physical inventories of the plant shall be conducted whenever there is reason to believe that the plant has experienced losses or gains that are different by a statistically significant amount from those expected.

7.0 RECORDS AND REPORTS

7.1 The licensee shall establish and maintain a records system which will provide sufficient information to maintain a material balance around the total plant. These records shall contain information pertaining to all receipts, shipments, measured discards, inventory, and MUF for each material balance. All entries in the records shall be supported by appropriate documents.

7.2 All measured discards and MUF shall be reported on a campaign basis by the Accountability Representative to the Plant Manager.

8.0 MANAGEMENT OF MATERIALS CONTROL SYSTEM

8.1 The Corporate Manager, Nuclear Material Control, shall conduct, at least once each year, an internal review of the nuclear materials control system, and report the findings to the Plant Manager.

8.2 An estimate of anticipated losses shall be prepared for each campaign, with the concurrence of the Accountability Representative, and shall be based on prior experience, throughput quantities and rates, etc. If losses exceed the estimate of those anticipated, they shall be investigated by the Accountability Representative and the results of his investigation shall be reported to the Plant Manager.

8.3 Any apparent loss of a discrete item or container of special nuclear material which cannot be resolved by an immediate investigation shall be reported to the Accountability Representative, who shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District I, Newark, New Jersey, and shall conduct an investigation of the loss. The Accountability Representative shall report the results of his investigation to the Plant Manager.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
R. P. Marshall

Date of Amendment SEP 4 1969

Division of Nuclear Materials
Safeguards

REQUEST FOR EXT.
PART 1 09/23/69

RCTS
111591

NFS

NUCLEAR FUEL SERVICES, INC.

WHEATON PLAZA BUILDING, SUITE 906
WHEATON, MARYLAND 20902
AREA CODE 301-TELEPHONE 933-5440

Dr. John A. McBride
Director
Division of Materials Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20554

Dear Dr. McBride:

We herewith enclose three originals and nineteen copies of Part I of Submission in Support of Request for Extension of Expiration Date of Provisional Operating License, together with Certificate of Service on interested parties as required by the regulations.

This submission is in further response to your letter of June 20, 1969.

Sincerely yours,

T. C. Runion,
President

111592

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating License No. CSF-1	)	
	)	

SUBMITTAL IN SUPPORT OF REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE, DATED MARCH 17, 1969

Part 1

September 23 , 1969

111593

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating License No. CSF-1	)	

SUBMITTAL IN SUPPORT OF REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE, DATED MARCH 17, 1969

Part I

This submittal supplements the Request for Extension of the Expiration Date of the Provisional Operating License dated March 17, 1969, and the submittals in support of this request dated July 16, 1969.

NET CASH REQUIREMENTS FOR FIVE YEARS

The estimated net cash requirements of the NFS West Valley plant for the period of five years -- 1969 through 1973 -- are $20,185,000. This figure represents the difference between anticipated operating revenues and operating expenses, plus the cost of the modernization program. A breakdown of anticipated revenues and expenses including expenses of the modernization program is set forth in Part II of this submittal, which we are requesting to be withheld from public disclosure.

Of the anticipated expenditures of $20,185,000 in excess of operating revenues, $12,110,000 represents the cost of the modernization program referred to in the submittal of July 16, 1969, leaving a net cash requirement of $8,075,000 to cover the costs required for existing operations.

ANTICIPATED CASH RECEIPTS OTHER THAN FROM OPERATING REVENUES

Skelly Oil Company, a stockholder of Nuclear Fuel Services, Inc., as set forth in the submittal of July 16, 1969, agreed to purchase $6,000,000 principal amount of a new issue of subordinated convertible debentures due January 1, 1979 and has purchased such debentures and furnished the funds to NFS. Attached hereto as Annex 1 is a copy of the unaudited balance sheet of NFS as of June 30, 1969, which reflects the receipt of such funds by NFS.

On April 29, 1968, under an agreement entered into between W. R. Grace & Co., Getty Oil Company, Skelly Oil Company, and NFS; Getty and Skelly agreed to subscribe to additional stock which would provide NFS with funds covering the years 1968 through 1971 to cover its cash requirements. The agreement provided for a total cash purchase of shares for an amount equivalent to $10,576,500. Of the total sum, $3,861,000 was taken down in 1968 leaving a balance of $6,715,000 to be applied to the cash requirements subsequent to January 1, 1969.

Therefore, the combined agreements of Getty and Skelly to purchase debentures and subscribe to stock during the years 1969, 1970, and 1971 is as follows:

Cash Available 1969 - 1971	
Skelly Debentures	$ 6,000,000
Stock Subscription	6,715,000
Total Cash Available	$12,715,000

Since the anticipated net cash requirement for operations (excluding the modernization program) amounts to $8,075,000 and the cash available amounts to $12,715,000, the available cash exceeds such expenditures by $4,640,000.

There is no restriction on the use by NFS of the sum of $12,715,000 which its stockholders have agreed to furnish. The agreement of Getty and Skelly is to furnish the entire sum during the years 1969, 1970, and 1971, and the funds for 1970 and 1971 can be advanced if required. Therefore, the available funds are far in excess of those required for the five year period 1969 through 1973 for operation of the facility as it exists today.

The existing request for extension of the provisional operating license relates solely to the plant as it exists today and does not seek approval of the modernization program.

When NFS submits an application or applications for approval of the modernization program it will furnish the financial information to show the arrangements for obtaining the additional funds necessary to finance the modernization program. The modernization program was authorized by the Board of Directors of NFS at a meeting which took place on April 27, 1969.

ESTIMATED COSTS OF OPERATION OF NFS FOR THE PERIOD FROM JANUARY 1, 1974 TO APRIL 30, 2003 DATE OF EXPIRATION OF LICENSE.

NFS has estimated that during the period commencing with 1974 when the modernization program will have been completed its operations will be profitable in each year and anticipates revenue and income more than sufficient to cover all expenses.

REVENUES AND EXPENSES OF ERWIN PLANT

The statements of anticipated expenses and sources of funds do not reflect the earnings or expenses of the Erwin plant, but do reflect all other earnings and expenses. NFS contemplates no cash requirements for Erwin beyond the cash generated by its operations. If any cash requirements should develop, NFS will make financial arrangements that will not adversely affect the financial situation of West Valley as set forth here.

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By _____
President

Dated: September 24, 1969

Bernhard G. Bechhoefer
Scharfeld, Bechhoefer, Baron,
Finkelstein & Firestone
1725 K Street, N. W.
Washington, D. C. 20006
Attorneys for
Nuclear Fuel Services, Inc.

Dated: September 24, 1969

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the 24th day of Sept, 1969, before me T. C. Runion to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

_____
My Commission Expires
7/1/70

ANNEX 1

111598

NUCLEAR FUEL SERVICES, INC.

Consolidated Balance Sheet
As of June 30, 1969
($000)

	June 30 1969	June 30 1968	Increase (Decrease)
ASSETS			
Current Assets:			
Cash and Marketable Securities	$ 5,307	$ 942	$ 4,365
Accounts Receivable - Net	2,608	3,000	(392)
Inventories	1,764	1,651	113
Other Current Assets	83	324	(241)
Total Current Assets	9,762	5,917	3,845
Properties and Equipment	26,662	24,489	2,173
Less: Accumulated Depreciation	6,462	4,760	1,702
Total - Net	20,200	19,729	471
Preoperating Expense	1,489	2,299	(810)
Other Assets	264	276	(12)
Total Assets	$31,715	$28,221	$ 3,494
LIABILITIES AND STOCKHOLDERS' EQUITY			
Current Liabilities:			
Accounts & Accruals Payable	$ 3,215	$ 1,484	$ 1,731
Short Term Loans	-	1,500	(1,500)
Current Portion of Long Term Debt	1,358	679	679
Total Current Liabilities	4,573	3,663	910
Deferred Taxes on Income	1,947	185	1,762
Long Term Debt - Banks	7,470	10,186	(2,716)
Long Term Debt - Skelly Debentures	6,000	-	6,000
Deferred Credits	1,226	1,470	(244)
Other Liabilities	169	-	169
Total Liabilities	21,385	15,504	5,881
Stockholders' Equity:			
Capital Stock Issued	12,863	11,543	1,320
Capital Surplus	4,168	3,601	567
Retained Earnings (Deficit)	(6,701)	(2,427)	(4,274)
Total Stockholders' Equity	10,330	12,717	(2,387)
Total Liabilities & Equity	$31,715	$28,221	$ 3,494

9/15/69

CERTIFICATE OF SERVICE

The undersigned, Bernhard G. Bechhoefer, attorney for the Applicant, Nuclear Fuel Services, Inc., does hereby certify that he caused the attached Request for Extension of Expiration Date of Provisional Operating License to be served on each of the following persons by causing a conformed copy of the same to be deposited today in the United States mail properly stamped for first class mail and addressed to each of the following:

(a) Mrs. Mynetta F. Fluker
County Clerk
Cattaraugus County
Little Valley, New York 14755

(b) Mr. Arnold C. Proctor
Supervisor, Town of Ashford
135 Depot Street
West Valley, New York 14171

(c) Mr. Oliver Townsend
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(d) Oscar M. Reubhausen, Esquire
c/o Debevoise, Plimpton, Lyons & Gates
320 Park Avenue
New York, New York 10022

(e) Maurice Axelrad, Esquire
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(f) Troy B. Conner, Jr., Esquire
c/o Atomic Energy Commission
Bethesda, Maryland 20014
Counsel for AEC Regulatory Staff

Dated:

Bernhard G. Bechhoefer

REQUEST FOR EXT.
PART II 09/23/69

RTS

NFS

NUCLEAR FUEL SERVICES, INC.

WHEATON PLAZA BUILDING, SUITE 906
WHEATON, MARYLAND 20902
AREA CODE 301-TELEPHONE 933-5440

September 24, 1969

Dr. John A. McBride
Director
Division of Materials Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20554

Dear Dr. McBride:

We herewith enclose three originals and nineteen copies of Part II of Submission in Support of Request for Extension of Expiration Date of Provisional Operating License.

This submission is in further response to your letter of June 20, 1969.

It is requested that the information furnished herein be withheld from public disclosure pursuant to the provisions of Title 10, Chapter 1, Section 2.790 of the Code of Federal Regulations on the following basis:

1. Disclosure of detailed operating costs and financial arrangements of Nuclear Fuel Services, Inc. and its stockholders would be detrimental to the competitive efforts of the applicant in bidding against domestic and foreign competition and would adversely affect the operations of NFS.

2. Licensing procedure in the AEC has evolved primarily around the utility industry and does not take due cognizance of the competitive elements of the chemical industry.

Sincerely yours,

T. C. Runion

T. C. Runion,
President

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating Licensing No. CSF-1	)	

SUBMITTAL IN SUPPORT OF REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE, DATED MARCH 17, 1969

Part II

SUBJECT TO SECTION 2.790 10 CFR 1

September 23, 1969

111584

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

SUBJECT TO SECTION 2.790 10 CFR 1

In the Matter of	)	
	)	
NUCLEAR FUEL SERVICES, INC., and	)	
	)	
NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY	)	Docket No. 50-201
	)	
	)	
Provisional Operating License No. CSF-1	)	

SUBMITTAL IN SUPPORT OF REQUEST FOR EXTENSION OF EXPIRATION DATE OF PROVISIONAL OPERATING LICENSE, DATED MARCH 17, 1969

Part II

NFS herewith submits Part II of its further submittal in support of Request for Extension of Expiration Date of Provisional Operating License dated March 17, 1969, and requests that the information contained in Part II should be withheld from public disclosure pursuant to the provisions of Title 10, Chapter 1, Section 2.790 of the Code of Federal Regulations. The Second Part is designated "Subject to Section 2.790." We request that this information be withheld from public disclosure on the following basis:

1. Disclosure of detailed operating costs and financial arrangements of Nuclear Fuel Services, Inc. and its stockholders would be detrimental to the competitive efforts of the applicant in bidding against domestic and foreign competition and would adversely affect the operations of NFS.

111585

SUBJECT TO SECTION 2.790 10 CFR 1

2. Licensing procedure in the AEC has evolved primarily around the utility industry and does not take due cognizance of the competitive elements of the chemical industry.

3. Information concerning production losses and reserves to meet such loss pursuant to AEC regulations is not appropriate for public disclosure.

This submittal consists of four Annexes as follows:

Annex 1. Breakdown by each year 1966 through 1968 of revenues and expenses incurred by the West Valley plant.

Annex 2. Breakdown of estimated revenues and expenses from operation for the five year period 1969 through 1973 inclusive for the West Valley plant.

Annex 3. Projected source and application of funds statement for the West Valley Plant for the five year period 1969 through 1973 inclusive. The statement indicates the cash deficit resulting from the existing operation, the estimated cost of the expansion and modernization program and resulting deficit after the inclusion of this program, and the cash surplus resulting from capital contributions including debentures.

Annex 4. Resolution of Nuclear Fuel Services, Inc. Board of Directors meeting on May 27, 1969, approving expansion and modernization program.

1

SUBJECT TO SECTION 2.790 10 CFR 1

Information contained in the second part of this submission could be detrimental to the interests of the applicant if access thereto is not restricted at the discretion of the Commission to persons properly and directly concerned with the extension of the license as requested by applicant.

Respectively submitted,

NUCLEAR FUEL SERVICES, INC.

By _____
President

Dated: September 24, 1969

Bernhard G. Bechhoefer
Scharfeld, Bechhoefer, Baron
Finkelstein & Firestone
1725 K Street, N. W.
Washington, D. C. 20006

Dated: September 24, 1969

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the 24th day of Sept., 1969, before me T. C. Runion to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

_____
My Commission expires 7/1/70

SUBJECT TO SECTION 2.790 10 CFR 1

111587

ANNEX 1

NUCLEAR FUEL SERVICES, INC.

West Valley
Income Statement
1966 - 1968

($000)

	1966	1967	1968
Income			
Operating Revenue	$ 3,631	$ 5,103	$ 5,168
Interest and Other Income	104	102	94
Total Income	3,735	5,205	5,262
Costs and Expenses			
Plant Costs and Operating Expenses	2,081	4,035	4,492
Depreciation	660	1,180	1,337
Selling, General & Administrative Expenses	146	286	242
Amortization of Pre-operating Expenses	277	567	646
Interest Expense	462	609	714
Other Expense	13	131	-
Total Costs and Expenses	3,639	6,808	7,431
Net Profit/(Loss) Before Taxes	$ 96	$(1,603)	$(2,169)

9/15/69

ANNEX 2

NUCLEAR FUEL SERVICES, INC.

West Valley
Projected Income Statement
1969 - 1973

($000)

	1969	1970	1971	1972	1973
Income					
Operating Revenue	$ 5,554	$ 5,933	$ 5,612	$ 5,906	$ 9,057
Interest and Other Income	-	-	-	-	-
Total Income	5,554	5,933	5,612	5,906	9,057
Costs and Expenses					
Plant Costs and Operating Expenses	4,882	5,038	5,067	5,244	5,899
Depreciation	1,340	1,359	1,683	1,701	2,295
Selling, General & Administrative Expenses	210	231	254	279	307
Amortization of Pre-operating Expenses	646	646	211	-	300
Interest Expense	656	508	399	323	247
Other Expense - Pre-operating	-	-	-	-	(3,000)
Total Costs and Expenses	7,734	7,782	7,614	7,547	6,048
Net Profit/(Loss) Before Taxes	$(2,180)	$(1,849)	$(2,002)	$(1,641)	$ 3,009

Plant Costs and Operating Expenses

Employment Costs	$ 1,932	$ 2,009	$ 2,089	$ 2,172	$ 2,377
Operating Supplies & Materials	944	989	926	969	1,396
Repair & Maintenance Materials	390	393	401	409	418
Rent & Site Maintenance	800	800	800	800	800
Utilities, Insurance, Taxes, etc.	816	847	851	894	908
Total	$ 4,882	$ 5,038	$ 5,067	$ 5,244	$ 5,899

9/15/69

111589

SUBJECT TO SECTION 2.790 10 CFR 1

ANNEX 3

NUCLEAR FUEL SERVICES, INC.

West Valley
Projected Source & Application of Funds
1969 - 1973

($000)

	1969	1970	1971	1972	1973	Total Five Year Period
Source of Funds						
Net Profit/(Loss) Before Taxes	$(2,180)	$(1,849)	$(2,002)	$(1,641)	$ 3,009	$ (4,663)
Depreciation	1,340	1,359	1,683	1,701	2,295	8,378
Pre-Operating Expense	646	646	211	-	300	1,803
Total Sources-(From Operations)	(194)	156	(108)	60	5,604	5,518
Application of Funds						
Capital Expenditures						
Revamp & Expansion	2,010	1,800	2,150	3,950	2,200	12,110
Miscellaneous	84	250	250	250	250	1,084
Working Capital Inc./(Dec.)	(45)	-	-	-	500	455
Short Term Loan Repayment	1,000	-	-	-	-	1,000
Long Term Loan Repayment	2,716	1,358	1,358	1,358	1,358	8,148
Other - Net	(94)	-	-	-	-	(94)
- Pre-Operating Expense	-	-	-	-	3,000	3,000
Total Application	5,671	3,408	3,758	5,558	7,308	25,703
Cash Excess/(Deficit) - Including Revamp & Expansion Program	(5,865)	(3,252)	(3,866)	(5,498)	(1,704)	(20,185)
Less: Capital Expenditure for Revamp & Expansion Program	2,010	1,800	2,150	3,950	2,200	12,110
Cash Excess/(Deficit) - Existing Facilities	(3,855)	(1,452)	(1,716)	(1,548)	496	(8,075)
Funds Provided By						
Skelly Debentures	6,000	-	-	-	-	6,000
Getty/Skelly Stock Subscriptions	990	990	4,735	-	-	6,715
Total Funds Provided	6,990	990	4,735	-	-	12,715
Net Cash Excess/(Deficit) By Year	3,135	(462)	3,019	(1,548)	496	4,640
Net Cash Excess/(Deficit) Cummulative	$3,135	$ 2,673	$ 5,692	$ 4,144	$ 4,640	$ 4,640

9/15/69

SUBJECT TO SECTION 2.790 10 CFR 1

ANNEX 4

NUCLEAR FUEL SERVICES, INC.
West Valley, New York

Resolution of Nuclear Fuel Services, Inc. Board of Directors meeting on May 27, 1969, approving expansion and modernization program.

> "At the request of the Chairman, Mr. Runion, as President of the Company, then presented to the Directors the 1969 capital budget of the Company as proposed by him. The President explained the desirability of revamping and expanding the reprocessing plant at West Valley and explained the necessity for miscellaneous and maintenance expenditures, the total cost of which was estimated to be $12,110,000. The President further explained the necessity for estimated miscellaneous and maintenance costs at the Erwin Plant which amounted to $800,000. The President also proposed that to the extent the 1969 capital budget was approved by the Directors such approval also constitute approval to make such capital expenditures."

> "RESOLVED, that the 1969 capital budget of the Company amounting to $12,910,000 as submitted to the meeting, is hereby approved, as are the capital expenditures contemplated by such budget."

110722

AEC-4 UNITED STATES ATOMIC ENERGY COMMISSION
REGULATORY FILE RECORD/REPORT SECTION

Your ☒ letter, ☐ application, dated December 28, 1960

Re: Section 5.1.2 of the Technical Specifications of CSF-1

including enclosures
is acknowledged and has been entered in our records.

Docket No. 50-201 Control No.

Please refer to the above number in future correspondence.

Date Received: January 6, 1961

This is an acknowledgment form only.
It is not a reply to your communication.

16-71570-1 GPO

REQUEST FOR FINAL
LICENSE 10/02/69

RTS

H157

Arthur W. Scharfeld (1903-1966)
Bernhard G. Bechhoefer
Theodore Baron
Michael Finkelstein
Martin E. Firestone

Law Offices
Scharfeld, Bechhoefer, Baron
Finkelstein & Firestone
Suite 512, 1725 K Street, N. W.
Washington, D.C. 20006

Telephone
(202) 223-2915

October 2, 1969

Dr. John A. McBride
Director
Division of Materials Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20554

Dear Dr. McBride:

We are herewith enclosing three originals and twenty-five copies of our request for conversion of the Nuclear Fuel Services, Inc. provisional license into a final license pursuant to 10 CFR 50.56 and 10 CFR 50.57.

Sincerely,

Bernhard G. Bechhoefer

Enc.

111573

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	)	Docket No. 50-201

REQUEST FOR FINAL LICENSE

October 3, 1969

UNITED STATES OF AMERICA

ATOMIC ENERGY COMMISSION

In the Matter of NUCLEAR FUEL SERVICES, INC., and NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY Provisional Operating License No. CSF-1	)	Docket No. 50-201

REQUEST FOR FINAL LICENSE

In accordance with the provisions of Section 104 (b) and 187 of the Atomic Energy Act of 1954 as amended and Sections 50.56 and 50.57 of the Commission's Regulations (10 CFR 50.56 and 10 CFR 50.57), Nuclear Fuel Services, Inc. hereby confirms the request made in its application for construction permit dated July 20, 1962 that an operating license be issued to it for a period not exceeding forty years from the date of the construction permit granted to it (April 30, 1963), such license to supercede provisional operating license No. CSF-1 as amended and extended; and in support thereof submits the following:

1. Provisional License CSF-1 for the operation of the nuclear fuel processing plant located at West Valley, New York was issued to applicant on April 19, 1966 and continues in effect. On March 17, 1969 NFS requested that the expiration date of such provisional operating license be extended until October 19, 1970.

On April 3, 1969 the Director of the Division of Materials Licensing acknowledged timely receipt of said application dated March 17, 1969 and that license CSF-1 will remain in effect until the Commission has taken action on such application. NFS is operating under such provisional operating license.

2. In its application of March 17, 1969, applicant did not request the issuance of a final license for a full term of forty years, since at that time it seemed desirable to obtain additional actual operating experience in connection with features, characteristics and components of the facility. Additional experience on such features has been obtained, and the situation no longer inhibits the issuance of a final license.

3. The safety analysis filed herein, as amended from time to time, constitutes a final and up to date safety analysis report as required by 10 CFR 50.34.

4. All officers and directors of NFS are American citizens. As set forth in Annex C to the application for transfer of control of licenses filed herein on February 27, 1969, the sole stockholders of NFS, Getty Oil Company and Skelly Oil Company, were not at that time owned, controlled or dominated by an alien, a foreign corporation or foreign

government. No substantial change has taken place in the ownership or control of Getty Oil Company or Skelly Oil Company since February 27, 1969. Therefore, NFS is not owned, controlled or dominated by an alien, a foreign corporation or foreign government.

5. NFS has submitted financial data in its application for the extension of the provisional operating license dated March 17, 1969 and has provided supplemental materials in submittals dated July 16, 1969 and September 24, 1969. NFS believes that these submittals furnish information establishing the financial qualifications of NFS to operate the facility and requests that such materials be considered in support of the request contained herein.

NFS, therefore, confirming its original application for a construction permit and license dated July 20, 1962, requests that the Commission issue a final license pursuant to Section 104 (b) of the Atomic Energy Act of 1954 as amended and Sections 50.56 and 50.57 of the Commission's Regulations (10 CFR 50.56 and 10 CFR 50.57).

Respectfully submitted,

NUCLEAR FUEL SERVICES, INC.

By _____
President

Dated: October 3, 1969

Bernhard G. Bechhoefer
Scharfeld, Bechhoefer, Baron
Finkelstein & Firestone
1725 K Street, N. W.
Washington, D. C. 20006
Attorneys for
Nuclear Fuel Services, Inc.

Dated: October 3, 1969

STATE OF MARYLAND)
) ss:
COUNTY OF MONTGOMERY)

On the third day of October, 1969, before me T. C. Runion to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

Notary Public

MY COMMISSION EXPIRES JULY 1, 1970

CERTIFICATE OF SERVICE

The undersigned, Bernhard G. Bechhoefer, attorn the Applicant, Nuclear Fuel Services, Inc., does her certify that he caused the attached Request For Fina to be served on each of the following persons by cau a conformed copy of the same to be deposited today i United States mail properly stamped for first class and addressed to each of the following:

(a) Mrs. Mynetta F. Fluker
County Clerk
Cattaraugus County
Little Valley, New York 14755

(b) Mr. Arnold C. Proctor
Supervisor, Town of Ashford
135 Depot Street
West Valley, New York 14171

(c) Mr. Oliver Townsend
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(d) Oscar M. Reubhausen, Esquire
c/o Debevoise, Plimpton, Lyons & Gat
320 Park Avenue
New York, New York 10022

(e) Maurice Axelrad, Esquire
230 Park Avenue
New York, New York 10017
New York State Atomic and
Space Development Authority

(f) Troy B. Conner, Jr., Esquire
c/o Atomic Energy Commission
Bethesda, Maryland 20014
Counsel for AEC Regulatory Staff

Dated: October 3, 1969

Bernhard G.

110721

HQ-16 (9-64)

UNITED STATES ATOMIC ENERGY COMMISSION
REGULATORY MAIL AND RECORDS SECTION

Your ☒ letter, ☐ application, dated December 23, 1966

requesting an addition to 4.10.1.1 of Technical Specifications CSF-1.....

including enclosures .....
is acknowledged and has been assigned:

DOCKET NO. 50-201 or CONTROL NO. .....

Please refer to the above number(s) in future correspondence.

Date Received: 12-27-66

This is an acknowledgment form only.
It is not a reply to your communication.

HQ-16 (9-64)

UNITED STATES ATOMIC ENERGY COMMISSION
REGULATORY MAIL AND RECORDS SECTION

Your ☒ letter, ☐ application, dated December 16, 1966

Re: Under the BASES of Technical Specification 4.12.....

...uding enclosures ... thereto of print 8C-T-377
is acknowledged and has been assigned:

DOCKET NO. 50-201 or CONTROL NO. .....

Please refer to the above number(s) in future correspondence.

Date Received: 12-22-66

This is an acknowledgment form only.
It is not a reply to your communication.

TO: W. H. Lewis

FROM: J. W. Loeding

DATE: April 28, 1966

SUBJECT: License CSF-1

As a result of an intensive study made to compare the provisional license as published in the Federal Register last September with the actual license as granted April 19, 1966, the following differences are noted:

Changes in the plant organization which must be reported within 30 days are based not on the letter of July 3, 1965, but rather on the letter of October 19, 1965, (a copy of which, to the best of my knowledge does not exist at West Valley. I believe that was handled by Messrs. Braun and Runion directly from Wheaton.)

The Technical Specifications contain the following changes from the specifications as submitted by West Valley:

(1) Page 10 - "ready condition", a new definition somewhat more stringent.

(2) Page 11 section 4.0 - a slight change, no significance.

(3) Page 26 - very very slight change in the bases for 4.6 in the third paragraph (no significant difference).

(4) Page 41, 4.13.2 - waste burial "duplicate records" is back in.

(5) Page 44, 5.1.4 - the liquid effluent sampler is now (again) "continuous".

(6) Page 50, par. 1, second line - include "1's" after 3C-2 and change "to" to "two".

(7) Page 52, 5.3.1 - AEC has added chemical scrubber provisions in DOG system for fuel with less than 0.16 curies of I-131.

(8) Page 53, second paragraph of Bases - changed to reflect the addition of the chemical scrubber.

(9) Page 54, first paragraph on page - entirely new to reflect the chemical scrubber and the operational routing under different run conditions.

(10) Page 70 - under Objective, "the safety needs of the operation are now established and maintained" - "established" being a new word

(11) Page 70, 7.1.1 - "and" has been placed between operation and control. Also in this paragraph the words "Nuclear Fuel Services, Inc. which provide management of the plant" have been added after activities.

(12) Page 70, 7.1.1.5 - the Criticality Committee has been changed to the Safety Committee and "the process system" has been added to those things for which the Safety Committee is responsible.

(13) Page 71, 7.1.2.1 - it is no longer "public safety" but now "radioactive safety".

(14) Page 71, 7.1.2.2 - "public safety" to "radioactive safety".

(15) Page 71, 7.1.3 - new first sentence has been added which states that "Nuclear Fuel Services' management shall be responsible for plant operation" (nice to see it in print anyway).

(16) Page 71, 7.1.4 - this paragraph, previously deleted by West Valley, has found its way back in.

(17) Page 71, 7.1.5 - this paragraph, previously deleted by West Valley, has found its way back in.

(18) Page 72, 7.1.6.2 - entirely new specification. (It does not require us to do anything which we would not have normally done.)

(19) Page 72, 7.1.6.3 - somewhat new wording, but still the same sense.

In my memo to you of April 20, I indicated the content of those reports due quarterly. There are no specified reports due the AEC on any more frequent basis except those activities which have to do with an incident or threatened incident outside the limits established by our operating license (including technical specifications). Depending on the gravity of the incident, these reports may be due either "immediately" or within 30 days.

Assuming normal operations, no report is due before August 19, 1966, which will cover the period between April 20 and July 19, 1966.

J. W. Loeding

JWL:lek

cc: M. E. Weech
G. C. Loud
W. A. Oldham
G. D. Dymmel
F. A. Dreher

SAFEGUARDS AMEND. 2
06/30/70

BEK

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JUN 30 1970

NMS:RDS
50-201

Nuclear Fuel Services, Inc.
Wheaton Plaza Building
Suite 906
Wheaton, Maryland 20902

Attention: Mr. R. J. Jones, Manager
Nuclear Material Control

AND

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

Attention: Mr. James Cline
General Manager

Gentlemen:

Safeguards Amendment No. 2 to Provisional Operating License No. CSF-1 is enclosed. The license conditions contained in this amendment are based on those previously issued for this license, modified as discussed in our letter dated April 25, 1970, and your replies dated May 12 and May 18, 1970.

A copy of the Notice of Issuance of Amendment to Facility License which is being filed with the Office of the Federal Register for publication is also enclosed.

RECEIVED
JUL 2 1970
W. P. DUCKWORTH

There is no prescribed format for the reports required by Condition 7.3. The reports should contain all of the information specified in Condition 7.3, including negative reports for months in which there are no discards or MUF.

Sincerely,

Ralph G. Page

Ralph G. Page, Acting Director
Division of Nuclear Materials
Safeguards

Enclosures:
1. License Amendment
2. Federal Register Notice

cc: Mr. J. P. Duckworth, Plant Manager
NFS, West Valley
Mr. J. Clark, Technical Manager
NFS, West Valley
Mr. Arnold C. Proctor, Supervisor
Town of Ashford, W. Valley, N.Y.
Mrs. M. F. Fluker, Cattaraugus
County Clerk
Commissioner of Commerce, State
of New York
Mr. M. Axelrad, ASDA
Mr. B. G. Bechhoefer, Counsel
NFS, Washington, D.C.

SAFEGUARDS AMEND. 2
06/30/70

B-1

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

JUN 30 1970

NMS:RDS
50-201

Nuclear Fuel Services, Inc.
Wheaton Plaza Building
Suite 906
Wheaton, Maryland 20902

Attention: Mr. R. J. Jones, Manager
Nuclear Material Control

AND

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

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J. P. DUCKWORTH

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Sincerely,

Ralph G. Page

Ralph G. Page, Acting Director
Division of Nuclear Materials
Safeguards

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cc: Mr. J. P. Duckworth, Plant Manager
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Town of Ashford, W. Valley, N.Y.
Mrs. M. F. Fluker, Cattaraugus
County Clerk
Commissioner of Commerce, State
of New York
Mr. M. Axelrad, ASDA
Mr. B. G. Bechhoefer, Counsel
NFS, Washington, D.C.

UNITED STATES ATOMIC ENERGY COMMISSION

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

NOTICE OF ISSUANCE OF SAFEGUARDS AMENDMENT NO. 2 TO

PROVISIONAL OPERATING LICENSE

License No. CSF-1

Safeguards
Amendment No. 2

The Atomic Energy Commission (the Commission) has found that:

A. The information provided by the licensees in letters dated May 12 and May 18, 1970, regarding the safeguarding of special nuclear material complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations set forth in 10 CFR Chapter I;

B. The issuance of this amendment will not be inimical to the common defense and security, or to the health and safety of the public; and

C. Prior public notice of proposed issuance of this amendment is not required since the amendment does not involve significant hazard considerations different from those previously evaluated.

Accordingly, License No. CSF-1, issued to the Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority, is hereby amended by deleting in its entirety Appendix B dated September 4, 1969, and substituting in lieu thereof a new Appendix B, which is Safeguards Amendment No. 2.

This amendment is effective as of the date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
Ralph G. Page

Ralph G. Page, Acting Director
Division of Nuclear Materials
Safeguards

Date of Issuance: JUN 30 1970

COPY

JUN 30 1970

APPENDIX B

UNITED STATES
ATOMIC ENERGY COMMISSION

LICENSE AMENDMENT
FOR
SPECIAL NUCLEAR MATERIALS SAFEGUARDS

Pursuant to the Atomic Energy Act of 1954, as amended, and Title 10, Code of Federal Regulations, Chapter 1, Part 70, the following amendment to the license identified below is hereby issued, incorporating controls for the safeguarding of special nuclear material.

Licensees

Names and Addresses:

Nuclear Fuel Services, Inc.
Box 124
West Valley, New York
14171

and

New York State Atomic and Space
Development Authority
230 Park Avenue
New York, New York 10017

License No. CSF-1

Docket No. 50-201

CONDITIONS

1.0 FACILITY ORGANIZATION

1.1 The Plant Manager shall have the responsibility for developing, revising, implementing, and enforcing the nuclear material control procedures and managing an overall system of special nuclear material control.

1.2 Nuclear material control procedures and revisions thereto shall be approved by the Plant Manager. A manual containing all current nuclear material control procedures shall be maintained by the Technical Services Manager.

COPY

1.3 The Accountability Representative shall assure that the nuclear material control procedures are appropriately reflected in process specifications, manufacturing instructions, standard operating procedures, or similar detailed management instructions.

1.4 All delegations of safeguards responsibilities by the Plant Manager shall be in writing.

2.0 FACILITY OPERATION

2.1 Material Balance Areas (MBA's) shall be established by the Plant Manager.

2.2 The Processing Plant may be maintained as a single Material Balance Area on the basis that responsibility for the special nuclear material within the plant shall not be transferred.

2.3 All operations within the MBA shall be the responsibility of a single employee who shall also be responsible for the custody of special nuclear material within the MBA.

2.4 See Amendment Dated 8/11/75

3.0 MEASUREMENTS AND STATISTICAL CONTROLS

3.1 The licensee shall determine the U-235, U-233, and/or Pu content of all receipts, shipments, intentional discards, and material inventoried, along with the limits of error associated with these quantities. The licensee shall make sufficient measurements to substantiate the stated quantities and associated limits of error. Measurements are not required on items which have been determined by other means to contain less than ten (10) grams U-235, U-233, and/or Pu each. Limits of error as used herein means the boundaries within which the true or best value of the parameter being measured lies with a probability of 95%.

3.2 A program of standardization and calibration of measurement equipment and analytical procedures shall be maintained to provide data to substantiate the limits of error associated with all measurements required for safeguards purposes.

3.3 All measurements required by this amendment shall be reviewed annually by the Accountability Representative, including a review of the quantitative calculation of limits of error of the measurement system. The Accountability Representative shall utilize data obtained through calibrations specified in Condition 3.2 to monitor performance of the measurement system to assure calculated limits of error are maintained between reviews. Records of reviews, calculations, and use of calibration data shall be kept.

3.4 After any physical inventory the material unaccounted for (MUF) and the limits of error associated with the material unaccounted for shall be computed promptly. The limits of error associated with MUF shall be calculated by statistically combining the limits of error determined for shipments, receipts, beginning inventory, ending inventory, and measured losses for the period since the last inventory.

3.5 If the quantity of MUF exceeds the associated limits of error, the licensee shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District 1, Newark, New Jersey. The licensee shall investigate the MUF and notify the Division of Nuclear Materials Safeguards within thirty (30) days after the initial notice, specifying the probable reasons for the MUF and the corrective action taken or planned.

4.0 SHIPPING AND RECEIVING

4.1 Receipt of special nuclear material may be provisionally accepted at the Processing Plant at the amount shown on the nuclear material transfer document until fuel dissolution and input measurements are made. The book inventory and material transfer forms shall be adjusted to the amounts of special nuclear material measured as input.

4.2 All irradiated fuel assemblies and containers of ruptured or loose assemblies shall be piece counted and verified where practicable by serial number, if any, upon receipt.

4.3 At the end of each processing campaign the Accountability Representative shall compare the measured special nuclear material input of the campaign with the quantity reported by the shipper of the irradiated fuel. If the difference is greater than the combined limits of error of the NFS input measurements and the shipper's calculated or measured values, the shipper shall be notified and the difference investigated. Statistical analyses of past performance and measurement uncertainties shall be kept.

5.0 STORAGE AND INTERNAL TRANSFERS

5.1 A documented system of control over special nuclear material stored and processed within the facility shall be maintained which will provide knowledge of the location, and quantity of all material contained in discrete, identifiable items or containers and within the process.

5.2 In-Plant Transfer Forms shall be issued to document receipts to storage, removals from storage, transfers to waste storage, transfers to shipping containers and shipments.

5.3 Each In-Plant Transfer Form supporting a transfer of material shall be signed by the delegated individual.

6.0 INVENTORY

6.1 A complete physical inventory of all special nuclear material subject to this license shall be conducted at approximately six-month intervals, but in no case shall more than eight months elapse between inventories.

6.2 The physical inventory shall be conducted in accordance with Standard Procedures which shall:

6.2.1 specify the extent to which the plant is to shut down and clean out process equipment;

6.2.2 specify the extent to which the plant or areas thereof are to remain static during the inventory;

6.2.3 identify the basis for accepting for inventory purposes previously made measurements and their limits of error;

6.2.4 designate measurements to be made for inventory purposes to establish the quantity of material on inventory and its associated limits of error; and

6.2.5 identify the manner by which material on inventory will be listed to assure each item is inventoried and there are no duplications or omissions.

6.3 The book inventory shall be reconciled with and adjusted to the results of the physical inventory upon completion of the physical inventory.

6.4 Special physical inventories of the plant shall be conducted whenever there is reason to believe that the plant has experienced losses or gains that are different by a statistically significant amount from those expected.

7.0 RECORDS AND REPORTS

7.1 The licensee shall establish and maintain a records system which will provide sufficient information to maintain a material balance around the total plant. These records shall contain information pertaining to all receipts, shipments, measured discards, inventory, and MUF for each material balance. All entries in the records shall be supported by appropriate documents.

7.2 All measured discards and MUF shall be reported on a campaign basis by the Accountability Representative to the Plant Manager.

7.3 The licensee shall report on a monthly basis all intentional discards and material unaccounted for. The MUF shall be that which has been determined during the month as a result of completing a material balance around a single operation, a number of operations, or the entire plant. This report shall be made within fifteen (15) days after the end of the month in which the discard was made or the material unaccounted for was determined. Reports shall be sent to the U.S. Atomic Energy Commission, Division of Nuclear Materials

JUN 3 0 1970

License No. CSF-1

Docket No. 50-201

Safeguards, District I, Newark, New Jersey. Each report shall be identified by the Reporting Identification Symbol(s) (RIS) assigned to the licensed operations and shall include a statement of the nature of the discards, the probable reasons for the MUF and any actions taken or planned with respect to the MUF.

8.0 MANAGEMENT OF MATERIALS CONTROL SYSTEM

8.1 The Corporate Manager, Nuclear Material Control, shall conduct, at least once each year, an internal review of the nuclear materials control system, and report the findings to the Plant Manager.

8.2 An estimate of anticipated losses shall be prepared for each campaign, with the concurrence of the Accountability Representative, and shall be based on prior experience, throughput quantities and rates, etc. If losses exceed the estimate of those anticipated, they shall be investigated by the Accountability Representative and the results of his investigation shall be reported to the Plant Manager.

8.3 Any apparent loss of a discrete item or container of special nuclear material which cannot be resolved by an immediate investigation shall be reported to the Accountability Representative, who shall promptly notify the Atomic Energy Commission, Division of Nuclear Materials Safeguards, District I, Newark, New Jersey, and shall conduct an investigation of the loss. The Accountability Representative shall report the results of his investigation to the Plant Manager.

FOR THE ATOMIC ENERGY COMMISSION

Date of Amendment JUN 3 0 1970

Original Signed by
Ralph G. Page

Division of Nuclear Materials
Safeguards

UNITED STATES ATOMIC ENERGY COMMISSION

NUCLEAR FUEL SERVICES, INC.

AND

NEW YORK STATE ATOMIC AND SPACE DEVELOPMENT AUTHORITY

DOCKET NO. 50-201

NOTICE OF ISSUANCE OF SAFEGUARDS AMENDMENT NO. 2 TO

PROVISIONAL OPERATING LICENSE

The Atomic Energy Commission (Commission) has issued, effective as of the date of issuance, Safeguards Amendment No. 2 to Provisional Operating License No. CSF-1, dated April 19, 1966. The license authorized Nuclear Fuel Services, Inc., and New York State Atomic and Space Development Authority (licensees) to operate the irradiated nuclear fuel processing plant located at the Western New York Nuclear Service Center in Cattaraugus and Erie Counties, New York.

By letter dated April 24, 1970, the Commission proposed to modify the safeguards amendment to License No. CSF-1 to incorporate changes in the conditions of Safeguards Amendment No. 1. These changes are identical to those being made in all special nuclear material license safeguards amendments and are being made to clarify one condition pertaining to measurements of special nuclear material, and to add a new condition to require certain safeguards reports to the Commission. The licensees responded by letters dated May 12 and May 18, 1970, agreeing to the proposed changes.

The Commission has made the findings required by the Atomic Energy Act of 1954, as amended, and the Commission's regulations which are set forth in the amendment, and has concluded that the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Within fifteen (15) days from the date of publication of the notice in the FEDERAL REGISTER, the licensees may file a request for a hearing and any person whose interest may be affected by this proceeding may file a petition for leave to intervene. Requests for a hearing and petitions to intervene shall be filed in accordance with the Commission's "Rules of Practice" in 10 CFR Part 2. If a request for a hearing or a petition for leave to intervene is filed within the time prescribed in this notice, the Commission will issue a notice of hearing or an appropriate order.

For further details with respect to this amendment, see (1) the Commission's letter of April 24, 1970; (2) the licensees' letters of May 12 and May 18, 1970; and (3) the amendment to the provisional operating license, which are available for public inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C. Copies of the amendment may be obtained upon request addressed

to the Atomic Energy Commission, Washington, D.C. 20545, Attention: Division of Nuclear Materials Safeguards.

Dated at Bethesda, Maryland, this 30th day of June 1970.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed by
Ralph G. Page
JUN 30 1970

Ralph G. Page, Acting Director
Division of Nuclear Materials
Safeguards

JUN 30 1972

Docket No. 50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. J. H. Clark, Manager
Environmental Protection and
Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

Gentlemen:

This refers to your letter of June 14, 1972, in which approval was requested to continue under interim technical specifications for liquid effluents until December 31, 1972.

In view of the progress made to date and the effort being made by NFS to improve the performance of the low-level waste treatment plant, as evidenced by the progress described in past monthly reports, discussions with the staff and the substantial additional development program proposed for the period of July 1 to December 31, 1972, we have deferred the effective date of Change 15 as set forth below and have established the following interim requirements:

1. NFS shall actively pursue the development program outlined in the NFS submittal of June 14, 1972, toward the objective of meeting the limits specified in deferred Change 15.

2. NFS shall submit two written reports describing the progress made and results obtained from the development program. The first report shall be due on September 15, 1972, the second on December 15, 1972.

3. The NFS Technical Services Manager, about the fifteenth of each month, shall verbally report progress made and results obtained from the development program to the Fuel Fabrication and Reprocessing Branch.

OFFICE ▶						
SURNAME ▶						
DATE ▶						

Form AEC-318 (Rev. 9-53)

4. NFS and its consultants shall meet with the Commission staff and their consultants whenever the staff deems it necessary to discuss progress made in improving the management of low-level wastes.

5. NFS, pending completion of the low-level waste treatment development program and the adoption or modification of Change No. 15, shall minimize effluent releases to the environs and, in any case, limit releases such that:

   a. The concentration of Cs-137 in the liquid waste at the point of release from the lagoon system will not exceed 2×10^{-5} μCi/ml.

   b. The concentration of radioactivity in the Cattaraugus Creek will not exceed either:

      i. Ten percent (10%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 averaged over any quarterly period; or

      ii. Twenty percent (20%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 for any weekly composite sample taken in accordance with Technical Specification 5.1.1.

   c. If the radioactive concentrations exceed either a. or b. above, then NFS shall:

      i. Take such action as is necessary to come into prompt compliance.

      ii. Make an investigation to identify the cause or causes for such levels of radioactivity.

      iii. Define and initiate a program of action to reduce such levels, and

      iv. Report these actions to the Commission on a timely basis.

We have determined that operation with these interim requirements does not present significant hazards considerations not described or implicit

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in the NFS Final Safety Report, and that there is reasonable assurance that the health and safety of the public will not be endangered.

Please inform us by letter at an early date of your agreement to the foregoing. Pending further notice, it is hereby ordered that Change 15 previously issued shall, in accordance with 10 CFR 2.204, become effective January 1, 1973.

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
R. B. Chitwood

R. B. Chitwood, Chief
Fuel Fabrication and Reprocessing
Branch
Directorate of Licensing

cc: Mr. James Cline

JAN 8 1973

Docket 50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection and
Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

Gentlemen:

This refers to your letter of December 19, 1972, in which approval was requested to continue under interim technical specification for liquid effluents until reprocessing operations are again resumed at the West Valley plant.

In view of the progress made to date and the effort being made by NFS to improve the performance of the low-level waste treatment plant, as evidenced by the progress described in past reports, discussions with the staff and the additional development and optimization program proposed for the interim period, we have deferred the effective date of Change 15 as set forth below and have established the following interim requirements:

1. NFS shall actively pursue the development and optimization program described in the NFS submittal of December 19, 1972, toward the objective of meeting the limits specified in deferred Change 15.

2. NFS shall describe the progress made and results obtained from the development and optimization program in the regular NFS Quarterly Operating Reports.

3. NFS, pending completion of the low-level waste treatment development program and the adoption or modification of Change No. 15, shall minimize effluent releases to the environs and, in any case, limit release such that:

   a. The concentration of Cs-137 in the liquid waste at the point of release from the lagoon system will not exceed 2×10^{-5} uCi/ml.

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SURNAME ▸					

b. The concentration of radioactivity in the Cattaraugus Creek will not exceed either:

i. Ten percent (10%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 averaged over any quarterly period; or

ii. Twenty percent (20%) of the prorated concentrations listed in Appendix B, Table II, 10 CFR Part 20 for any weekly composite sample taken in accordance with Technical Specification 5.1.1.

c. If the radioactive concentrations exceed either a. or b. above, then NFS shall:

i. Take such action as is necessary to come into prompt compliance.

ii. Make an investigation to identify the cause or causes for such levels of radioactivity.

iii. Define and initiate a program of action to reduce such levels, and

iv. Report these actions to the Commission on a timely basis.

We have determined that operation with these interim requirements does not present significant hazards considerations, and that there is reasonable assurance that the health and safety of the public will not be endangered.

Pending further notice, it is hereby ordered that Change 15 previously issued shall, in accordance with 10 CFR 2.204, not become effective until reprocessing operations resume at the NFS West Valley Reprocessing Plant.

FOR THE ATOMIC ENERGY COMMISSION

R. B. Chitwood, Chief
Fuel Fabrication and Reprocessing

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

L:NFP:RGR
50-201
70-1156

JUN 4 1974

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection
and Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

and

New York Atomic and Space
Development Authority
ATTN: Mr. L. Strongin
Secretary and
Assistant Counsel
230 Park Avenue
New York, New York 10017

Gentlemen:

We have considered your request of May 22, 1974 to revise Section 10 of Appendix B to License No. CSF-1 to permit a one-time shipment of approximately 35 kgs of plutonium from the Plutonium Storage Facility at West Valley, New York to Exxon Nuclear Corporation, Richland, Washington.

We have found your transportation security plan acceptable and are hereby revising Section 10 of Appendix B to License No. CSF-1, effective immediately, to read as follows:

10.0 Transportation Security

10.1 Interim Plan for Physical Security of Special Nuclear Material in Transit

The licensee shall not import, export, transport in a single shipment or take delivery of a single shipment free on board at the point where it is delivered to an agent or carrier, quantities of special nuclear material as specified in 73.1(b)

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JUN 6 1974
J. R. CLARK

of 10 CFR Part 73 until a detailed plan as described in 10 CFR 73.30(c) is submitted, and such plan is approved by the Atomic Energy Commission.

10.2 The licensee is authorized to make a single shipment of approximately 35 kgs of plutonium from the Plutonium Storage Facility at West Valley, New York, to Exxon Nuclear Corporation, Richland, Washington, provided that the shipment is protected in accordance with the protective measures described in the licensee's letter dated May 22, 1974, with enclosure.

10.2.1 No statement in the licensee's transportation security plan shall relieve the licensee of a requirement of 10 CFR Part 73 unless granted in a specific exemption or exception set forth as a condition of this license.

10.2.2 The licensee shall make arrangements with Tri-State to be notified of any changes in the prearranged transportation plan, e.g., a deviation in routing or a change in schedule, as soon as the change is effected.

10.2.3 The special nuclear material shall be shipped in approved containers, and the containers shall be sealed by tamper-indicating seals which meet the criteria set forth in Regulatory Guide 5.15, "Security Seals for the Protection and Control of Special Nuclear Material."

10.2.4 The licensee shall conduct a trace investigation in accordance with the requirements of 10 CFR 73.35(f) in the event that the shipment is lost or otherwise unaccounted for after the estimated time of arrival.

10.2.5 The licensee shall notify the appropriate Regulatory Operations Regional Office of the planned shipment at least seven days prior to the shipment.

10.2.6 The licensee shall notify the consignee of the time of departure of the shipment and notify or confirm with the consignee the method of transportation, name(s) of carriers, and the estimated time of arrival of the shipment at its destination as specified in 10 CFR 73.36(c)(1).

10.2.7 The licensee shall preplan the shipment to assure that delivery will occur at a time when the receiver (consignee) at the final delivery point is present to accept receipt of shipment as specified in 10 CFR 73.30(b).

We have established that the enclosure to your letter of May 22, 1974 contains information of a type specified in 10 CFR 2.790(d). Accordingly, we are withholding the enclosure from public disclosure.

Sincerely,

R. G. Page, Chief
Materials and Plant Protection
Branch
Directorate of Licensing

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

L:MPP:EB
50-201

MAR 5 1974

Distribution: 3/7/74

Messrs. W. H. Lewis
W. A. Oldham
E. D. North
N. J. Newman

3/6/74
C/C-IPD
BEK
RTS
GDV
TKW
MJ
f-Tech Spec

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection
and Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

Gentlemen:

We have reviewed your West Valley Reprocessing Plant interim transportation plan for the protection of special nuclear material in transit dated February 11, 1974, submitted in response to the requirement of § 73.30(e) of 10 CFR Part 73, and find it acceptable. Accordingly, we are amending Safeguards Amendment No. 2 to License No. CSF-1, Docket No. 50-201, to add a new license condition as follows:

10.0 Transportation Security

10.1 Interim Plan for Physical Security of Special Nuclear Material in Transit

The licensee shall not import, export, transport in a single shipment or take delivery of a single shipment free on board at the point where it is delivered to an agent or carrier, quantities of special nuclear material as specified in 73.1(b) of 10 CFR Part 73 until a detailed plan as described in 10 CFR 73.30(e) is submitted, and such plan is approved by the Atomic Energy Commission.

Sincerely,

R. G. Page, Chief
Materials and Plant Protection
Branch
Directorate of Licensing

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

FROM: J.R. Clark
Hold copy for KAb

SG:PKM
50-201

AUG 1 1 1975

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AUG 14 1975
J. R. CLARK

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection
and Licensing
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20652

Gentlemen:

In reply to your letter of January 24, 1975, we have determined that the granting of a temporary exemption from the requirements of paragraph 70.58(1) of 10 CFR Part 70 for the suspended chemical processing of irradiated fuel and other special nuclear material are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. Accordingly, we are hereby granting an exemption from the requirements of 10 CFR 70.58(1) for those operations suspended until the issuance of an operating license, subject to the condition that prior to resuming separations operations at the West Valley reprocessing facility, NFS will submit a Fundamental Nuclear Material Control Plan for approval in accordance with paragraph 70.58(1), and the NRC finds the plan acceptable.

We have reviewed the plan submitted on January 24, 1975 and amended on July 14, 1975 for those plant activities that will be performed during the period of suspended operation. To incorporate the plan into the Technical Specifications, Appendix B of the Technical Specifications to Provisional License No. CSF-1 is hereby amended to incorporate the Fundamental Nuclear Material Control Plan to be implemented 60 days after the date of this letter, as follows:

Condition 2.4 The licensee shall follow the fundamental nuclear material control plan submitted on January 24, 1975, and amended on July 14, 1975, and as revised in accordance with the provisions of 10 CFR 70.32(c) for the following activities:

1. The receipt and storage of irradiated fuel.

2. The decontamination of equipment.

3. The analysis and transfer of decontamination solutions to waste storage.

APPLICATION FOR AMEND.
12/13/73

127902 Dist. (12/18) Rc

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

DEC 1 3 1973

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Docket 50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Environmental Protection
and Licensing
6000 Executive Boulevard
Rockville, Maryland 20852

and

New York Atomic and Space
Development Authority
ATTN: Mr. James Cline
General Manager
230 Park Avenue
New York, New York 10017

DEC 2 0 1973
J. R. CLARK

Gentlemen:

We have completed the pre-acceptance review of the NFS application, dated October 3, 1973, for amendments to Provisional Operating License No. CSF-1 and found it to be acceptable. Accordingly, please submit 25 copies of the updated application, 70 copies of the SAR and 200 copies of the Environmental Report as soon as possible.

Notwithstanding our acceptance of the Safety Analysis Report and Environmental Report, our review has revealed that additional information is required to enable us to proceed with our evaluation in certain areas. A letter identifying this information will follow in a few days.

Your application does not indicate that a copy has been served on the appropriate local official in accordance with the provisions of Section 2.101(b) of the Commission's "Rules of Practice". Please forward a certification, complete with name and address of recipient, indicating that you have complied with this requirement.

RECEIVED

A local public document room has been established at the Memorial Library of Little Valley, Main Street, Little Valley, New York. A copy of the application, and other relevant documents as they become available, will be on file for public inspection. It is requested that you have one of your representatives make periodic checks of the material available and assure that revised and supplemental information is properly incorporated into the application and that any amendments, reports, and letters which you have filed with us are available. We will send copies of documents you file with us to the local public document room.

Sincerely,

L. C. Rouse

L. C. Rouse, Chief
Fuel Fabrication and Reprocessing
Branch
Directorate of Licensing

J P Duckett

Before the
U. S. ATOMIC ENERGY COMMISSION
Washington, D. C.

127866

License No. CSF-1
B-1

APPLICATION BY
NUCLEAR FUEL SERVICES, INC.
FOR APPROPRIATE AMENDMENTS TO
PROVISIONAL OPERATING LICENSE NO. CSF-1

Provisional Operating License No. CSF-1 pertaining to the nuclear fuel reprocessing facility (the "Facility") at the Western New York Nuclear Service Center (the "Site") at West Valley, New York, has been issued to Nuclear Fuel Services, Inc. ("NFS") and the Atomic and Space Development Authority ("ASDA"). License No. CSF-1, inter alia, authorizes possession, use, and operation of the Facility as a production facility pursuant to 10 CFR 50.

In accordance with Section 104.b of the Atomic Energy Act of 1954, as amended, (the "Act") and of the regulations issued pursuant thereto by the U. S. Atomic Energy Commission (the "Commission"), NFS hereby applies for appropriate amendments, as set forth below, to License No. CSF-1 including whatever construction permit may be required under the provisions of 10 CFR 50.91.

The amendments being sought by NFS would:

(a) authorize certain modifications of the Facility described in the Safety Analysis Report (the "SAR") being submitted herewith; and

(b) authorize operation of the Facility, as so modified, for a term of forty years.

Background information pertaining to the filing of the current application is contained in the SAR, particularly Section 3 of Chapter I thereof. As set forth therein, the Commission has notified NFS that two of the proposed modifications of the Facility appear to be a "material alteration" and thus would have to be considered under the provisions of 10 CFR 50.91, which requires the issuance of a construction permit. To enable a more effective evaluation of the entire modification program as a whole, NFS has included in this application not only the two foregoing modifications but also other portions of the program. Thus authorization to proceed with such other portions of the program would be encompassed within the anticipated construction permit even though they do not require a construction permit. 2/

2/ It should, of course, be noted that some portions of the modification program have already been initiated or completed or are currently being reviewed by the Commission, all in accordance with applicable provisions of 10 CFR Part 50. Authorization to proceed with such modifications would thus not be encompassed within the anticipated construction permit although such modifications would be taken into account in the Commission's review, which would pertain to the Facility as modified by the entire modification program. The status of the various portions of the modification program and an indication of which portions of the modification program will be included in the construction permit and which will be or have been pursued under the provisions of 10 CFR 50.59 are set forth in the SAR, Table I-3-1.

Although NFS has no present plans to do so, it may also determine, at some future time, to withdraw one or more specific portions of the modification program from this application and seek their approval by the Commission independently under the provisions of 10 CFR 50.59. Nothing contained in this application should be deemed to prejudice such separate action if otherwise permitted under the Act and the Commission's regulations.

Since the Facility has been operational since 1966 and the application pertains to modifications of the existing Facility rather than to construction of a new facility, the information being supplied in the SAR and the Environmental Report submitted herewith is, in most instances, of the scope and quality that would be supplied in connection with an application for an operating license rather than for a construction permit. Accordingly, although both documents insofar as they are not of final SAR quality will be updated by the time that the modification program is completed, it is not expected that a new application would have to be filed at that time.

In support of this application, NFS states the following:

1. Name

   Nuclear Fuel Services, Inc.

2. Address

   Nuclear Fuel Services, Inc.
   Suite 600
   6000 Executive Boulevard
   Rockville, Maryland 20852

127869

3. Description of Business

NFS leases from ASDA the land constituting the Site and owns, in part, and leases, in part, and operates the Facility and related support systems to which this application pertains. In addition to the Reprocessing Facility, NFS owns and operates a fuel preparation plant located at Erwin, Tennessee.

4. State of Incorporation and Principal Place of Business

NFS is a corporation organized under the laws of the State of Maryland with its corporate offices and principal place of business located at the address set forth in item 2., above.

5. Directors and Officers

The names, addresses, positions, and the place of citizenship of all present directors and officers are set forth below:

A. Directors

Chairman — J. Earle Gray
5256 Los Encantos Way
Los Angeles, California 90027
United States Citizen

127870

Director	Ralph W. Deuster 7700 Persimmon Tree Lane Bethesda, Maryland 20034 United States Citizen
Director	James Y. Haslam 2807 East 36th Place Tulsa, Oklahoma 74105 United States Citizen
Director	Jack D. Jones 269 South Lorraine Boulevard Los Angeles, California 90004 United States Citizen
Director	John P. McCabe 1724 Ben Lomond Drive Glendale, California 91202 United States Citizen
Director	Robert N. Miller 2904 East 73rd Street Tulsa, Oklahoma 74136 United States Citizen

127871

Director	Justus O'Reilly 4660 South Columbia Avenue Tulsa, Oklahoma 74145 United States Citizen
Director	Sidney R. Petersen 6855 Colbath Avenue Van Nuys, California 91405 United States Citizen

B. Officers

President	Ralph W. Deuster 7700 Persimmon Tree Lane Bethesda, Maryland 20034 United States Citizen
Executive Vice President	Robert V. Curry 6464 Windermere Circle Rockville, Maryland 20852 United States Citizen
Vice President	Charles W. Taylor 7701 Barnum Road Bethesda, Maryland 20034 United States Citizen

Vice President	Wesley H. Lewis 10804 Hob Nail Court Potomac, Maryland 20854 United States Citizen
Secretary	Henry W. Brook 7424 Lynnhurst Street Chevy Chase, Maryland 20015 United States Citizen
Treasurer	Hugh M. Slawson 3010 Dona Susana Drive Studio City, California 91604 United States Citizen

6. Ownership and Control

NFS has two stockholders, Getty Oil Company ("Getty") which owns approximately 83.36% of the outstanding stock and Skelly Oil Company ("Skelly") which owns approximately 16.64% of the outstanding stock. Neither of the foregoing companies is owned, controlled, or dominated by an alien, foreign corporation, or foreign government.

7. Disclosure of Interests

NFS is filing this application in its own behalf and is not acting as an agent or representative of any other party.

8. Class of License Applied For

Provisional Operating License No. CSF-1 was issued pursuant to Section 104.b of the Act. The amendments thereof requested herein, including the construction permit to be issued under 10 CFR 50.91, would be issued pursuant to Section 104.b of the Act.

9. Use of the Facility

Under License No. CSF-1, the Facility is used by NFS for the processing of fuel elements and associated activities. The Facility will continue to be used by NFS for the same purposes after issuance of the amendments requested herein.

Attached hereto and made a part hereof is the SAR, consisting of two volumes, and the Environmental Report, which contain the information with respect to the Facility and the Site required under the Commission's regulations.

10. Period of Time for Which License is Sought

The amendments requested herein would convert Provisional Operating License No. CSF-1 to a license for a term of 40 years.

11. Other Licenses Issued or Applied For

In addition to a license issued pursuant to Section 104.b of the Act and 10 CFR Part 50, Provisional Operating License No. CSF-1 also grants certain by-product, source and special nuclear material licenses pursuant to the Act and Parts 20, 30, 40, and 70 of the Commission's regulations. NFS hereby requests that such additional byproduct, source, and special nuclear material licenses be issued as may be necessary and appropriate to the modification and operation of the Facility.

12. Financial Qualifications

Exhibit A is an estimate of the costs of making the modifications to the Facility described herein. Exhibit B is a copy of NFS' balance sheet as of December 31, 1972, and of its Report of Operations and Statement of Retained Earnings and Capital Surplus for the year ending December 31, 1972.

Exhibits A and B consist of information which NFS considers to be proprietary and public disclosure thereof could place NFS at a disadvantage with respect to its competitors in conducting its business affairs. Accordingly, Exhibit A and B are being submitted by separate cover letter, and pursuant to 10 CFR 2.790 NFS requests that Exhibit A and B be withheld from public disclosure.

NFS will finance the costs of the modifications through internal sources, including undistributed present and future earnings from operations of its facility at Erwin, Tennessee, from revenues for the continuing transportation to the Facility and storage of fuel elements and from advance receipt of revenues of reprocessing contracts to be performed in the future, and through external sources in the form of additional capital contributions or loans from its parent companies, Getty and Skelly. Copies of Getty's and Skelly's 1972 Annual Reports are attached as Exhibits C and D, respectively. With respect to the costs of the modification program, it should be noted that only 70% of the costs of such program remain to be incurred by NFS since it has already expended approximately 30% of the total funds required for design and implementation of the program.

13. Earliest and Latest Dates for Completion of Modifications

NFS estimates that the earliest date for completion of the modifications described in this application is 24 months from the date of issuance of the construction permit and that the latest date for such completion is 48 months from such date of issuance.

14. Agreement Limiting Access to Restricted Data

NFS agrees that it will not permit any individual to have access to Restricted Data until the Civil Service Commission shall have made an investigation and report to the Commission on the character, associations and loyalty of such individual, and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security.

15. Communications

All communications to NFS pertaining to this application should be sent to Mr. W. H. Lewis,

Vice President, Nuclear Fuel Services, Inc., 6000 Executive Boulevard, Pockville, Maryland 20852, with a copy to Newman, Reis, and Axelrad, 1025 Connecticut Avenue, N. W., Washington, D. C. 20036

NUCLEAR FUEL SERVICES, INC.

By Ralph W. Deuster

-tachments

State of Maryland, County of Montgomery:

I hereby certify that on the 13th. day of December 1973, before me, the subscriber, a notary public of the State of Maryland, in and for Montgomery County, personally appeared Ralph W. Deuster and made oath in due form of law that the matters and facts set forth in the above application for appropriate amendments to Provisional Operating License No. CSF-1 are true to the best of his knowledge, information and belief.

As witness, my hand and notarial seal.

Notary Public

EXHIBIT A

127877

APPLICATION BY
NUCLEAR FUEL SERVICES, INC.
FOR APPROPRIATE AMENDMENTS TO
PROVISIONAL OPERATING LICENSE NO. CSF-1

ESTIMATED COSTS OF MODIFICATION PROGRAM TO NFS' REPROCESSING FACILITY

Group	Projects*	Estimated Cost (million dollars)
High Level Waste/ Intermediate Level Waste	• High Level Waste Storage • Intermediate Waste Storage	13.1
Intercycle Evaporators/ Pu Expansion	• Intercycle Evaporators • 2nd Pu Cycle • Low Enriched U Evaporator Additions • Pu Loadout • Pu Loadin	2.6
Emergency Utilities	• Fire Fighting Improvements • Emergency Diesel Generator • Water Transmission • Emergency Cooling • FRS Make-up Water	0.3
Ventilation	• FRS Ventilation • Class I Ventilation • Building Ventilation • Process Ventilation • Iodine Removal	4.1
Waste Evaporation/ Acid Recovery	• Acid Handling • Recovered Acid Storage • High Level Waste Evaporator • Acid Recovery System • Low Level Waste Evaporator	2.4
Low Level Waste Treatment	• Facility	1.0

*Described in Section I-2.0 of the Safety Analysis Report

Group	Projects*	Estimated Cost (million dollars)
Miscellaneous	• Shear • Saw • Transfer Port • Shielding Windows • Remote Decontamination • Hull Monitor • Dissolver Filters • Crane Room Extension • Cooling Tower • Steam Condensate Receivers • Utility Water Softener	1.6
Fuel Receiving and Storage	• Cask Decontamination Station • Cask Shrould • Fuel Assembly Transfer Crane • FRS Pool Water Treatment • FRS Cooler	1.1
Modification Program		26.2

* Described in Section I-3.0 of the Safety Analysis Report

EXHIBIT B

APPLICATION BY
NUCLEAR FUEL SERVICES, INC.
FOR APPROPRIATE AMENDMENTS TO
PROVISIONAL OPERATING LICENSE NO. CSF-1

NUCLEAR FUEL SERVICES, INC.
REPORT OF OPERATIONS
YEAR ENDED DECEMBER 31, 1972

($000)

Income	
Operating Revenue	$ 8,513
Interest and Other Income	79
Total Income	$ 8,592
Costs and Expenses	
Plant Costs and Operating Expenses	15,421
Depreciation	1,969
General and Administrative	1,720
Interest Expense	1,547
Total Costs and Expenses	$20,657
Net Income (Loss) from Operations	(12,065)
Federal Income Tax Credit	4,560
NET INCOME (LOSS)	$(7,505)

NUCLEAR FUEL SERVICES, INC.
STATEMENT OF RETAINED EARNINGS AND CAPITAL SURPLUS
DECEMBER 31, 1972

($000)

	Capital Surplus	Retained Earnings
Balance, December 31, 1971	$4,168	$(16,120)
Additional Paid in Capital	3,199	-
Loss for the Year Ended December 31, 1972	-	(7,505)
Balance, December 31, 1972	$7,367	$(23,625)

NUCLEAR FUEL SERVICES, INC.
CONSOLIDATED BALANCE SHEET
DECEMBER 31, 1972

($000)

Assets	
Current Assets	
Cash & Equivalents	$ 4,377
Receivables - Trade	1,539
Other	6,490
Reserves	(2)
Total	$ 8,027
Inventories	10,178
Other	40
Total Current Assets	$22,622
Fixed Assets - Gross	35,040
Less: Reserve for Depreciation	12,097
Fixed Assets - Net	$22,943
Other Assets	193
TOTAL ASSETS	$45,758
Liabilities	
Current Liabilities	
Current Portion Long-Term Debt	$ 1,358
Accounts Payable	8,132
Reserve for Nuclear Material Losses	1,373
Reserves - Other	903
Other Current Liabilities	518
Total Current Liabilities	$12,284
Deferred Taxes	2,480
Other Liabilities	651
Long-Term Debt	27,517
Equity	2,826
TOTAL LIABILITIES & EQUITY	$45,758

AMENDMENT TO POL
09/17/75

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

SEP 17 1975

Docket No. 50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. W. H. Lewis
Vice President
6000 Executive Boulevard
Suite 600
Rockville, Maryland 20852

Gentlemen:

In connection with the application for an amendment to Provisional Operating License No. CSF-1 issued to Nuclear Fuel Services, Inc. and the New York State Atomic and Space Development Authority for operation of the West Valley Reprocessing Plant, enclosed is a copy of a notice, "Notice of Proposed Issuance of Amendment to Provisional Operating License," which is being transmitted to the Office of the Federal Register for publication.

Sincerely,

James R. Miller, Chief
Fuel Cycle Licensing Branch 2
Division of Materials and
Fuel Cycle Facility Licensing

Enclosure:
As stated

cc: w/encl. (see attached)

NEW YORK STATE
DEPARTMENT OF [illegible]
RECEIVED

SEP 22 1975

LEGAL SECTION

cc: w/encl.

New York State Atomic and Space
Development Authority
ATTN: Mr. James Cline
General Manager
230 Park Avenue
New York, New York 10017

County Clerk
303 Court House
Cattaraugus County
Little Valley, New York 14755

Supervisor, Town of Ashford
135 Depot Street
West Valley, New York 14171

Dr. William E. Seymour
Staff Coordinator
New York State Atomic Energy Council
New York State Department of Commerce
99 Washington Street
Albany, New York 12210

Mr. Terence P. Curran, Director
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N.Y.S. Department of Environmental
Conservation
Albany, New York 12201

NUCLEAR FUEL SERVICES, INC.

SERVICE LIST

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Chairman, Atomic Safety and
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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Atomic Safety and Licensing Board Pane
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Marvin Resnikoff, Chairman
Energy Task Force
Sierra Club, Niagara Group
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Buffalo, New York 14203

Docket & Service Section
Office of the Secretary of the
Commission
U.S. Nuclear Regulatory Commission
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UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-201

NUCLEAR FUEL SERVICES, INC.

NOTICE OF PROPOSED ISSUANCE OF AMENDMENT

TO PROVISIONAL OPERATING LICENSE

The Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Provisional Operating License No. CSF-1 issued to Nuclear Fuel Services, Inc., and the New York State Atomic and Space Development Authority (the licensees), for operation of the West Valley Reprocessing Plant located in the Western New York Nuclear Service Center in the town of Ashford, near Riceville, Cattaraugus County, New York, about thirty miles from Buffalo.

The proposed amendment would revise the provisions in Technical Specification 4.3 relating to canister loading and spacing in accordance with the licensees' application for amendment, dated August 4, 1975. The proposed amendment would establish new limits governing spent fuel distribution and thereby allow greater spent fuel storage capacity in the Storage Pool located at the West Valley Plant.

Prior to issuance of the proposed license amendment, the Commission will have made the findings required by the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations.

By October 28, 1975, the licensees may file a request for a hearing and any person whose interest may be affected by this proceeding may file a request for a hearing in the form of a petition for leave to intervene with respect to the issuance of the amendment to the subject facility operating license. Petitions for leave to intervene must be filed under oath or affirmation in accordance with the provisions of Section 2.714 of 10 CFR Part 2 of the Commission's regulations. A petition for leave to intervene must set forth the interest of the petitioner in the proceeding, how that interest may be affected by the results of the proceeding, and the petitioner's contentions with respect to the proposed licensing action. Such petitions must be filed in accordance with the provisions of this FEDERAL REGISTER notice and Section 2.714, and must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Section, by October 28, 1975. A copy of the petition and/or request for a hearing should be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to Lowenstein, Newman, Reis and Axelrad, 1025 Connecticut Avenue, N.W., Washington, D.C. 20036, attorneys for Nuclear Fuel Services, Inc., and to Debevoise, Plimpton, Lyons & Gates, 299 Park Avenue, New York, N.Y. 10017, ATTN: Oscar M. Ruebhausen, Esq., attorneys for New York State Atomic and Space Development Authority.

A petition for leave to intervene must be accompanied by a supporting affidavit which identifies the specific aspect or aspects of the

proceeding as to which intervention is desired and specifies with particularity the facts on which the petitioner relies as to both his interest and his contentions with regard to each aspect on which intervention is requested. Petitions stating contentions relating only to matters outside the Commission's jurisdiction will be denied.

All petitions will be acted upon by the Commission or licensing board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel. Timely petitions will be considered to determine whether a hearing should be noticed or another appropriate order issued regarding the disposition of the petitions.

In the event that a hearing is held and a person is permitted to intervene, he becomes a party to the proceeding and has a right to participate fully in the conduct of the hearing. For example, he may present evidence and examine and cross-examine witnesses.

For further details with respect to this action, see the application for amendment dated August 4, 1975, which is available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the Memorial Library of Little Valley, Main Street, Little Valley, New York, and at the Town of Concord Public Library, 23 North Buffalo Street, Springville, New York. The license amendment and the Safety Evaluation, when issued, may be inspected at the above locations and a copy may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C.

20555, Attention: Director, Division of Materials and Fuel Cycle Facility Licensing.

Dated at Bethesda, Maryland, this 17th day of September, 1975.

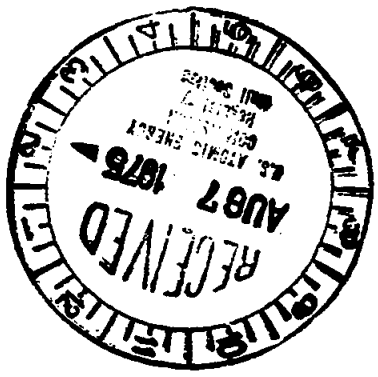
FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY
JAMES R. MILLER

James R. Miller, Chief
Fuel Cycle Licensing Branch 2
Division of Materials and
Fuel Cycle Facility Licensing

Nuclear Fuel Services, Inc. 6000 Executive Boulevard, Suite 600, Rockville, Maryland • 208
A Subsidiary of Getty Oil Company
(301) 770-55

DOCKET NUMBER 50-201



August 4, 1975

Mr. R. E. Cunningham, Acting Director
Division of Materials and Fuel Cycle
Facility Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Reference: (a) Letter from J. R. Clark, Nuclear Fuel Services, Inc. to J. R. Miller, U. S. Atomic Energy Commission dated December 20, 1975

Dear Mr. Cunningham:

In reference (a), Nuclear Fuel Services, Inc. (NFS) notified the U. S. Atomic Energy Commission that NFS would submit a modified request for a change to Technical Specification 4.3 Canister Loading and Spacing. NFS hereby requests the NRC's approval of the proposed change to Technical Specification 4.3 submitted as Attachment 1 to this letter. In support of the proposed change, NFS has conducted safety analyses which demonstrate the substantial safety margins remaining after the proposed change. These safety analyses are summarized in Nuclear Criticality Safety Analysis of Spent Fuel Canister Loading and Spacing in the NFS Fuel Storage Pool which is submitted as Attachment 2 to this letter.

Pursuant to 10 C.F.R. 2.790 and 10 C.F.R. 9.5, NFS requests that the proprietary supplement (submitted as Attachment 3 to this letter) be withheld from public disclosure. The data from which the proprietary supplement was derived is contained within the non-proprietary Attachment 2. From this data the public is able to make its own independent appraisal of the bases of and the effects of the proposed technical specification change. The proprietary supplement itself was developed as a result of work funded by NFS at substantive expense and represents the expenditure of significant effort. This information is of the type treated

#5

as confidential by NFS and is being protected from public disclosure by NFS. It is, in addition, in an area of current commercial interest to NFS and would, if disclosed, give a competitor a commercial advantage.

Very truly yours,

J. R. Clark, Manager
Environmental Protection
and Licensing

JRC:kc

Attachments: [3]
As Stated

cc: Hon. James G. Cline, Chairman
New York State Atomic and Space
Development Authority

RE: DOCKET NUMBER 50-201

AFFIRMATION

STATE OF MARYLAND)
) SS:
COUNTY OF MONTGOMERY)

I hereby certify that on the 4th day of August 1975, before me, the subscriber, a notary public of the State of Maryland, in and for Montgomery County, personnaly appeared W. H. Lewis and made oath in due form of law that the matters and facts set forth in the information contained in Attachments 1, 2 and 3 in NFS' letter of August 4th regarding a request for a change to Technical Specification 4.3 Canister Loading and Spacing for the NFS West Valley Reprocessing Facility are true to the best of his knowledge, information and belief.

Edna E. Flores

My commission expires July 1, 1978.

ATTACHMENT 1

PROPOSED CHANGE
TO
TECHNICAL SPECIFICATION 4.3
OF
LICENSE CSF-1

PROPOSED

4.3 STORAGE CANISTER LOADING AND SPACING

Applicability

This specification establishes limits governing fuel distribution in the Storage Pool.

Objective

To assure that individual storage canisters and arrays of storage canisters are maintained in subcritical configuration.

Specification

4.3.1 NUCLEAR FUEL IN THE FUEL STORAGE POOL SHALL BE STORED IN CANISTERS.

4.3.2 ANY SINGLE FUEL ASSEMBLY OR PACKAGE WHICH HAS BEEN STORED UNDER WATER PRIOR TO RECEIPT AT THE NFS STORAGE POOL MAY BE STORED IN A CANISTER PROVIDED THE GEOMETRY OF THE ASSEMBLY OR PACKAGE IS NOT REARRANGED AND PROVIDED THAT AT LEAST TWELVE INCHES OF WATER IS MAINTAINED BETWEEN FUEL CONTAINED IN ADJACENT CANISTERS.

4.3.3 THREE OR FEWER DRESDEN-1 FUEL ASSEMBLIES MAY BE STORED IN A CANISTER PROVIDED THAT AT LEAST 7.25 INCHES OF WATER IS MAINTAINED BETWEEN ADJACENT CANISTERS.

4.3.4 ONE OR TWO FUEL ASSEMBLIES LISTED MAY BE STORED IN A CANISTER PROVIDED THAT AT LEAST SIX INCHES OF WATER IS MAINTAINED BETWEEN ADJACENT CANISTERS.

CATEGORY

GE 7

GE 8

4.3.5 ONE FUEL ASSEMBLY OF ANY OF THE CATEGORIES LISTED BELOW MAY BE STORED IN A CANISTER PROVIDED AT LEAST SIX INCHES OF WATER IS MAINTAINED BETWEEN ADJACENT CANISTERS.

CATEGORY	CATEGORY
BW14	W14SA
BW15	W15B
BW17	W15CY
C14	W17B
C15	W16YR
C15P	BR9
C16	BR11
W14B	

4.3.6 LIGHT WATER REACTOR FUEL ASSEMBLIES NOT APPROVED FOR STORAGE BY OTHER SPECIFICATIONS MAY BE STORED IN CANISTERS PROVIDED:

4.3.6.1 AT LEAST SIX INCHES OF WATER IS MAINTAINED BETWEEN ADJACENT CANISTERS;

4.3.6.2 THE QUANTITY OF FUEL STORED IN A CANISTER IS LIMITED SO THAT THE EFFECTIVE NEUTRON MULTIPLICATION FACTOR (k_{eff}) OF AN ARRAY OF AT LEAST 1000 LOADED CANISTERS DOES NOT EXCEED 0.95 WITH 95% CONFIDENCE BASED UPON UNIRRADIATED FUEL;

4.3.6.3 THE ARRAY CRITICALITY ANALYSIS IS PERFORMED WITH A VALIDATED CALCULATIONAL METHOD;

4.3.6.4 THE ARRAY CRITICALITY ANALYSIS IS PERFORMED AND SEPARATELY CONFIRMED BY NUCLEAR CRITICALITY SPECIALISTS AND EACH OF THE SPECIALISTS HAS AT LEAST THESE QUALIFICATIONS:

(a) B.S. DEGREE INCLUDING CREDITS IN NUCLEAR PHYSICS OR NUCLEAR REACTOR THEORY AND

(b) ONE YEAR OF EXPERIENCE INVOLVING NUCLEAR CRITICALITY SAFETY ANALYSES OF HETEROGENEOUS LATTICES.

4.3.6.5 AND, THE ARRAY CRITICALITY ANALYSIS AND THE REVIEW THEREOF IS DOCUMENTED AND KEPT WHILE THE SUBJECT FUEL IS BEING STORED.

Bases

The Fuel Receiving and Storage Area (FRS) has been designed to permit the handling of fuel assemblies such that geometry and administrative control prevents the significant interaction of fuel in a storage canister with fuel in other canisters. These precautions are necessary since the FRS will at most times contain fuel in excess of that necessary to result in a criticality if placed in optimum array.

A safe array of low enriched (less than 5 w/o U-235) uranium fuel assemblies is assured by maintaining water separation to prevent significant interaction of neutrons between individually safe canisters of fuel. Separation of canisters is positively maintained by the storage racks and by spacer rings on the canisters. Existing canisters are 12.7 inches in diameter and have spacer rings 20 inches in diameter, thus maintaining at least 7.3 inches of water between canisters. Use of these existing canisters for storing two or more Dresden-1 assemblies will be administratively assured. Future canisters up to 14 inches in diameter and having spacer rings 20 inches in diameter will maintain at least six inches of water between canisters and may be used to provide storage of fuel in accordance with Specifications 4.3.4, 4.3.5 and 4.3.6.

Individual fuel assemblies or packages stored under water have been demonstrated as safe; and, therefore, no further calculations are deemed necessary provided the fuels are separated by at least 12 inches of water to assure neutron isolation. A fuel assembly received in a bowed or distorted condition will be stored in accordance with Specification 4.3.2.

Other storage canister loading and spacing authorized by these technical specifications yield arrays having effective multiplication factors less than 0.95. This was demonstrated by performing a reactivity analysis of a large array of each type of fuel, loaded in canisters and spaced according to Specifications 4.3.3, 4.3.4, and 4.3.5, or more conservative parameters. Each analysis was performed by a validated calculational method. Storage with six inches of water between these canisters of fuel, minimizes neutron interaction and practically uncouples the array.

The calculational method (including the cross-section set) employed in reactivity analyses performed to fulfill Specification 4.3.6 will have been validated according to ANSI Standard N16.9 - 1974 (proposed). To prevent error in identifying the fissile content of the fuel, analyses are based upon enrichment before irradiation, thereby adding to the margin of safety.

The consequence of exceeding this specification would be to decrease the margin of safety for the prevention of criticality. In-Section X-4.5.1 of the Safety Analysis Report, it has been assumed that despite all design efforts, a criticality incident somehow does occur. The consequences of such an unlikely event have been analyzed and show not to involve any undue risk to the public health and safety.

The action to be taken to correct an exceeding of this specification is to take immediate steps to increase spacing of fuel in storage or decrease canister loading.

ATTACHMENT 2

NUCLEAR CRITICALITY SAFETY ANALYSIS OF SPENT FUEL CANISTER LOADING AND SPACING IN THE NFS FUEL STORAGE POOL

NUCLEAR CRITICALITY SAFETY ANALYSIS OF SPENT FUEL CANISTER LOADING AND SPACING IN THE NFS FUEL STORAGE POOL

CONTENTS

I. INTRODUCTION

The NFS West Valley Fuel Receiving and Storage Pool (FRS) consists of an array of fuel-loaded, aluminum canisters in a water-filled pool. This report provides a nuclear safety analysis which covers the storage of 1 PWR or 2 BWR fuel assemblies per canister, with a minimum separation between canisters of 4 inches of water, and a canister OD of up to 14 inches. The basic criterion for the analysis was that k_{eff} be less than 0.95 at (at least) the 95% confidence level on an unirradiated fuel basis.

II. SUMMARY

A criticality evaluation was made for each of the major PWR and BWR fuel assembly categories presently anticipated to be stored at the NFS FRS. The fuel assembly parameters used in the evaluation were based on information obtained from the NAC fuel-trac (1) system. The calculational results show that the k_{eff} of the proposed FRS arrays will be less than 0.95 (at 95% confidence level) for all of the fuel assembly categories analyzed (i.e., the maximum value computed for $k_{eff} + 2\sigma$ was 0.91240).

III. DISCUSSION

A. Calculational Approach

In order to determine the maximum reactivity of the fuel storage pool, seventeen different types of fuel assemblies were examined. These types represent assemblies which might be stored in the NFS FRS (see Table 3). For each type, fuel assembly parameters yielding maximum reactivity were used assuming cold clean fuel. The dimensions of the fuel assemblies and canisters allow the assemblies to be at different positions within the canister. In all calculations, the assemblies were placed within the canister in their most reactive position (see for example Figures 1 and 2). In addition, for purposes of conservatism, the aluminum wall of the canisters was replaced by water.

For example, in Figure 1 (single-batched array), assemblies a and b were placed within their respective canister as close as physically possible. The pitch a-b thus established was used as the array pitch in the x and y directions. (x direction within canister row in the FRS pool, y direction across canister row).

In Figure 2 (double-batched array), the pitch in the y direction was based on a canister pitch in the y direction of 18 inches instead of 20 inches.

Assembly pairs a-b and c-d were placed within their respective canister as close as physically possible. The

pitch of the fuel assembly pairs in the x direction was thus taken to be 18 inches.

The x and y pitches thus established were used as the array pitch of the assembly pairs in the x respectively y direction.

B. Generation of Cross-Sections

The standard XSDRN 123 neutron group library[2] was used in this analysis. This library consists mainly of neutron cross-section sets derived from GAM-II and THERMOS libraries. The thermal cut-off is at group number 94 (1.859 ev).

For the Pu cross-sections, RSIC-DLC-16[3] was used. The fast group cross-sections for the DLC-16 library were generated using SUPERTOG [4], whereby point cross-sections from ENDF/B-II were structured into a standard 99 group GAM-II set, using a $1/_E$ weighting function. The thermal cross-sections were similarly processed with SUPERTOG into a standard 30 group THERMOS energy structure. The fast and thermal sets thus generated were combined into a standard 123 energy group XSDRN structure. (See Table 1).

This 123 group structure was subsequently collapsed (cell weighted) into a 50 group structure. The thermal cut-off is at group number 34 (1.859 ev). (See Table 2)

The group collapses for each fuel type and for each benchmark configuration (see Section D) were performed using the XSDRN code. The parameters/ options used were:

- One-dimensional cylindrical geometry, with the outer radius boundary being the equivalent radius of the cell.

- Reflective left boundary; white/albedo right boundary.
- S_4 P_3 1-D Transport (discrete ordinate diamond method) using 123 neutron group XSDRN library, and 123 neutron group RSIC-DLC-16 library for the Pu isotopes.
- Overall convergence criterion: 0.001
  Point convergence criterion: 0.001
- Resonance correction (resolved and unresolved) for U-238 using:
  a. Cylindrical geometry
  b. Nordheim's Integral Method (NIM) for U-238 and NIM for 1st moderator, O^{16}.
  c. Dancoff correction using Sauer's[5] method for fuel rod lattices
  d. Effective moderator cross-section per absorber atom, σ_m eff for U^{238}
  e. First moderator scattering cross-section per absorber atom for O^{16} in UO_2
- Collapsed 50 group cross-section sets generated in ANISN format for each fuel assembly category. (The σ_t is in position 3, σ_{gg} is in position 4, with a cross-section table length of 17, and P_0 and P_1 scattering matrices.)

- Collapsed cross-sections of U^{235} in UO_2, U^{238} in UO_2, Zr^{Nat} in Zr-2 and Zr-4, Ni, Cr, Fe, Mn in SS-304, H in H_2O, O^{16} in H_2O, Pu^{239}, Pu^{240} and Pu^{241} in PuO_2.

C. Calculation of k_{eff}

The nuclear criticality calculations for each fuel assembly category were performed using the KENO-II code[6].

The cross-sections used were produced by XSDRN as explained in Section B above. The cross-sections were homogenized over the assembly which was surrounded by water. One "box", therefore, consisted of a homogenized assembly, surrounded by water.

Because the cross-section sets were obtained using a cell weighted spectrum over the fuel rod, no noticeable difference between a "heterogeneous assebly" case and a "homogenized assembly" case would be expected. To verify this, two criticality calculations were performed for one B&W 17 x 17 assembly, 3.590 w/o U^{235}, 16 neutron groups (number of downscatters = 6), 264 fuel rods, 25 guide and instrument tubes, 200 neutrons per batch and 40 batches (8,000 neutron histories). Results were as follows:

Homogeneous case: $k_{eff} \pm 2\sigma = 0.84739$ to 0.88282 with 95% confidence level with 5 generations skipped.

Heterogeneous case: $k_{eff} \pm 2\sigma = 0.85461$ to 0.88335 with 95% confidence level with 5 generations skipped.

A criticality calculation for the fuel storage pool was made for each of the 17 fuel assembly categories using a 50 group KENO calculation with group 34 for the first thermal group (1.859ev). For each case, 35 batches were run, each batch having 300 neutrons, i.e., 10,500 neutron histories.

The principal parameters used in the calculation of k_{eff} of each fuel assembly category and the constraints on enrichment based upon $(^{235}U + Pu_{fis})$ w/o of $(U + Pu)_{total}$ are presented in Tables 3 and 5. (See proprietary supplement for Table 9). The resultant k_{eff} is also presented in Table 9.

In Table 3 the constraints on enrichment are shown based on total fissile $(U^{235} + Pu_{fis})$ w/o of $(U + Pu)_{tot}$.

To test the normality of the Monte Carlo Calculations, the Shapiro-Wilk[7] test was also performed. Each computed case (fuel assembly types and benchmarks) satisfied the test.

D. Benchmarking and Validation of the Method Used

In order to validate the method used, four critical systems, determined by experiment, were used as benchmarks. Three of these systems are water moderated and reflected arrays of Yankee[8] fuel rods. The fourth system was a lattice of plutonium-enriched rods (UO_2 - 3.98 wt% PuO_2) in light water. This experiment was conducted in the Critical Approach Facility[8]. XSDRN and KENO-II were run for each benchmark case. The k_{eff}'s calculated by XSDRN (cross-section cell weighted collapse with resonance corrections) and KENO-II (k_{eff} calculation) method were in good agreement with the critical experiments (see Table 4). Data input to KENO for benchmark calculations are presented in Tables 5, 6, 7 and 8.

This same method was used for each of the 17 fuel assembly categories (see Table 3).

Sample problems of the XSDRN and KENO codes were run. The results of those runs were in good agreement with the ones of the published sample problems.

A U-1108 computer with 262,000 (decimal) directly addressable memory locations was used for all the calculations performed in this criticality study.

IV. RESULTS

The results of the analysis for each of the seventeen fuel assembly categories are presented in Figure 3 and Table 9 (see proprietary supplement). The k_{eff} for each category is less than 0.95 at at least the 95% confidence level. The highest $k_{eff} + 2\sigma$ is 0.91240. The lowest $k_{eff} - 2\sigma$ for the benchmark cases is 0.98645.

Since assumptions were made for the simulated model which would yield a more reactive system, the actual k_{eff} for each type would be even less than shown.

Some conservative assumptions were:

1. Increased coupling between assemblies (smaller pitch) than physically possible.
2. Replace Al canister by water.
3. Replace the plenum in the fuel rods by active fuel.
4. A 97% fuel pellet theoretical density was used for each Fuel Assembly Category.

The validity of the calculated values of the fuel assembly types in the FRS pool is supported by the results of the four benchmarks.

REFERENCES

(1) "*fuel-trac*® Nuclear Fuel Cycle Data and Information System", Nuclear Assurance Corporation, Atlanta, Georgia.

(2) XSDRN: "A Discrete Ordinates Special Averaging Code" by N. M. Greene and C. W. Craven, Jr. ORNL-TM-2500 RSIC-CCC-123

(3) RSIC-DLC-16: "123 Group Neutron Cross-Section Data generated from ENDF/B Data for use in the XSDRN Discrete Ordinate Spectral Averaging Code"

(4) R. Q. Wright, N. M. Greene, J. L. Lucius, and C. W. Craven, Jr. "SUPERTOG: A Program to Generate Fine Group Constants and P_n Scattering Matrices from ENDF/B", ORNL-TM-2679 (1969).

(5) A. Sauer, "Appropriate Escape Probabilities" Nuclear Science and Engineering 16, 329 (1963)

(6) KENO. "A multigroup Monte Carlo Criticality Program," G. E. Whitesides and N. F. Cross , Union Carbide Corporation Nuclear Division, Computing Technology Center, Oak Ridge, Tennessee
Argonne Code Center Acc #450

(7) G. L. Burows & D. B. MacMillan
"Confidence Limits for Monte Carlo Calculations"
Nuclear Science and Engineering 22, 387 (1965)

(8) "Reactor Physics Constants" ANL-5800 Second Edition, (July 1963) pp. 325-326

(9) V. O. Votinen, J. H. Lauby, L. C. Schmid and W. P. Stinson, "Lattices of Plutonium-enriched Rods in Light Water", Nuclear Technology 15, 257 (August 1972).

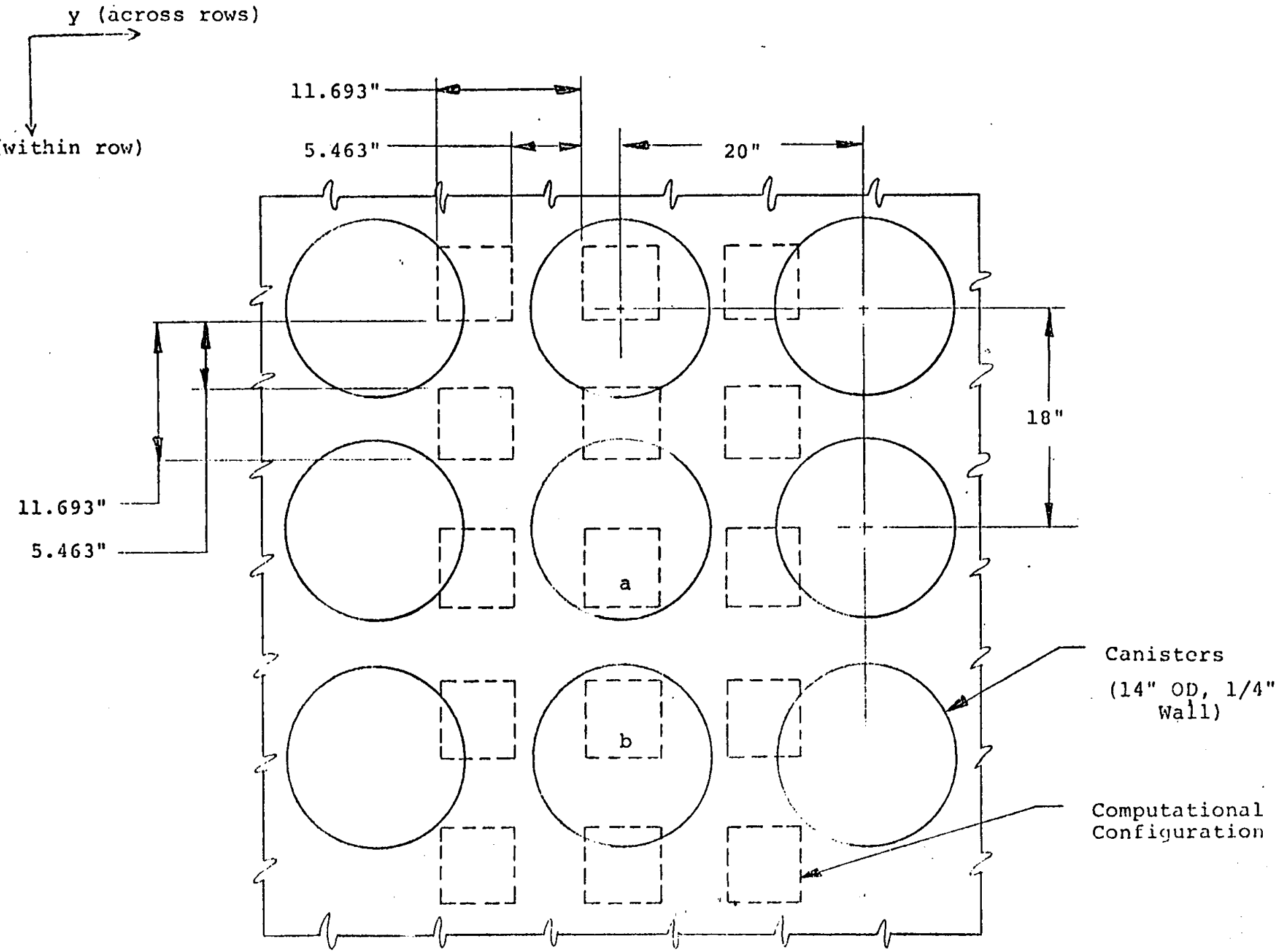


FIGURE 1

COMPUTATIONAL FUEL CONFIGURATION (SINGLE BATCHED FUEL CATEGORY I)

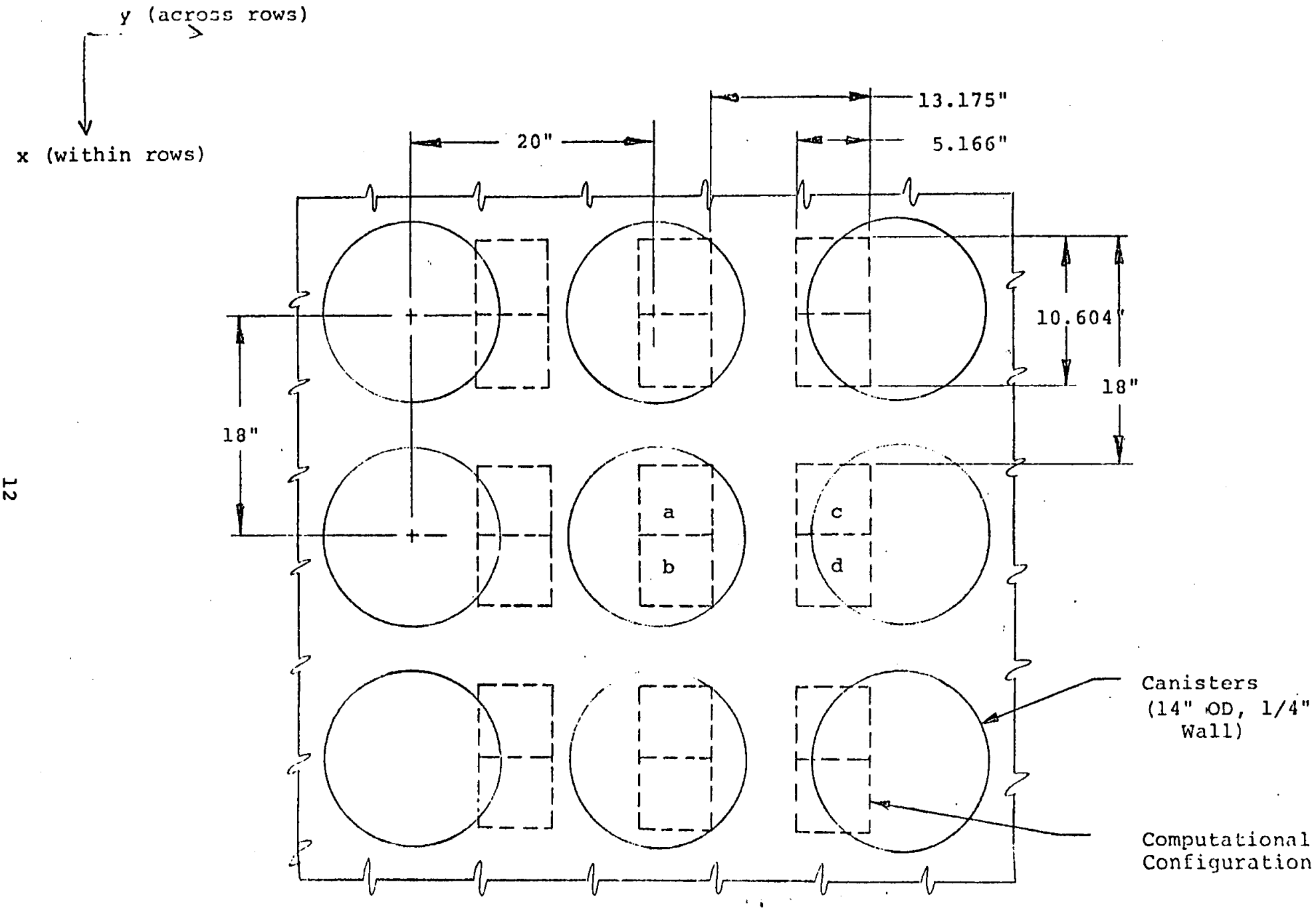


FIGURE 2

COMPUTATIONAL FUEL CONFIGURATION (DOUBLE BATCHED FUEL CATEGORY VIII)

FIGURE 3

RESULTS OF BENCHMARKS AND
OF FUEL ASSEMBLY CATEGORIES

SEE PROPRIETARY SUPPLEMENT

TABLE 1: 123 NEUTRON GROUP ENERGY BOUNDARIES

Group	Energy Boundaries	Broad Gp. Numbers	Lethargy Boundaries
1	1.49182+07	1	-4.00000-01
2	1.34986+07	1	-3.00000-01
3	1.22140+07	1	-2.00000-01
4	1.10517+07	1	-1.00000-01
5	1.00000+07	2	0
6	9.04837+06	2	1.00000-01
7	8.18731+06	2	2.00000-01
8	7.40818+06	2	3.00000-01
9	6.70320+06	2	4.00000-01
10	6.06531+06	2	5.00000-01
11	5.48812+06	2	6.00000-01
12	4.96585+06	3	7.00000-01
13	4.49329+06	3	8.00000-01
14	4.06570+06	3	9.00000-01
15	3.67879+06	3	1.00000+00
16	3.32871+06	3	1.10000+00
17	3.01194+06	4	1.20000+00
18	2.72532+06	4	1.30000+00
19	2.46597+06	5	1.40000+00
20	2.23130+06	5	1.50000+00
21	2.01897+06	6	1.60000+00
22	1.82685+06	6	1.70000+00
23	1.65299+06	7	1.80000+00
24	1.49569+06	7	1.90000+00
25	1.35335+06	8	2.00000+00
26	1.22456+06	8	2.10000+00
27	1.10803+06	9	2.20000+00
28	1.00259+06	9	2.30000+00
29	9.07180+05	10	2.40000+00
30	8.20850+05	10	2.50000+00
31	7.42736+05	11	2.60000+00
32	6.72055+05	11	2.70000+00
33	6.08101+05	12	2.80000+00
34	5.50232+05	12	2.90000+00
35	4.97871+05	13	3.00000+00
36	4.50492+05	13	3.10000+00
37	4.07622+05	14	3.20000+00
38	3.68832+05	14	3.30000+00
39	3.33733+05	15	3.40000+00
40	3.01974+05	15	3.50000+00
41	2.73237+05	16	3.60000+00
42	2.47235+05	16	3.70000+00
43	2.23708+05	17	3.80000+00
44	2.02419+05	17	3.90000+00
45	1.83156+05	18	4.00000+00
46	1.65727+05	18	4.10000+00

Group	Energy Boundaries	Broad Gp. Numbers	Lethargy Boundaries
47	1.49956+05	19	4.20000+00
48	1.35686+05	19	4.30000+00
49	1.22773+05	19	4.40000+00
50	1.11090+05	20	4.50000+00
51	8.63170+04	20	4.75000+00
52	6.73795+04	21	5.00000+00
53	5.24752+04	21	5.25000+00
54	4.08677+04	21	5.50000+00
55	3.18278+04	22	5.75000+00
56	2.47875+04	23	6.00000+00
57	1.93045+04	24	6.25000+00
58	1.50344+04	24	6.50000+00
59	1.17088+04	24	6.75000+00
60	9.11882+03	24	7.00000+00
61	7.10175+03	24	7.25000+00
62	5.53085+03	25	7.50000+00
63	4.30743+03	25	7.75000+00
64	3.35463+03	26	8.00000+00
65	2.61259+03	26	8.25000+00
66	2.03468+03	26	8.50000+00
67	1.58461+03	26	8.75000+00
68	1.23410+03	27	9.00000+00
69	9.61117+02	27	9.25000+00
70	7.48519+02	27	9.50000+00
71	5.82947+02	28	9.75000+00
72	4.53999+02	28	1.00000+01
73	3.53575+02	28	1.02500+01
74	2.75365+02	29	1.05000+01
75	2.14454+02	29	1.07500+01
76	1.67017+02	29	1.10000+01
77	1.30073+02	29	1.12500+01
78	1.01301+02	30	1.15000+01
79	7.88933+01	30	1.17500+01
80	6.14421+01	30	1.20000+01
81	4.78512+01	30	1.22500+01
82	3.72665+01	30	1.25000+01
83	2.90232+01	31	1.27500+01
84	2.26033+01	31	1.30000+01
85	1.76035+01	31	1.32500+01
86	1.37096+01	31	1.35000+01
87	1.06770+01	32	1.37500+01
88	8.31529+00	32	1.40000+01
89	6.47595+00	32	1.42500+01
90	5.04348+00	32	1.45000+01
91	3.92786+00	32	1.47500+01
92	3.05902+00	33	1.50000+01
93	2.38237+00	33	1.52500+01
94	1.85913+00	34	1.54980+01
95	1.70900+00	34	1.55822+01

Group	Energy Boundaries	Broad Gp. Numbers	Lethargy Boundaries
96	1.56660+00	34	1.56692+01
97	1.43154+00	34	1.57593+01
98	1.28490+00	35	1.58674+01
99	1.13373+00	36	1.59926+01
100	9.99193-01	37	1.61189+01
101	8.81034-01	38	1.62448+01
102	7.68351-01	38	1.63816+01
103	6.55216-01	39	1.65409+01
104	5.48797-01	39	1.67181+01
105	4.48545-01	40	1.69198+01
106	3.61440-01	41	1.71357+01
107	2.99447-01	42	1.73239+01
108	2.49346-01	43	1.75070+01
109	2.07066-01	43	1.76928+01
110	1.79843-01	44	1.78338+01
111	1.59830-01	44	1.79517+01
112	1.39811-01	45	1.80856+01
113	1.19782-01	45	1.82402+01
114	9.97377-02	46	1.84233+01
115	8.23109-02	46	1.86153+01
116	6.99049-02	47	1.87787+01
117	5.98906-02	47	1.89333+01
118	4.98691-02	48	1.91164+01
119	3.98366-02	48	1.93411+01
120	2.97804-02	49	1.96320+01
121	2.10764-02	49	1.99777+01
122	1.48907-02	50	2.03251+01
123	9.82919-03	50	2.07405+01
124	4.74190-03		2.14694+01

TABLE 2. 50 GROUP ENERGY BOUNDARIES

Broad Group Parameters:

Group	Upper Energy	Mid Energy
1	1.4918+07	1.2214+07
2	1.0000+07	7.0469+06
3	4.9658+06	3.8674+06
4	3.0119+06	2.7253+06
5	2.4660+06	2.2313+06
6	2.0190+06	1.8268+06
7	1.6530+06	1.4957+06
8	1.3533+06	1.2246+06
9	1.1080+06	1.0026+06
10	9.0718+05	8.2085+05
11	7.4274+05	6.7206+05
12	6.0810+05	5.5023+05
13	4.9787+05	4.5049+05
14	4.0762+05	3.6883+05
15	3.3373+05	3.0197+05
16	2.7324+05	2.4724+05
17	2.2371+05	2.0242+05
18	1.8316+05	1.6573+05
19	1.4996+05	1.2907+05
20	1.1109+05	8.6517+04
21	6.7379+04	4.6309+04
22	3.1828+04	2.8088+04
23	2.4787+04	2.1875+04
24	1.9304+04	1.0333+04
25	5.5308+03	4.3074+03
26	3.3546+03	2.0347+03
27	1.2341+03	8.4818+02
28	5.8295+02	4.0065+02
29	2.7537+02	1.6702+02
30	1.0130+02	5.4222+01
31	2.9023+01	1.7603+01
32	1.0677+01	5.7150+00
33	3.0590+00	2.3848+00
34	1.8591+00	1.5456+00
35	1.2849+00	1.2070+00
36	1.1337+00	1.0643+00
37	9.9919-01	9.3826-01
38	8.8103-01	7.5978-01
39	6.5522-01	5.4212-01
40	4.4855-01	4.0264-01
41	3.6144-01	3.2899-01
42	2.9945-01	2.7325-01
43	2.4935-01	2.1176-01
44	1.7984-01	1.5857-01
45	1.3981-01	1.1809-01
46	9.9738-02	8.3499-02
47	6.9905-02	5.9043-02
48	4.9869-02	3.8537-02
49	2.9780-02	2.1058-02
50	1.4891-02	8.4030-03

TABLE 3

Characteristics of LWR Fuel Assemblies

Fuel Assembly Category	Fuel I BW14	Fuel II BW15	Fuel III BW17
Fuel Pellet OD (nominal) (in.) ≤	0.313	0.370	0.324
Fuel Rod OD (nominal) (in.) ≥	0.3415	0.430	0.379
Fuel Rod Pitch Within Row (nominal) (in.)	0.453	0.568	0.501
Pitch of Fuel Rod Row (nominal) (in.)	0.453	0.568	0.501
Clad Thickness (nominal) (in.) ≥	0.012	0.0265	0.0235
Clad Material	SS	Zr	Zr
Active Fuel Height (in.) ≤	105.5	152.0	151.0
Pellet Density % TD ≤	97.0	97.0	97.0
Assembly Avg. $(U + Pu)_{fis}$ w/o of $(U + Pu)_{tot}$ ≤	4.400	3.500	3.590
Number of Rods/assembly from	170	204	260
to	175	210	266
Number of Assemblies per canister	1	1	1

Fuel Assembly Category	Fuel IV C14	Fuel V C16	Fuel VI C15A
Fuel Pellet OD (nominal) (in.) ≤	0.3815	0.325	0.359
Fuel Rod OD (nominal) (in.) ≥	0.440	0.382	0.413
Fuel Rod Pitch Within Row (nominal) (in.)	0.580	0.506	0.550
Pitch of Fuel Rod Row (nominal) (in.)	0.580	0.506	0.550
Clad Thickness (nominal) (in.) ≥	0.026	0.025	0.024
Clad Material	Zr	Zr	Zr
Active Fuel Height (in.) ≤	159.0	159.0	140.0
Pellet Density % TD ≤	97.0	97.0	97.0
Assembly Avg. $(U + Pu)_{fis}$ w/o of $(U + Pu)_{tot}$ ≤	3.580	3.500	3.400 (1)
Number of Rods/assembly from	173	232	209
to	178	238	214
Number of Assemblies per canister	1	1	1

(1) or 2.700 w/o U^{235} + 0.950 w/o Pu_{fis} of $(U + Pu)_{tot}$

Page 3 of Table 3

Fuel Assembly Category	Fuel VIII GE 7	Fuel IX GE 8	Fuel X W14B
Fuel Pellet OD (nominal) (in.) ≤	0.488	0.416	0.3669
Fuel Rod OD (nominal) (in.) ≥	0.563	0.493	0.422
Fuel Rod Pitch Within Row (nominal) (in.)	0.738	0.640	0.556
Pitch of Fuel Rod Row (nominal) (in.)	0.738	0.640	0.556
Clad Thickness (nominal) (in.) ≥	0.032	0.034	0.0243
Clad Material	Zr	Zr	Zr
Active Fuel Height (in). ≤	162.0	160.0	151.0
Pellet Density % TD ≤	97.0	97.0	97.0
Assembly Avg. $(U + Pu)_{fis}$ w/o of $(U + Pu)_{tot}$ ≤	2.900	3.100	3.500
Number of Rods/assembly from	48	62	176
to	49	63	181
Number of Assemblies per canister	1 or 2	1 or 2	1

Fuel Assembly Category	Fuel XI W15B	Fuel XII W17B	Fuel XIII W14SA
Fuel Pellet OD (nominal) (in.) ≤	0.3669	0.3225	0.383
Fuel Rod OD (nominal) (in.) ≥	0.422	0.374	0.422
Fuel Rod Pitch Within Row (nominal) (in.)	0.563	0.496	0.556
Pitch of Fuel Rod Row (nominal) (in.)	0.563	0.496	0.556
Clad Thickness (nominal) (in.) ≥	0.0243	0.0225	0.0165
Clad Material	Zr	Zr	SS
Active Fuel Height (in.) ≤	151.0	172.0	125.5
Pellet Density % TD ≤	97.0	97.0	97.0
Assembly Avg. $(U + Pu)_{fis}$ w/o of $(U + Pu)_{tot}$ ≤	3.400	3.500	4.100
Number of Rods/assembly from	201	260	177
to	206	266	182
Number of Assemblies per canister	1	1	1

Fuel Assembly Category	Fuel XIV W15CY	Fuel XV W16YR	Fuel XVI BR9	Fuel XVII BR11
Fuel Pellet OD (nominal) (in.) ≤	0.3835	0.3105	0.4825	0.387
Fuel Rod OD (nominal) (in.) ≥	0.422	0.365	0.5445	0.449
Fuel Rod Pitch Within Row (nominal) (in.)	0.563	0.468	0.707	0.577
Pitch of Fuel Rod Row (nominal) (in.)	0.563	0.468	0.707	0.577
Clad Thickness (nominal) (in.) ≥	0.0165	0.024	0.031	0.031
Clad Material	SS	Zr	Zr or SS	Zr or SS
Active Fuel Height (in.) ≤	128.0	100.0	75.0	75.0
Pellet Density % TD ≤	97.0	97.0	97.0	97.0
Assembly Avg. $(U + Pu)_{fis}$ w/o of $(U + Pu)_{tot}$ ≤	4.100	4.100	4.000	4.000
Number of Rods/assembly from	201	234	75	115
to	206	239	81	121
Number of Assemblies per canister	1	1	1	1

TABLE 4: BENCHMARK OF THE METHOD

	Benchmark-1	Benchmark-2	Benchmark-3	Benchmark-4
Fuel Rod				
Enrichment U^{235} w/o	2.70	2.70 *	2.70	Natural
w/o PuO_2 of Total Mixture				3.98
Atomic % Pu^{238} of Total Pu				0.28
Atomic % Pu^{239} of Total Pu				75.38
Atomic % Pu^{240} of Total Pu				18.10
Atomic % Pu^{241} of Total Pu				5.08
Atomic % Pu^{242} of Total Pu				1.13
Pellet Density (gr/cc)	10.20	10.20	10.20	9.46
Pellet OD (inch)	0.300	0.300	0.300	0.4975
Cladding	SS-304	SS-304	SS-304	Zr-2
Clad OD (inch)	0.3384	0.3384	0.3384	0.565
Clad Thickness (inch)	0.0161	0.0161	0.0161	0.0337
Rod Pitch (inch)	0.470	0.573	0.435	0.85
Type of Pitch	Square	Square	Square	Triangular
Active Fuel Height (inch)	48	48	48	36
Number of fuel rods (critical)	1301	826	1851	252.6
Average Temperature (°C)	20	20	20	25
Cell Calculation (using XSDRN)				
Number of energy groups	123	123	123	123
Number of spatial intervals in the cell	10	11	11	12
Equivalent radius of the cell (cm)	0.6735	0.821	0.6234	1.1335
Dancoff correction	0.2200	0.1136	0.2814	0.1047
Effective moderator cross-section per absorber atom σ_m eff (barn) for U^{238}	76.063	76.063	76.063	56.5781
First moderator scattering cross-section per absorber for atom O^{16}	7.485	7.485	7.485	7.636
Calculation performed using the following fissile isotopes	U^{235}	U^{235}	U^{235}	U^{235}, Pu^{239}, Pu^{241}
Criticality Calculation				
Homogenization with R_{crit} (cm)	24.2938*	23.5995*	26.8195*	18.0160
k_{eff} using KENO at 95% confidence level with 5 generations skipped, 300 neutrons per batch, 35 generations, 50 neutron groups				
$k_{eff} - 2\sigma$	0.99659	0.99348	0.99618	0.98645
$k_{eff} + 2\sigma$	1.02917	1.01502	1.02234	1.01764

* A Homogenized 10 cm thick stainless steel water disk on each end of the fuel-moderator cylinde. An enclosing water reflector approximately 15 cm thick.

Table 5. INPUT DATA CRITICALITY ULATION FOR BENCHMARK-1

```
@EMIT20*JPRVAKENC2,YN1X6C1
          10.0        70.0                                70   00   08
       VAUN=1 BENCHMARK / 2.70 W/O / 0.3384 R0000 / RCRIT=24,2938CM /
       / 50 GROUPS /
          35   300     5    50    14     9     3   17   04   00   00   00   00       0
           0     0     0     0     0     1          1                        3    4
                 1          +1 1.9903E-4     U235 IN UO2  OVER ASBL
                 1           2 7.0818E-3     U238 IN UO2  OVER ASBL
                 1           3 3.9581E-2     H IN H2O  OVER ASBL
                 1           4 1.4562E-2     O16 IN UO2  OVER ASBL
                 1           5 1.9791E-2     O16 IN H2O  OVER ASBL
                 1           6 1.3539-03     CR IN SS-304 CLAD OVER ASBL
                 1           7 1.2800E-4     MN IN SS-304 CLAD OVER ASBL
                 1           8 4.2900-03     FE IN SS-304 CLAD OVER ASBL
                 1           9 5.9956-04     NI IN SS-304 CLAD OVER ASBL
                 2           3 6.6767E-2     H IN H2O OUTSIDE ASBL
                 2           5 3.3383E-2     O16 IN H2O OUTSIDE ASBL
                 3           3 3.9583E-2     H IN H2O  OVER SS304-H2O PLUG
                 3           5 1.9791E-2     O16 IN H2O  OVER SS304-H2O PLUG
                 3           6 7.4841-03     CR IN SS-304 CLAD OVER SS304-H2O PLUG
                 3           7 7.0758E-4     MN IN SS-304 CLAD OVER SS304-H2O PLUG
                 3           8 2.3693-02     FE IN SS-304 CLAD OVER SS304-H2O PLUG
                 3           9 3.31435-3     NI IN SS-304 CLAD OVER SS304-H2O PLUG
       BAND,P  TEMPLIR
       CYLINDER        1 24.2938 060.96  -060.96
        0.0
        0.0
        0.0
        0.0
       CYLINDER        3 24.2938 070.96  -070.96
        0.0
        0.0
        0.0
        0.0
       CYLINDER        2 40.0000 086.00  -086.00
        0.0
        0.0
        0.0
        0.0
       CUBOID          0 040.000 -40.000 040.000 -40.000 086.00  -086.00
        0.0
        0.0
        0.0
        0.0
```

Table 6. INPUT DATA CRITICALITY (\TION FOR BENCHMARK-2

```
RENIER*JPRVAKENO2,YK2V6C1
        10.0       70.0                          70   00   08
      YANK-2 BENCHMARK / 2.70 W/O / 0.3384 RODOO / RCRIT=23.5995CM /
       / 50 GROUPS /
          35  300     5    50    18    10     3   17    04    00    00    00    00         0
           0     0     0     0     0     1          1                             3    4
                 1         +1 1.3391E-4      U235 IN UO2 OVER ASRL
                 1          2 4.7646E-3      U238 IN UO2 OVER ASRL
                 1          3 4.8477E-2      H IN H2O OVER ASRL
                 1          4 9.7971E-3      O16 IN UO2 OVER ASRL
                 1          5 2.0239E-2      O16 IN H2O OVER ASRL
                 1          7 9.1087E-4      CR IN SS-304 CLAD OVER ASRL
                 1          8 8.6119E-5      MN IN SS-304 CLAD OVER ASRL
                 1          9 2.8836E-3      FE IN SS-304 CLAD OVER ASRL
                 1         10 4.0338E-4      NI IN SS-304 CLAD OVER ASRL
                 2          3 6.6767E-2      H IN H2O OUTSIDE ASRL
                 2          5 3.3383E-2      O16 IN H2O OUTSIDE ASRL
                 3          3 3.9583E-2      H IN H2O  OVER SS304-H2O PLUG
                 3          5 1.9791E-2      O16 IN H2O  OVER SS304-H2O PLUG
                 3          7 7.4841-03      CR IN SS-304 CLAD OVER SS304-H2O PLUG
                 3          8 7.0758E-4      MN IN SS-304 CLAD OVER SS304-H2O PLUG
                 3          9 2.3691-02      FE IN SS-304 CLAD OVER SS304-H2O PLUG
                 3         10 3.31435-3      NI IN SS-304 CLAD OVER SS304-H2O PLUG
      BADD:P  TEMPLIN
      CYLINDER        1 23.5995 060.96  -060.96
       0.0
       0.0
       0.0
       0.0
      CYLINDER        3 23.5995 070.96  -070.96
       0.0
       0.0
       0.0
       0.0
      CYLINDER        2 40.0000 086.00  -086.00
       0.0
       0.0
       0.0
       0.0
      CUBOID          0 040.000 -40.000 040.000 -40.000 086.00  -086.00
       0.0
       0.0
       0.0
       0.0
```

Table 7. INPUT DATA CRITICALITY 'ULATION FOR BENCHMARK-3

```
@ENTER*JP2VAREN02,VR3VBC1
          10.0       70.0                        70    00    08
      VANE=3 BENCHMARK / 2.70 W/O / 0.3384 RODOD / RCRIT=26.81954 CM /
       / 50 GROUPS /
         35   300     5    50    14    10     3   17    04    00    00    00    06         0
          0     0     0     0     0     1          1                           3     4
                1          +1 2.3234E-4      U235 IN UO2 OVER ASBL
                1           2 8.2672E-3      U238 IN UO2 OVER ASBL
                1           3 3.5932E-2      H IN H2O OVER ASBL
                1           4 1.6999-02      O16 IN UO2 OVER ASBL
                1           5 1.7516E-2      O16 IN H2O OVER ASBL
                1           7 1.5805-03      CR IN SS-304 CLAD OVER ASBL
                1           8 1.4943-04      MN IN SS-304 CLAD OVER ASBL
                1           9 5.0035-03      FE IN SS-304 CLAD OVER ASBL
                1          10 6.9992-04      NI IN SS-304 CLAD OVER ASBL
                2           3 6.6767E-2      H IN H2O OUTSIDE ASBL
                2           5 3.3383E-2      O16 IN H2O OUTSIDE ASBL
                3           3 3.9583E-2      H IN H2O  OVER SS304-H2O PLUG
                3           5 1.9791E-2      O16 IN H2O  OVER SS304-H2O PLUG
                3           7 7.4841-03      CR IN SS-304 CLAD OVER SS304-H2O PLUG
                3           8 7.0758E-4      MN IN SS-304 CLAD OVER SS304-H2O PLUG
                3           9 2.3693-02      FE IN SS-304 CLAD OVER SS304-H2O PLUG
                3          10 3.31435-3      NI IN SS-304 CLAD OVER SS304-H2O PLUG
      BAND:P  TEMPLIB
      CYLINDER        1 26.8195 060.96  -060.96
       0.0
       0.0
       0.0
       0.0
      CYLINDER        3 26.8195 070.96  -070.96
       0.0
       0.0
       0.0
       0.0
      CYLINDER        2 40.0000 086.00  -086.00
       0.0
       0.0
       0.0
       0.0
      CUBOID          0 040.000 -40.000 040.000 -40.000 086.00  -086.00
       0.0
       0.0
       0.0
       0.0
```

Table 8. INPUT DATA CRITICALITY (ATION FOR BENCHMARK-4

```
RENTER*JPRVAKENO2,ACH4Y6C2
        10.0      70.0                        70   00   08
       /BENCHMARK-4  BATT.11 / UO2-PUO2 4.0%WO / RCRIT = 18.0160CM/
       / 35 GROUPS /
        35  306    0   50   14   10    4   15   08   02   01   01   01      0
         0    0    0    0    0    1        1                        3    4
              1        -1 4.5740-05       U235 IN UO2 OVER ASBL
              1         2 6.2004-03       U238 IN UO2-PUO2 OVER ASBL
              1         3 1.9702-04       PU239 IN UO2-PUO2  OVER ASBL
              1         4 5.1148-05       PU240 IN UO2-PUO2  OVER ASBL
              1         5 1.3304-05       PU241 IN UO2-PUO2  OVER ASBL
              1         6 4.0013-02       H IN H2O OVER ASBL
              1         7 1.3091-02       O16 IN UO2 OVER ASBL
              1         8 2.0007-02       O16 IN H2O OVER ASBL
              1        10 3.8465-03       ZR IN ZR-2 CLAD OVER ASBL
              2         6 6.6767E-2       H IN H2O OUTSIDE ASBL
              2         8 3.3363E-2       O16 IN H2O OUTSIDE ASBL
              3         6 4.0018-02       H IN H2O  OVER END PLUG ROD
              3         8 2.0009-02       O16 IN H2O  OVER END PLUG ROD
              3        10 1.7326-02       ZR IN ZR-2 END PLUG ROD
              4         9 6.6200-02       AL IN AL SUPPORT PLATE
       4400.0  TEMPL10
       BOX TYPE         1
       CYLINDER         1 18.0160 045.72  -045.72
        0.0
        0.0
        0.0
        0.0
       CYLINDER         3 18.0160 46.5455-40.4185
        0.0
        0.0
        0.0
        0.0
       CYLINDER         2 40.0000 067.31  -63.286
        0.0
        0.0
        0.0
        0.0
       CYLINDER         4 40.0000 067.31  -64.516
        0.0
        0.0
        0.0
        0.0
       CUBOID           2 040.000 -40.000 040.000 -40.000 067.31  -070.00
        0.0
        0.0
        0.0
        0.0
       BOX TYPE         2
       CUBOID           2 040.000 -40.000 040.000 -40.000 067.31  -070.00
        0.0
        0.0
        0.0
        0.0
       CORE BOX         0 040.000 -40.000 040.000 -40.000 067.31  -070.00
        0.0
        0.0
        0.0
        0.0
       CUBOID           2 040.000 -40.000 040.000 -40.000 067.31  -070.01
        0.0
        0.0
        0.0
        0.0
        1      1   01   1     1   01   1     1    1    1 3              ASBL
```

TABLE 9

RESULTS OF FUEL ASSEMBLY CATEGORIES

SEE PROPRIETARY SUPPLEMENT

Docket 50-201
Spent Fuel Storage Facil

Nuclear Fuel Services, Inc. 6000 Executive Boulevard, Suite 600, Rockville, Maryland • 2085

A Subsidiary of Getty Oil Company

(301) 770-5510

October 3, 1975

JD
JFS
PRP

Dr. Marvin Resnikoff
Box 123, Market Station
Buffalo, New York 14203

Dear Marvin:

Your letter of September 22, 1975 requested that we provide you and Ms. Carol Mongerson of the Springville Radiation Study Group (SRSG) with a copy of the NFS Application of August 4, 1975 for a proposed change to Technical Specification 4.3, Canister Loading and Spacing of License No. CSF-1. I understand that you and the SRSG have already received a copy of the Application (as an enclosure to the letter from the NRC to NFS of September 17, 1975). Please let me know if your copy did not reach you. As you may know, a copy of this Application can also be found in the NRC Public Document Rooms in Springville and Little Valley, and at the public reading room at NFS West Valley Reprocessing Facility.

It is apparent from your letter that you are mistaken as to the scope of the changes to the technical specification requested by the NFS Application. It is unfortunate that you hasten to express critical views as to a subject you deem "extremely serious" apparently prior to even reading the relevant NFS Application.

Yours very truly,

Neil

Neil J. Newman
Attorney

NJN/il

cc: R. Black, Esquire
L. Strongin, Esquire
J. B. MacDonald, Esquire
R. G. Berger, Esquire
K. Sheldon, Esquire
C. Mongerson
P. Murray
J. R. Lippert II, Esquire
R. Scott
J. H. Schlegel, Esquire
M. Axelrad, Esquire

Docket 50-201
Fuel Storage Facility

~~FS~~
~~ED~~

September 22, 1975

Neil J. Newman, Attorney
Nuclear Fuel Services, Inc.
6000 Executive Boulevard, Suite 600
Rockville, Md. 20852

Dear Neil:

It is our understanding that NFS has applied for a separate license for the fuel receiving and storage area, and that it is NFS' intention to increase the present storage pool capacity by a factor of 3 or 4. We would appreciate it greatly if a copy of your application could be sent to Carol Mongerson of the Springville Radiation Study Group and myself.

We consider this ill-timed license request by NFS an extremely serious matter, and intend to intervene in the proceeding. In Western New York we now have a low level waste burial ground that leaks, high level waste tanks that pose a frightening potential hazard and may remain in Western New York forever, and now this plan to truck in and store another 1,000 metric tons of "spent" fuel. In short, the ASDA site is becoming the nuclear garbage dump of the nation. In this upcoming bicentennial year, we intend to share this nuclear "treasure" with the rest of the country.

A copy of this letter is being sent to other parties in the NFS proceeding.

Sincerely,

Dr. Mervin Resnikoff
Box 183 Market Sta.
Buffalo, N.Y. 14203

cc: R. Black, Esq.
L. Strongin, Esq.
✓J.B. MacDonald, Esq.
R.G. Berger, Esq.
K. Sheldon, Esq.
C. Mongerson
P. Murray
J.P. Lippert, II, Esq.
R. Scott
J.H. Schlegel, Esq.
M.E. Straub, Esq.
R. Dorset, FOE
J. Bunz, Conservation Council
G. Speth, NRDC
E. Blauner, Sierra Club

Committee on Licensing
RECEIVED
SEP 26 1975
New York State
Department of Commerce
ATOMIC ENERGY COUNCIL

NEW YORK STATE DEPARTMENT OF COMMERCE
RECEIVED
SEP 26 1975

SENT TO: Bradley Meyer Mathusa Perriman
By T.K.D
Date 10/1/75

ROISMAN, KESSLER AND CASHDAN
1712 N STREET, NORTHWEST
WASHINGTON, D. C. 20036
(202) 833-2070

ANTHONY Z. ROISMAN
GLADYS KESSLER
DAVID R. CASHDAN
KARIN P. SHELDON
CLIFTON E. CURTIS
DAVID S. FLEISCHAKER
MERIDETH WRIGHT (ADM. FLORIDA)

PHYLLIS L. QUANDER
ADMINISTRATIVE SECRETARY

FS
PRP

October 28, 1975

Thomas W. Reilly, Esq.
Chairman
Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. Hugh C. Paxton
Los Alamos Scientific Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87544

Dr. Frederick P. Cowan
Apartment 2-104
1900 S.E. St. Lucie Blvd.
Stuart, Florida 33494

Re: Nuclear Fuel Services, Inc., et al.
(West Valley Reprocessing Plant)
Docket No. 50-201

Gentlemen:

On August 4, 1974 Nuclear Fuel Services, Inc. applied for an amendment to Provisional Operating License No. CSF-1 which would revise Technical Specification 4.3 relating to spent fuel canister loading and spacing, and increase the amount of spent fuel stored in the storage pool at the West Valley Reprocessing Plant.

As intervenors before the Nuclear Regulatory Commission in the proceedings concerning the NFS application for a construction permit and full term operating license for the West Valley facility, the SCNG and SRSG have demonstrated a substantial interest in the licensing and operation of this facility. Among the issues of concern are the health, safety and environmental impacts of the handling and storage of spent fuel, issues which we intend to fully pursue during the hearings on the licenses.

SENT TO: BRADLEY
By T.K.D. DAVIES
Date 11/14/75 GALLOWAY
JAMNBACK
MEYER/MATHUSA
PERRIMAN
SOLON
STRONGIN

The SCNG/SRSG is opposed to any action, such as the one contemplated by the Technical Specification amendment, which will authorize the continued use of the West Valley site for the storage of spent fuel, or allow expansion of the capacity of the storage pool, or increase the amount of spent fuel stored at the facility, prior to the resolution of important safety questions. These questions include, inter alia:

(1) the ability of the Fuel Receiving and Storage Building, which has been termed by the NRC Staff as of "matchbox construction", to withstand a tornado or design basis earthquake, and the consequences if it does not;

(2) the hazard of increased transportation of spent fuel to, and quite possibly away from West Valley, should NFS not be licensed;

(3) the alternatives to making Western New York State the nuclear garbage dump of the nation;

(4) the possibility of sabotage to the storage pool;

(5) any potential interference by construction of the new facility with stored spent fuel.

Despite our opposition we have determined not to intervene in, or request a hearing on the proposed revision of the Technical Specifications which would allow an increase in the amount of spent fuel stored at West Valley. We do not believe it is possible to develop all the issues relevant to spent fuel storage at West Valley within the context of a proceeding on an amendment to one Technical Specification. Attempting to do so will only result in a fragmentation of the process of review of the licensing of the West Valley plant. Such a fragmentation would not only prevent evaluation of all the implications of the spent fuel issue, but would work a substantial hardship on the resources of citizen intervenors.

The importance of the problem of spent fuel handling and storage was recognized by the NRC recently in its determination to undertake a generic environmental impact statement on the subject. Although the Commission will permit licensing actions to be completed in the meantime, subject to consideration of five specific factors set forth in the Intent to Prepare Generic Environmental Impact Statement on Handling and Storage of Spent

Light Water Power Reactor Fuel, September 10, 1975, such licensing actions are not intended to be conclusive on all related issues. As representatives of NFS explained to members of SCNG/SRSG at a meeting on September 29, 1975, the unresolved safety question involved in the proposed amendment relates primarily to the potential for criticality of the more closely spaced fuel. It hardly seems proper to attempt to use a proceeding with such a narrow focus as the place for a full dress review of all the implications of spent fuel storage.

To assure SCNG/SRSG the opportunity to address spent fuel storage and other issues in the hearings on the licenses for the construction and full term operation of West Valley, we have obtained the attached stipulation from NFS and the NRC Staff. This stipulation reflects our common understanding that while SCNG/SRSG will not intervene in, or request a hearing on the proposed change to the Technical Specifications which will allow closer spacing of the spent fuel elements in the storage pool, this lack of participation will not in any way alter or affect our rights to pursue issues at a later time.

The stipulation reflects the entire agreement of the parties on the Technical Specification amendment. The views expressed and the position taken on the amendment in this letter are those of the SCNG/SRSG alone. Neither NFS nor the NRC Staff join in or approve of the position.

Obviously a stipulation among the parties cannot bind the Board. It is submitted herewith to indicate the concurrence of several of the parties of this matter. We respectfully request that the Board determine whether SCNG/SRSG will be allowed to raise spent fuel issues in the hearing on the construction permit and operating license, unfettered by any action taken on the license amendment referred to above. Should the Board determine that the stipulation is not appropriate, we request that we be granted ten days from the date of the Board's decision to file a petition to intervene on the proposed Technical Specification amendment.

Sincerely,

Karin P. Sheldon

Karin P. Sheldon
Counsel for Sierra Club, Niagara Group
and Springville Radiation Study Group

KPS/pq
Encl.
CC (with encl.): All parties of record.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

NUCLEAR FUEL SERVICES, INC., et al.	)	Docket No. 50-201
(West Valley Reprocessing Plant)	)	

STIPULATION CONCERNING PROPOSED
AMENDMENT TO TECHNICAL SPECIFICATION 4.3
CANISTER LOADING AND SPACING

The NRC Regulatory Staff (Staff), Nuclear Fuel Services, Inc. (NFS), the Sierra Club, Niagara Group and the Springville Radiation Study Group (SCNG/SRSG) by their respective attorneys, hereby stipulate and agree as follows:

1. SCNG/SRSG will not intervene as a party to, or request a hearing upon the August 4, 1975 application of NFS for an amendment to NFS Provisional Operating License No. CSF-1 which would revise Technical Specification 4.3 Canister Loading and Spacing, and increase the storage capacity of the spent fuel storage pool at the West Valley Reprocessing Plant.

2. The Staff and NFS agree that no findings made, or actions taken by the Nuclear Regulatory Commission with respect to the amendment referred to above shall be used as evidence against, or as a basis or justification for an objection to allowing, or a refusal to permit SCNG/SRSG subsequently to raise any issue or take any position, or to offer any evidence or direct testimony, conduct any cross-examination, or make any legal argument within

the scope of SCNG/SRSG's admitted contentions in the proceedings concerning the construction permit and full term operating license for the West Valley facility, or in any other NRC proceedings for any other increase in the amount of spent fuel stored at West Valley or any future expansion of West Valley's spent fuel storage capacity.

3. This stipulation contains the entire agreement among the parties thereto and nothing set forth therein shall be deemed to constitute agreement by the Staff or NFS to any other matters, including any statement contained in any cover letter from the SCNG/SRSG to the Board.

November 5, 1995
Date

Karin P. Sheldon
Karin P. Sheldon, Esq.
ROISMAN, KESSLER & CASHDAN
1712 N Street, N.W.
Washington, D.C. 20036
Counsel for SCNG/SRSG

November 5, 1995
Date

Richard L. Black
Richard Black, Esq.
Office of the Executive Legal Director
U.S. NUCLEAR REGULATORY COMMISSION
Washington, D.C. 20555
Counsel for NRC Staff

November 5, 1995
Date

Maurice Axelrad
Maurice Axelrad, Es.
LOWENSTEIN, NEWMAN, REIS & AXELRAD
1025 Connecticut Avenue, N.W.
Washington, D.C. 20036
Counsel for NFS, Inc.

Copies to
WHL
WAD
NJI
GEK

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

NOV 3 0 1977

C/C - BEK
JPD
B 149 RTS
CES
f - TS book

SGPS:RLH
50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Quality Assurance and
Licensing
6000 Executive Boulevard, Suite 600
Rockville, Md. 20852

Gentlemen:

We have reviewed revision 5 to your document, "Nuclear Fuel Services, Inc., West Valley, New York, Physical Protection Plan," dated November 1976, which was submitted as an enclosure to your letter dated January 14, 1977. We have determined that this revision is acceptable and have noted that it includes commitments to meet several of the requirements contained in current technical specifications. Accordingly, we are deleting in their entirety technical specifications 9.3.2, 9.3.4, 9.3.5, 9.3.7 and 9.3.8. We are also revising technical specifications 9.3.9, 9.3.10 and 9.4.1 to reflect the parts of those specifications which are incorporated into revision 5 of your plan. In addition, we are revising technical specification 9.3.3 to simplify the statement of the requirement.

We are restructuring the exceptions portion of the technical specifications to your license by adding a general condition 9.4 and by adding the specific condition 9.4.2 to allow cleared DOE/ERDA couriers accompanying shipments to be excepted from the requirements for search stipulated in 10 CFR Part 73.50(c)(1).

In accordance with the foregoing determinations, we are hereby reissuing Section 9 of Physical Security Requirements to your License No. CSF-1 as contained in the enclosure to this letter, effective immediately.

We have determined that the enclosure to your letter dated January 14, 1977 contains information of a type specified in 10 CFR 2.790(d).

RECEIVED
DEC 9 - 1977
GEN'L MGR.

Accordingly, it is deemed to be commercial or financial information within the meaning of 10 CFR 9.5(a)(4) and shall be subject to disclosure only in accordance with the provisions of 10 CFR 9.12. For the same reason we are withholding Appendix A of the enclosure to this letter.

George W. McCorkle, Chief
Physical Security Licensing Branch

Enclosure:
As stated

Docket No. 50-201
License No. CSF-1

9.0 PHYSICAL SECURITY REQUIREMENTS

Applicability

The specifications of this section apply to the Nuclear Fuel Services, Inc., West Valley Fuel Reprocessing Plant and the storage of irradiated fuel therein.

Objective

The objective of this section is to provide physical protection of the Nuclear Fuel Services, Inc., West Valley Fuel Reprocessing Plant and of the licensed activities conducted therein.

Specifications

9.1 The licensee shall follow the security plan entitled, "Nuclear Fuel Services, Inc., West Valley, New York, Physical Protection Plan, Revision 5," dated November 1976, including pages marked Revision 0, 1, 2, 3, and 4.

9.2 No statement in the licensee's security plan shall relieve the licensee of a requirement of 10 CFR Part 73 unless granted in a specific exemption or exception set forth as a Technical Specification of this license.

9.3 In addition to the commitments contained in the above cited security plan, as revised, the following specifications shall be complied with. In any conflict between a commitment contained in the licensee's security plan and a specification below, the specification shall be complied with by the licensee:

9.3.1 The protected area fence surrounding the HLW protected area shall be no closer than 30 feet to any structure within the HLW protected area. The 8D1, 8D2, 8D3 and 8D4 waste tanks are considered as structures for the purpose of this specification, in accordance with 10 CFR 73.50(b)(3).

9.3.2 Deleted.

9.3.3 Daily inspection of the protected area fences and the FRS Building walls shall be made to verify that the integrity of those barriers is maintained as required by the provisions of 10 CFR 73.50(f).

9.3.4 Deleted.

9.3.5 Deleted.

9.3.6 The size of the security force shall be as specified in Appendix A*.

9.3.7 Deleted.

9.3.8 Deleted.

9.3.9 Procedures for entry into the primary alarm station shall require that positive identification of personnel and verification of access authorization be made prior to unlocking entrances.

9.3.10 Alarms annunciating in the PCAS shall require a positive action by the personnel manning the station to acknowledge the alarm in addition to reconciling and initiating any action that may be appropriate.

9.4 The licensee is excepted from the following requirements of 10 CFR 73 as set forth below; however, these exceptions do not relieve the licensee of any other requirements of 10 CFR Part 73 unless specifically granted as a condition of this license.

---

* Appendix A contains information which could compromise the effectiveness of the licensee's security program and is therefore withheld from public disclosure in accordance with 10 CFR 2.790(d).

9.4.1 An exception is granted to the requirement that at least one continuously manned central alarm station be located within a protected area as specified in 10 CFR 73.50(b)(1), 10 CFR 70.50(d)(1) and 10 CFR 73.50(e)(1), provided that the guard in the NFS primary central alarm station is protected from attack as specified in the licensee's plan. No exception is granted from any other requirement of 10 CFR 73.50(b)(1), 10 CFR 73.50(d)(1) or 10 CFR 73.50(e)(1), unless specifically stated elsewhere in these specifications.

9.4.2 The licensee is granted an exception to the search requirements of 10 CFR 73.50(c)(1) for DOE/ERDA couriers engaged in delivering or receiving shipments provided that the requirements defined in Appendix A* are met.

---

* Appendix A contains details which could compromise the effectiveness of the licensee's security program and is therefore withheld from public disclosure in accordance with 10 CFR 2.790(d).

APPENDIX A

This Appendix contains details which could compromise the effectiveness of the licensee's security program and is therefore withheld from public disclosure in accordance with 10 CFR 2.790(d).

9.3.4 Deleted.

9.3.5 Deleted.

9.3.6 The licensee shall maintain patrols such that in response to an alarm an armed member of the licensee's security force can be at the site of the alarm within three (3) minutes of the alarm.

9.3.7 Deleted.

9.3.8 Deleted.

9.4.2 The licensee is granted an exception to the search requirements of 10 CFR 73.50(c)(1) for DOE/ERDA couriers engaged in delivering or receiving shipments provided that:

(a) The couriers possess DOE/ERDA credentials and have been properly identified.

(b) The couriers are included on an authorization list separately received from DOE/ERDA.

(c) An advance notice of shipment has been received from DOE/ERDA.

Telecopy to: H. A. Oldham
C. E. Kitchen

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

MAY 2 2 1978

SGPS:GSP
50-201

Nuclear Fuel Services, Inc.
ATTN: Mr. J. R. Clark, Manager
Quality Assurance and Licensing
6000 Executive Boulevard, Suite 600
Rockville, Maryland 20852

Gentlemen:

In the course of other activities we have recently completed a review of your physical protection program as set forth in the approved physical protection plan and technical specifications to your license.

We note that technical specification 10.2 is now obsolete. Accordingly, we are rescinding in its entirety, Section 10.0 (Transportation Security) of the technical specifications to your License No. CSF-1 and reissuing that section as contained in Enclosure A to this letter.

Sincerely,

George W. McCorkle, Chief
Physical Security Licensing Branch
Division of Safeguards

Enclosure:
As stated

RECEIVED
MAY 23 1978
GEN'L MGR.

Docket No. 50-201
License No. CSF-1

ENCLOSURE

10.0 TRANSPORTATION SECURITY

10.1 Interim Plan for Physical Security of Special Nuclear Material in Transit

The licensee shall not import, export, transport in a single shipment or take delivery of a single shipment free on board at the point where it is delivered to an agent or carrier, quantities of special nuclear material as specified in 73.1(b) of 10 CFR Part 73 until a detailed plan as described in 10 CFR 73.30(e) is submitted, and such plan is approved by the Nuclear Regulatory Commission.

NFS TERMINATE
LICENSE

LAW OFFICES OF

MILLER & CHEVALIER

CHARTERED

WASHINGTON, D. C. 20006

626-5650

10-9

October 3, 1981

Philip H. Gitlen, Esquire
Whiteman Osterman & Hanna
99 Washington Avenue
Albany, New York 12210

Dear Phil:

Enclosed is a draft of our proposed license application to the NRC to terminate NFS' license.

I believe the best procedure to follow to enable the parties to quickly close on settlement is as follows:

1. NFS and the Authority agree upon the application language and meet with the NRC staff on Monday October 5 to obtain their view on whether the amendment can be issued by October 9, or in any event no later than October 17.

2. NFS, the Authority and NRC staff informally agree that the amendment terminating NFS' license will be coordinated with the signing of the Settlement Agreement with the DOE Takeover so that they are done simultaneously.

3. NFS and the Authority agree that the Authority's joining in this application is only in connection with the settlement and that the Authority has the right to

withdraw its support without prejudice if the amendment is not issued by October 17.

Please call me today to discuss this or other procedures.

Sincerely,

Clarence T. Kipps, Jr.

Telecopied: October 3, 1981

DRAFT
October 2, 1981
FKP:mab

Mr. John G. Davis
Director
Office of Nuclear Material
Safety and Safeguards
United States Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Davis:

With this letter, Nuclear Fuel Services, Inc. (NFS), joined by the New York State Energy Research and Development Authority (NYERDA), submits to the Commission an application for amendment of License No. CSF-1. This amendment, in conjunction with Amendment 31 issued on September 30, 1981, is required in order that DOE and NYERDA may carry out the conditions of Section 2(b)(4)(A) of the West Valley Demonstration Project Act, Pub. L. 96-368 (1980).

The amendment terminates all rights and responsibilities of NFS under License No. CSF-1 and transfers to NYERDA all residual rights and responsibilities of the licensees upon completion of the West Valley Demonstration Project. All other information required by the Commission for amendment of an operating license is contained in the previous submissions of the licensees under Docket No. 50-201.

The requested amendment which adds a Paragraph 8 of the license, is as follows:

8. Notwithstanding any other provisions of this license, all rights and responsibilities of the licensee, Nuclear Fuel Services, Inc. (NFS), under License No. CSF-1 are terminated upon DOE assuming exclusive possession and control of the facility. Upon DOE's assumption of exclusive possession and control of the facility as provided in paragraph 7 above, all references to 'licensee'; 'licensees'; 'licensees under this license, as their respective interests under this license appear'; or 'licensees, as their respective interests under this license appear', shall thereafter refer exclusively to the New York State Energy Research and Development Administration.

AMENDMENT TO INDEMNITY AGREEMENT NO. B-29
AMENDMENT NO. 12

Effective Oct. 21, 1981, Indemnity Agreement No. B-29 between Nuclear Fuel Services, Inc., and the New York Atomic and Space Development Authority and the Atomic Energy Commission, dated May 27, 1965 is further amended by adding a new Article IX to read as follows:

Article IX

Effective as of the time the licensees, as their interest under License No. CSF-1 appear, transfer the location to the U.S. Department of Energy pursuant to License Amendment No. 31, this agreement is suspended. This suspension shall continue in effect until the U.S. Department of Energy surrenders possession of the location to the licensees, as their interests appear under license No. CSF-1. This agreement shall not include such period of suspension. Such suspension shall not affect any obligation of Nuclear Fuel Services, Inc., the New York State Energy Research and Development Authority (as successor to ASDA), or the Nuclear Regulatory Commission (as successor to the Commission) with respect to any nuclear incident occurring prior to the time of suspension.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Jerome Saltzman, Assistant Director
for State & Licensee Relations

FOR NUCLEAR FUEL SERVICES, INC.

Accepted: _____ 1981

By _____

FOR THE NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY

Accepted: January 6, 1982

By _____
Chairman

AMENDMENT TO INDEMNITY AGREEMENT NO. B-29
AMENDMENT NO. 12

Effective October 21, 1981, Indemnity Agreement No. B-29 between Nuclear Fuel Services, Inc., and the New York Atomic and Space Development Authority and the Atomic Energy Commission, dated May 27, 1965 is further amended by adding a new Article IX to read as follows:

Article IX

Effective as of the time the licensees, as their interests under License No. CSF-1 appear, transfer the location to the U.S. Department of Energy pursuant to License Amendment No. 31, this agreement is suspended. This suspension shall continue in effect until the U.S. Department of Energy surrenders possession of the location to the licensees, as their interests appear under license No. CSF-1. This agreement shall not include such period of suspension. Such suspension shall not affect any obligation of Nuclear Fuel Services, Inc., the New York State Energy Research and Development Authority (as successor to ASDA), or the Nuclear Regulatory Commission (as successor to the Commission) with respect to any nuclear incident occuring prior to the time of suspension.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Jerome Saltzman, Assistant Director
for State and Licensee Relations
Office of State Programs

FOR NUCLEAR FUEL SERVICES, INC.

Accepted: Feb 9 1982

By

FOR THE NEW YORK STATE ENERGY RESEARCH AND DEVELOPMENT AUTHORITY

Accepted _____ 1982

By _____

120625 4a

Law Offices
Scharfeld, Bechhoefer & Baron
5th Floor 1710 H Street, N.W.
Washington, D.C. 20006

Telephone
298-8050

Arthur W. Scharfeld
Bernhard G. Bechhoefer
Theodore Baron

July 20, 1965

Dr. Walton A. Rodger
Nuclear Fuel Services, Inc.
P. O. Box 124
Cattaraugus County
West Valley, New York

Dear Walt:

I am enclosing four (4) copies of Submission No. 8 of Information Subsequent to Construction Permit. This was filed on Monday, July 19th.

We still have a few complete copies in our office, and Baltimore has a larger number in case they are required.

Sincerely,

Bernhard G. Bechhoefer

Enclosure

RECEIVED

AMENDMENT 1
11/26/85

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

FILE COPY

November 26, 1985

Jay Dunkleberger
New York State Energy Office
Agency Building 2, 10th Floor
Empire State Plaza
Albany, New York 12223

Dear Mr. Dunkleberger:

I have attached background information about the position of the AEC staff taken on assurances of State responsibility for long-term care and maintenance of the storage tanks and burial site at West Valley. Please keep us informed of any proposed changes to present arrangements. I would be pleased to arrange for a meeting or telephone conference between State and NRC staff to discuss the basis for the AEC position and any changes the State may be considering.

If I may be of further assistance, please let me know.

Sincerely,

Paul H. Lohaus

Paul H. Lohaus
State Liaison Officer

Enclosure:
As Stated

BEFORE THE UNITED STATES ATOMIC ENERGY COMMISSION

WASHINGTON, D. C.

In the Matter of NUCLEAR FUEL SERVICES, INC. and NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY	DOCKET NO. 50-201

AMENDMENT NO. 1

To the Application for Licenses

of the

New York State Atomic Research and Development Authority

April 8, 1963

Before the
United States Atomic Energy Commission
Washington, D. C.

In the Matter of NUCLEAR FUEL SERVICES, INC. and NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY	DOCKET NO. 50-201

AMENDMENT NO. 1

To the Application for Licenses

of the

New York State Atomic Research and Development Authority

The New York State Atomic Research and Development Authority ("ARDA"), one of the applicants in this proceeding, herewith submits its Amendment No. 1 to its Application for Licenses filed on January 30, 1963.

The purpose of this amendment is to provide evidence of the responsibility of the State of New York for the proper maintenance of the Western New York Nuclear Service Center ("Site"), and for the wastes to be stored at the Site, in perpetuity in accordance with all applicable federal, state or local laws, regulations or licenses.

As evidence of the recognition and acceptance of this responsibility by the State of New York, there is attached hereto, and made a part of ARDA's Application for Licenses:

Appendix B - an agreement, dated March 21, 1963, between the New York State Office of Atomic Development and ARDA in the form in which it has been executed with the approval of the Governor of the State of New York;

Appendix C - a certified copy of Resolution 43, duly adopted by ARDA, at a meeting duly held on March 15, 1963, authorizing the execution of said agreement;

Appendix D - a copy of a letter, dated April 4, 1963, from the Governor of the State of New York, to the Chairman of ARDA, setting forth the Governor's approval of the resolutions adopted by ARDA at the meeting of March 15, 1963; and

Appendix E - a letter, dated April 8, 1963, from the Chairman of ARDA transmitting said agreement to the Director of the AEC

Division of Licensing and Regulation in response to his letter of request dated February 13, 1963 (AEC Exhibit No. 2).

Respectfully submitted,

NEW YORK STATE ATOMIC RESEARCH AND DEVELOPMENT AUTHORITY

By: Oliver Townsend
Chairman

Dated: April 8, 1963

STATE OF NEW YORK)
: ss.:
COUNTY OF NEW YORK)

On the 8th day of April, 1963, before me personally came OLIVER TOWNSEND, to me known and known to me to be the individual described in and who executed the foregoing instrument and acknowledged to me that he executed the same.

Mary Pesenhofer
Notary Public

MARY PESENHOFER
Notary Public, State of New York
No. 03-8337315 - Qual. in Bronx Co.
Certificate filed in New York County
Commission Expires March 30, 1964