STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
PROPOSAL OF DOMINION NUCLEAR	:	
CONNECTICUT, INC. TO MODIFY THE	:	
EXISTING MILLSTONE POWER	:	
STATION TO ESTABLISH AN	:	
INDEPENDENT SPENT FUEL STORAGE	:	
INSTALLATION (DRY STORAGE	:	
SYSTEM) ON PROPERTY LOCATED	:	
OFF ROPE FERRY ROAD IN THE TOWN	:	
OF WATERFORD, CONNECTICUT	:	**AUGUST 25, 2003**

I. INTRODUCTION

A. Authority and Purpose

This information and the accompanying attachments (the "Application") is submitted by Dominion Nuclear Connecticut, Inc. ("DNC") pursuant to Chapter 277a, Sections 16-50k(a) of the Connecticut General Statutes ("Conn. Gen. Stat."), as amended, and Sections 16-50j-1, et seq. of the Regulations of Connecticut State Agencies ("R.C.S.A."), as amended. The Application proposes a modification to the existing Millstone Power Station ("Millstone") site in the Town of Waterford, Connecticut ("Town" or "Waterford") to permit the establishment of an Independent Spent Fuel Storage Installation ("ISFSI") (also known as a dry storage system).

B. Brief Project Description

Management of spent nuclear fuel is an integral part of nuclear power operations, particularly given the current lack of a federally licensed high level nuclear waste repository in the United States. Accordingly, DNC has evaluated the available options for the interim storage of spent fuel at Millstone until such time as the U.S. Department of Energy fulfills its statutory and contractual obligations and accepts the fuel for permanent disposal. The option selected by DNC,

and proposed as a part of this submission, will utilize a dry storage system at Millstone. The dry storage system selected is a passive system without moving equipment or components and is designed to provide shielding and safe confinement of spent nuclear fuel to assure nuclear safety and environmental protection. This system utilizes a proven technology previously approved by the U.S. Nuclear Regulatory Commission ("NRC").

The ISFSI will utilize a series of reinforced concrete storage modules located on concrete pads. Spent fuel, which has been adequately cooled in spent fuel pools for at least five years, would be sealed inside a steel canister and placed into a concrete module. A detailed description of the loading and storage process is included in Section III.A below. The ISFSI would encompass an approximately 2-acre area in the easterly portion of the South Access Point ("SAP") parking lot; east of and adjacent to the Millstone power generating units (the "ISFSI Site"). The westerly portion of the SAP parking lot, between the ISFSI Site and the power generating units (approximately 4 acres) will be used as an equipment laydown area (the "Equipment Laydown Area"). The ISFSI Site and Equipment Laydown Area will be surrounded by physical security measures including perimeter intrusion detection systems, physical barriers, isolation zones and security lighting similar to that currently surrounding the Millstone power generating units.

C. Scope of this Submission

The installation of an ISFSI at Millstone as described in this submission, constitutes a modification to the existing power generating facility pursuant to Conn. Gen. Stat. § 16-50k(a). The ISFSI itself is not a "facility" as defined in Conn. Gen. Stat. § 16-50i(a). This submission and the subsequent proceedings before the Connecticut Siting Council ("Council") do not involve and will not include any specific discussion of the ongoing or continuing operations of Millstone Power Station, except as it relates to the interim storage of spent fuel in the ISFSI.

D. The Applicant

DNC is the majority owner and the licensed operator of Millstone Power Station.[1] DNC is a Delaware cooperative, operating Millstone pursuant to licenses issued by the NRC in accordance with 10 Code of Federal Regulations ("CFR") Part 50. DNC and its affiliates have extensive experience in the operation of nuclear power stations. DNC's indirect parent company, Dominion Resources, Inc. ("Dominion"), owns and operates a total of three nuclear power stations, including Millstone, in the United States. Dominion Virginia Power owns and operates the Surry Power Station and is the majority owner and operator of the North Anna Power Station both in Virginia. Both the Surry and North Anna Power Stations operate ISFSIs at their sites that utilize dry storage systems.

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[1] DNC owns Millstone Units 1 and 2 in their entirety and owns 93.47% of Millstone's Unit 3. The remaining interest in Unit 3 is owned by the Massachusetts Municipal Wholesale Electric Company (4.8%) and Central Vermont Public Service Corporation (1.73%).

E. Application Fee

The estimated total construction cost for the ISFSI would be in excess of $5,000,000. Pursuant to R.C.S.A. § 16-50v-1a(b) of the Regulations of Connecticut State Agencies, a fee of $25,000 accompanies this submission in the form of a check payable to the Council.

F. Section 16-50*l*(c) Compliance

In compliance with Conn. Gen. Stat. § 16-50*l*(c), DNC hereby states that the ISFSI is not a facility that would be identified in the annual forecast report required by Conn. Gen. Stat. § 16-50r ("Annual Forecast Report"). DNC is engaged in the generation of electricity in the State of Connecticut and is subject to the requirements of Conn. Gen. Stat. § 16-50r. Millstone regularly appears in the Council's Annual Forecast Report and DNC representatives regularly participate in the Council's load and forecast proceedings.

G. Application Guide

As described in Section I.C above, the ISFSI is not a facility defined under Conn. Gen. Stat. Section 16-50i(a). DNC has, however, for the purposes of this submission, used the Council's Application Guide for Electric Generating Facility (the "Application Guide") to develop the information and materials submitted as a part of this modification. In a number of respects the information required by the Application Guide is not applicable to the ISFSI project. Attachment 1 contains a restatement of the Council's Application Guide identifying those requirements not applicable to this modification. In all other respects where information has been provided and the provision of the Application Guide satisfied, references have been made to the applicable section, report or plans included in this submission.

II. SERVICE AND NOTICE REQUIRED - CONN. GEN. STAT. § 16-50

A. Local Input Process

Conn. Gen. Stat. §§ 16-50*l*(e) and 16-50x(d) require the submission of certain technical information to the Town of Waterford, as the host municipality, at least 60 days prior to the submission of this modification with the Council. The technical information regarding the ISFSI was provided to Town of Waterford officials on June 17, 2003. Because a portion of the Millstone property is located within 2,500 feet of the Town of East Lyme municipal boundary, copies of this technical information were also provided to Town of East Lyme officials on the same day.

B. Notice of Filing

Copies of this submission have been sent by certified mail, return receipt requested to municipal, regional, state and federal officials pursuant to Conn. Gen. Stat. § 16-50*l*(b). A Certification of Service, along with a list of parties served with a copy of this submission is included in Attachment 2.

Notice of DNC's intent to file the Application was published on two separate occasions in the *New London Day*, pursuant to Conn. Gen. Stat. § 16-50*l*(b). A copy of the published Legal Notice is included as Attachment 3. A Publisher's Affidavit or Certificate of Publication will be submitted to the Council as soon as it is available. In accordance with Conn. Gen. Stat. § 16-50*l*(b), Attachment 4 contains a certification that notice of DNC's intent to file the Application was sent to each person appearing of record as an owner of property that may be considered to abut the Millstone property, as well as a list of property owners to whom such notice was sent and a sample notice letter.

III. REQUIRED INFORMATION

A. Detailed Description of ISFSI

1. Background

On March 22, 1974, the Council, then known as the Power Facility Evaluation Council, issued a Certificate of Environmental Compatibility and Public Need for the construction of the Millstone Unit 3 nuclear power generating facility. The construction and operation of Millstone Unit 1 and initiation of construction of Millstone Unit 2 predated the establishment of the Council and its authority over power generating facilities in Connecticut. Millstone Unit 1 permanently ceased operations in 1998. Millstone Units 2 and 3 currently operate with a combined electric generating capacity of approximately 2,020 megawatts.

2. Millstone Property

Millstone is located on a 520-acre parcel south of Rope Ferry Road (Connecticut Route 156) in the southwest portion of the Town of Waterford, Connecticut (the "Property"). The Property is bounded on the north by Rope Ferry Road (Connecticut Route 156), on the west by Niantic Bay, on the south by Long Island Sound and Jordan Cove, and on the east by Gardiner's Wood Road. The Property is traversed by an Amtrak rail line.

The Millstone power generating units, turbine buildings, and associated support buildings are located in the southernmost portion of the Property within a 49.3-acre area encompassed by physical barriers and to which access is controlled (the "Protected Area"). The Protected Area was established and is maintained in accordance with requirements established by the NRC. Physical security measures, including perimeter intrusion detection systems, physical barriers, isolation zones and security lighting, are used to establish and maintain the Protected Area. Following the events of September 11, 2001, the NRC issued orders imposing further security

requirements for nuclear power plants nationwide. Additional security measures, which comply with these recent orders, have been and continue to be implemented at Millstone.

Portions of the Property, outside of the Protected Area, are developed with employee parking areas, office and storage buildings, training facilities, an electric switchyard and a transmission line corridor extending from the switchyard to the north. In the northeast portion of the Property, DNC maintains baseball, soccer and football fields used by the Town of Waterford. All remaining areas of the Property are maintained as open space. To accommodate security considerations, a nature trail located south of Millstone's main access point off Route 156 is now closed to public access.

3. Management of Spent Nuclear Fuel

As part of the operation of Millstone, Units 2 and 3 are refueled on a periodic basis, presently at intervals of approximately 18 months. During refueling, the power generating unit is taken off-line, and fuel assemblies are removed from the reactor vessel and placed into the unit's spent fuel pool for cooling and storage. Each of the three Millstone units maintains a separate spent fuel pool. During refueling, the fuel assemblies that have been completely utilized in prior fuel cycles and discharged (that is, "spent"), are replaced with new or "fresh" fuel. Approximately one-third of the reactor core is replaced with fresh fuel during each refueling.

Spent fuel management is an integral part of nuclear power operations. Consistent with the federal Nuclear Waste Policy Act, DNC has been exploring the available options to store spent fuel on an interim basis at Millstone until the U.S. Department of Energy accepts the fuel for permanent disposal. One option in use at approximately 25 nuclear reactor sites in the United States is to utilize an on-site, dry storage system for the interim storage of spent fuel. Dry storage systems are currently planned for use at 15 additional nuclear reactor sites. Dry storage allows spent fuel that has already been cooled in a spent fuel pool for a minimum of five years,

to be stored in a welded, leak-tight, steel dry-shielded canister ("DSC"), within a reinforced concrete storage module. DNC has determined that there are significant operational advantages of dry storage when compared to other options involving high density storage of spent fuel in the existing spent fuel pools. *Only spent fuel from the Millstone units will be stored in the Millstone ISFSI.*

In planning for spent fuel management and in evaluating when additional storage will be needed, one operational objective is to maintain sufficient capacity in a unit's spent fuel pool to store all fuel in the reactor core as well as the spent fuel that has been permanently removed from the reactor during past refuelings. This practice of assuring that there is always adequate open space in the spent fuel storage pools for the fuel in the reactor core is referred to as maintaining "full core reserve" capability. A dry storage system would allow DNC to remove fuel that has cooled for at least five years, from the Millstone spent fuel pools, thereby freeing space in the spent fuel pools to both accommodate spent fuel from more recent refuelings and to maintain full core reserve capability into the future.

4. Dry Storage Proposal for Millstone

Currently, DNC stores spent fuel from each of the Millstone units in the spent fuel pool for that unit. The storage of spent fuel is incidental to the principal use of the Property for generation of electricity. The ISFSI is simply an alternative method of storing spent fuel in support of Millstone's existing power generating operations and will not change the existing use of the Property. As discussed above, the ISFSI is intended to be used for the interim storage of spent fuel at Millstone until the U.S. Department of Energy fulfills its statutory and contractual obligations and accepts the fuel for permanent disposal. The ISFSI is not intended to be a long-term repository for the storage of spent fuel.

DNC has selected Transnuclear's[2] Standardized NUHOMS®, NUclear HOrizontal Modular Storage, dry storage system for use at Millstone. The Millstone ISFSI will consist of a series of reinforced concrete horizontal storage modules ("HSMs") approximately 8'6" wide, 18'6" high (plus a 2'1" exhaust vent) and 20' long. In the center of each HSM is a hollow cylindrical sleeve within which a single DSC is placed. (Attachment 5, Dwg.-10).

Each DSC has a nominal diameter of 67 inches and is currently capable of holding 32 pressurized water reactor spent fuel assemblies or 61 boiling water reactor spent fuel assemblies.[3] The fuel transfer and storage process begins when the empty DSC is loaded into a shielded transfer cask. A seal is then placed in the space between the DSC and transfer cask and the space is filled with clean water. The DSC and the transfer cask are then lowered into the spent fuel pool. The DSC is loaded with spent fuel underwater in the spent fuel pool. Once loaded, a shield plug is placed on the DSC. The transfer cask, with the loaded DSC, is then removed from the spent fuel pool. After removal from the pool, a second lid is placed on the DSC, the water inside the DSC is drained and the second lid is welded in place. The DSC and its contents are then vacuum dried. The DSC is then filled with helium before the third and final DSC lid is welded in place. After bolting on the transfer cask lid, the transfer cask is transported to the ISFSI where the DSC is placed into the empty HSM. The HSM opening is then closed

[2] Transnuclear ("TN") was incorporated in 1965 and is a subsidiary of COGEMA, and part of the AREVA Group, the largest nuclear company in the world. TN and its parent COGEMA own and operate a fleet of over 2,000 fuel transport casks. In 2002, the company organized over 3,000 multimodal shipments of nuclear materials with up to 70 shipments occurring simultaneously. In the United States, more spent fuel is dry stored in TN supplied systems than all other systems combined. At the end of 2002, TN supplied systems stored over 5,200 pressurized water reactor ("PWR") assemblies, accounting for 67% of all PWR assemblies currently in dry storage. The NUHOMS® System has completed over 200 safe canister transfers in the last 15 years. A total of 387 systems have been ordered to date.

[3] Millstone Units 2 and 3 are both pressurized water reactors. Millstone Unit 1 is a boiling water reactor.

with a bolted cover and sealed. The entire fuel loading and transport process will be closely monitored by DNC operations personnel at each step of the process.

The ISFSI Site was selected following an evaluation of possible locations both inside the existing Protected Area and elsewhere on the Millstone Property. (See Section III.A.8 below). The SAP parking lot is located directly beneath the Units 1, 2 and 3 transmission lines extending from the power generating units to the electric switchyard to the north. The ISFSI Site will be located in the easternmost portion of the SAP parking lot, beneath the Unit 1 transmission lines. Because OSHA imposes certain restrictions on construction activities below energized transmission lines, activity beneath the energized Units 2 and 3 transmission lines will be limited to equipment storage in the Equipment Laydown Area.

The ISFSI Site has been designed to accommodate a total of 135 HSMs. These 135 HSMs, used in conjunction with the existing spent fuel pools would provide sufficient spent fuel storage for operation of Millstone Units 2 and 3 through the end of the units' license periods including license renewal,[4] and, if necessary, the storage of spent fuel to support changes in use of the shutdown Millstone Unit 1. The ISFSI, however, will be developed in a phased approach on an as-needed basis. The first phase of the project will involve site regrading and preparation, installation of temporary and permanent stormwater drainage structures, and the construction of a concrete pad that can accommodate the installation of 20 HSMs. Only 19 HSMs would be installed in this initial (or first) phase of construction. The first 10 HSMs will be installed and loaded beginning in late 2004. Based on DNC's projected refueling schedule, an additional 9 HSMs are planned to be installed through 2013. Eighteen (18) of the 19 HSMs would be used

[4] The NRC operating licenses are due to expire in 2015 for Millstone Unit 2 and 2025 for Millstone Unit 3. DNC anticipates applying for and receiving license extensions of 20 years for each unit, extending the operating life of Unit 2 to 2035 and Unit 3 to 2045.

to satisfy DNC's spent fuel storage needs for Millstone Unit 2. One empty HSM (the 19th HSM) is placed adjacent to the last loaded HSM for radiological shielding purposes. Additional modules will be added only on an as-needed basis. A complete set of project site plans and details are included in Attachment 5.

5. Maintenance and Operation

The NUHOMS® system is a passive installation without moving equipment or components. There are no operating motors, fans or other similar devices associated with the HSMs. Once fuel transfer is completed and a security system operational, the ISFSI requires modest operation and maintenance efforts. Surveillance of the HSM exterior air inlets and outlets and temperature monitoring of the HSMs will be performed daily. Routine maintenance of infrastructure (storm drainage systems, concrete pads, etc.) will be performed on an as-needed basis. No new full-time staff will be required to operate or maintain the ISFSI.

6. U.S. Nuclear Regulatory Commission - General License

NRC regulations (10 CFR Part 72) establish licensing requirements for the interim storage of spent nuclear fuel and high-level radioactive waste in an ISFSI. The first ISFSI licensed by the NRC was in 1986 at Dominion's Surry Power Station in Virginia. Currently, dry storage of spent fuel is in use at 25 nuclear sites across the United States. Dry storage systems are currently planned for use at 15 additional nuclear sites.

Through rulemaking, the NRC has issued a general license for the storage of spent fuel in an ISFSI located at any power reactor site licensed by the NRC under 10 CFR Part 50 if the ISFSI utilizes a dry system that has been previously certified by the NRC. This general license is codified at 10 CFR § 72.210 of NRC regulations. NRC regulations (10 CFR § 72.212) contain specific conditions for a general license issued under Section 72.210. Among these conditions are requirements that the general license be limited to:

(a)(1) ... spent fuel which the general licensee is authorized to possess at the site under the specific license for the site.

(a)(2) ... storage of spent fuel in casks approved under the provisions of this part.

DNC will meet the conditions of Section 72.212 and therefore will construct and operate the ISFSI under this general license granted by the NRC. Accordingly, no further application to the NRC is required or necessary to authorize an ISFSI at Millstone. DNC will utilize the Standardized NUHOMS® System for the Millstone ISFSI. As required by 10 CFR § 72.212(a)(2), the NUHOMS® system has been previously certified for use by the NRC.

Specifically, the NRC has approved and issued a Certificate of Compliance to Transnuclear for the Standardized NUHOMS® System. NRC regulations at 10 CFR § 72.214 list the casks approved for storage of spent fuel under the conditions specified in their Certificates of Compliance; the NUHOMS System is listed as Certificate Number 1004. Through this certificate, the NRC has certified that the storage design meets the applicable safety standards set forth in 10 CFR Part 72, Subpart L.

The NUHOMS® system is a passive installation without moving equipment or components, designed to provide shielding and safe confinement of spent fuel for a range of postulated accident conditions and natural phenomena. The NUHOMS® system is described in detail in the Transnuclear Final Safety Analysis Report ("FSAR"). This FSAR forms the basis for the NRC certification of the NUHOMS® system and the analyses that DNC must perform in order to comply with the provisions of 10 CFR Part 72, Subpart K.

Pursuant to the general license, DNC must meet the requirements of 10 CFR §§ 72.104 and 72.212 and other applicable 10 CFR Part 72, Subpart K provisions. In particular, 10 CFR § 72.212(b) requires the general licensee (that is, DNC) to perform a number of written, technical

evaluations and conduct other reviews prior to the use of the ISFSI. These evaluations and reviews must:

- Demonstrate that the conditions set forth in the Certificate of Compliance for the dry storage system being utilized have been met;
- Demonstrate that storage pads and related areas have been designed to adequately support the static load of the casks;
- Confirm that the off-site dose limitations of 10 CFR § 72.104 are satisfied;
- Verify that reactor site parameters are enveloped by the NRC's prior review of the selected ISFSI system and the Certificate of Compliance;
- Confirm that activities related to spent fuel storage under the general license will not involve any change in the Millstone Part 50 facility license or Technical Specifications; and
- Verify that the storage of spent fuel in an ISFSI will not decrease the effectiveness of other plant programs, such as the quality assurance, emergency planning, and security programs.

In addition, DNC will develop written cask loading procedures as required by the NRC. Pursuant to 10 CFR § 72.212(b)(1), DNC will notify the NRC at least 90 days prior to the first storage of spent fuel under the general license. The technical reviews that DNC is required to perform are expected to be reviewed by the NRC prior to initiation of spent fuel loading activities. Further, the NRC's practice is to observe initial fuel loading activities.

7. Security and Emergency Services

Once the ISFSI is constructed, but prior to the initiation of fuel loading activities, the existing Protected Area, including all security monitoring systems, will be extended to

encompass the ISFSI Site and Equipment Laydown Area. As a result, all spent fuel transfer activities will be conducted within the Protected Area. Security and utility systems, such as lighting and power, will be constructed during the initial phase of site development. Security measures will be implemented in accordance with the requirements of the existing Millstone physical security plan and applicable NRC regulations.

As mentioned in Section III.A.6 above, in accordance with NRC regulations, a review of the Millstone physical security plan, radiological emergency plan, quality assurance program, training program, and radiation protection program is underway and will identify any modifications to these plans and programs that may be necessary owing to the ISFSI. As required by the NRC, these reviews will be completed and any necessary modifications to the plans and programs implemented prior to the operation of the ISFSI.

8. Site Selection Process

Conn. Gen. Stat. § 16-50*l*(a) requires the submission of information that describes the justification for the site selected including a comparison with alternative site locations considered. An explanation of DNC's site selection process can be found in the Site Selection Summary included as a part of Attachment 6.

B. Environmental Effects

1. Wetlands and Watercourses

To assess the impact of the ISFSI project on wetlands and watercourses, DNC consultants completed an Inland Wetlands and Watercourses Delineation Report and Impact Assessment ("Wetlands Report") for the southerly portion of the Property. (See Attachment 7). The ISFSI Site, Equipment Laydown Area and the area in which soil will be placed during construction (the "Soil Placement Area") are located outside the limits of existing tidal and inland wetlands and

watercourses on the Property; outside of the Town designated upland review areas;[5] and, outside identified flood hazard areas. The closest wetland or watercourse is located approximately 150 feet to the east of the ISFSI Site. This wetland area is associated with a drainage outfall and swale to the east of the existing railroad spur line. (See Attachment 7 - Figure No. 2 - Outlet DSN 011). This area will be impacted by construction activity associated with the installation of a new drainage outlet at this location. The existing stormwater culvert will be replaced with a new pipe and head-wall and permanent erosion controls measures. These impacts will be temporary but will result in long-term improvements to the existing drainage swale. Additional wetlands have been identified to the north of Building 532 and the existing access road. Limited drainage improvements, south of the access road and east of Building 532, will encroach into the Town's 100-foot upland review area but will not directly impact any wetland or watercourse. Additional wetlands and watercourses in the southerly portion of the Property include a fresh water pond approximately 200 feet to the east of the ISFSI Site and wetlands associated with on-site drainage features to the north of the ISFSI Site. The Wetlands Report reaches a number of conclusions including:

- The development of the ISFSI Site will have no direct permanent impacts on wetland or watercourse areas and will result in no net loss of wetlands or watercourses on the Property;
- The ISFSI project will not result in any changes or impacts to the existing fresh water pond or any of its adjacent wetland areas;

[5] The Town of Waterford Inland Wetlands and Watercourses ("IWW") Regulations define the upland review area as non-wetland areas within 100 feet of a wetland boundary. Activity within this upland review area may be determined to be a regulated activity.

- Wetland impacts associated with the reconstruction of the drainage outlet (DSN 011) east of the railroad spur will be temporary and will result in long-term improvements at the drainage outlet;
- The ISFSI Site is located outside the Town of Waterford's upland review area - an area within 100 feet of a wetland or watercourse boundary; and
- Adequate erosion and sedimentation controls can be installed and monitored throughout the construction period to avoid construction related impacts.

2. Stormwater Drainage

DNC's consultants also performed hydrologic and hydraulic analyses and developed a drainage design for the ISFSI project. The complete Drainage Report is included as Attachment 8.

As described above, the ISFSI Site will be located on the portion of the SAP parking lot, east of the Millstone power generating units. Stormwater runoff from the SAP parking lot is currently conveyed as sheet flow until intercepted by several existing catch basins. Each catch basin is connected to an existing 30" trunk line running beneath the SAP Parking Lot. This 30" trunk line discharges through an existing stormwater outlet (DSN 011) east of the ISFSI Site. Total surface runoff from the Property will not increase substantially (less than 5%) as a result of the ISFSI project. Peak stormwater runoff rates and velocity will not increase appreciably and will not materially increase water surface profiles or flooding potential of those areas that currently receive stormwater discharge from the Property.

As part of the ISFSI project certain modifications to the existing stormwater drainage system will be required. These modifications include:

- the rerouting of a portion of the 30" stormwater drainage line, from a point near Building 532, to run parallel to the existing access road and around the northerly and easterly side of the ISFSI Site. This new drainage line will connect to a new stormwater culvert east of the ISFSI Site;
- the installation of new stormwater drainage structures including catch basins and trench drains within the ISFSI Site and Equipment Laydown Area. Each of these drainage structures will be connected to a piping system located south of the ISFSI Site, connected to the stormwater culvert east of the ISFSI Site;
- the replacement of the existing stormwater culvert extending from the area east of the ISFSI Site, under the access road and rail spur; and
- the replacement of an existing outlet structure east of the railroad spur line with permanent erosion control measures.

No stormwater drainage improvements are proposed or necessary in the Soil Placement Area.

3. Site Ecology

As discussed in detail in the Environmental Site Assessment ("ESA") prepared for the ISFSI project and included in Attachment 9 of this filing, the ISFSI and associated site improvements will have no significant adverse effect on ecological resources at the Property. The ESA identified and evaluated vegetative communities and significant terrestrial and marine biological resources that may exist on the Property and be affected by the development of the ISFSI. The conclusions of the ESA, as they relate to on-site ecological resources, can be summarized as follows:

- The ISFSI Site, Equipment Laydown Area and Soil Placement Area are located on previously disturbed upland areas with no special habitat value.
- The ISFSI Site is adequately separated from coastal resources, tidal waters, marine habitats and other marine resources.
- Site plans for the ISFSI project include sufficient erosion and sedimentation control measures to avoid impacting existing ecological resources on the Property.
- There are no state or federal threatened, endangered or special concern species known to occur at the ISFSI Site.

4. Noise

The construction and operation of the Millstone ISFSI will have little or no impact on ambient noise levels beyond the boundaries of the Property.

Noise associated with the construction of the ISFSI will occur on-site for a short period of time, approximately three months, during the initial phases of construction. Construction noise will stem from the operation of construction equipment and truck traffic. Construction activity will be limited to daytime hours. The closest off-site noise receptor is a residential area approximately 1,700 feet to the northeast of the ISFSI Site. Changes in topography and the existence of dense vegetation between the ISFSI Site and this residential area will significantly reduce, if not eliminate, noise impacts associated with construction activity.

As described in Sections III.A.5 and 6 above, the NUHOMS system is a passive system for storing spent fuel. There are no operating motors, fans or other similar devices associated with the HSMs. The only noise resulting from the operation of the ISFSI is that associated with the transport and loading operation. (See Attachment 9, Section 4.10).

5. Historic and Archeological Resources

On March 18, 2003, DNC requested that the Connecticut Historical Commission/State Historic Preservation Officer ("SHPO") review the proposed ISFSI project. In a letter dated March 24, 2003, the SHPO, John W. Shannahan, determined that the development of the ISFSI will have **no effect** on state or federal historic or archeological resources listed on or eligible for the National Register of Historic Places. A copy of DNC's letter to the SHPO and the SHPO's response are included behind Attachment 10.

6. Visibility

DNC has assessed the visual impact of the ISFSI on publicly accessible areas around the Property. A copy of this analysis is included as Attachment 11.

The ISFSI Site will be located adjacent to the existing Millstone generating units in the southernmost portion of the Property. As a part of this analysis, DNC has taken photographs from fourteen different locations surrounding the proposed ISFSI Site. Eleven of the fourteen photographs were taken from areas within Jordan Cove, Long Island Sound and Niantic Bay. These bodies of water surround the Property on three sides and are active recreational areas. Additional photographs were taken from residential property, northwest of the ISFSI Site (Photograph No. 12); from an area along the Amtrak right-of-way, north of the ISFSI Site (Photograph No. 13); and from the closest residential neighborhood, northeast of the ISFSI Site (Photograph No. 14).

As indicated by these photographs, the 20'-7" tall HSMs used in the ISFSI will have little or no visual impact on surrounding, publicly accessible areas. From most locations surrounding the ISFSI Site, views will be obstructed by changes in topography, existing vegetation (mature trees) and the existing power generating facility itself. The outline of the storage modules may be visible, through the trees, from locations to the east, southeast and northeast, but only during

winter months. This evidence supports a finding that the proposed ISFSI will have little or no visual impact on adjacent publicly accessible areas.

7. Recreational

The closest recreational resources identified in the ESA are those located in the northeast corner of the Property. As described above, Millstone currently allows the Town of Waterford to use a portion of the Property for recreational purposes. The Town of Waterford has developed baseball, soccer and football fields in this area. The use of these fields by the Town of Waterford will not be affected by the ISFSI project. The existing Millstone Nature Trail is a recreational area that has been closed to the public pursuant to NRC Security Orders issued since September 11, 2001.

Other recreational resources located in the vicinity of Millstone include Niantic Bay, Long Island Sound, Jordan's Cove, Harkness Memorial State Park and the Dr. William A. Niering Natural Area Preserve. A summary of surrounding recreational resources is included in the ESA (Attachment 9). None of these recreational resources will be impacted by the construction or operation of the ISFSI.

8. Public Drinking Water Supply

Millstone is supplied with potable water through the City of New London's public water supply system. This system provides water to most of the Town of Waterford. Operation of the ISFSI does not require access to potable water, or any water supply. The existing public drinking water supply system at Millstone will not be affected by the ISFSI.

9. Traffic

The construction of the ISFSI will have only minor effects on local vehicular traffic. Construction related impacts will be limited to construction worker vehicle trips and truck traffic associated with the import of soil, concrete and related construction materials. Truck traffic associated with the ISFSI project will be required to use designated truck routes and adhere to Department of Transportation regulations regarding load weight. Certain materials (e.g. HSMs) are expected to be transported to the site by barge, further reducing the traffic burden on local roads.

The operation of the ISFSI will have no impact on local traffic at all. As described above, all fuel loading processes will occur within the expanded Protected Area. No on- or off-site traffic will be impacted by this process. A more detailed discussion regarding transportation and traffic issues associated with the ISFSI project is included in the ESA.

10. State and Local Land Use Controls

a. Connecticut Conservation and Development Policies Plan

The Conservation and Development Policies Plan for Connecticut (1998-2003) ("C&D Plan"), issued by the Office of Policy and Management, does not specifically reference dry storage systems, or any spent fuel storage system for that matter, related to existing nuclear generating facilities in the State. The C&D Plan does recognize, however, that spent nuclear fuel will need to remain on site at Millstone and other active and inactive nuclear power generating facilities in the State until the federal government is able to meet its obligation of providing a national repository for this material. (C&D Plan p. 24).

b. Town of Waterford Plan of Preservation, Conservation & Development

According to the Town of Waterford's 1998 Plan of Preservation, Conservation & Development, the Property is designated a public utility use. The introduction of an ISFSI at Millstone does not, in any way, affect the Town's designation of the Property. In fact, the introduction of an ISFSI at Millstone will allow for the continued use of the Property for power generation through the end of the Millstone Units 2 and 3 license periods, including license renewal.

c. Town of Waterford Zoning Regulations

The southerly portion of the Property, south of the Amtrak rail line is zoned I-G, General Industrial District. A small portion of the Property, south of the Amtrak rail line and adjacent to the Gardiner's Wood Road neighborhood is zoned OS, Open Space District. The portion of the Property north of the Amtrak rail line is zoned IP-1, General Industrial Park District.

Pursuant to Section 11.1.7 of the Zoning Regulations, "Public Utility generating plants, [and] uses and facilities appurtenant thereto" (e.g., the ISFSI) are permitted in the I-G district. Each of Millstone's generating units is located in the I-G portion of the Property.

Pursuant to Section 13.1.6, "Public Utility buildings, substations, storage yards and appurtenances" are permitted in the IP-1 district. Millstone's training facilities and related office buildings in the northerly portion of the Property are located in the IP-1 portion of the Property.

d. Millstone Property Management Guidelines

On May 20, 1985, the Waterford Planning and Zoning Commission ("Commission") adopted Property Management Guidelines ("Management Guidelines") for the Millstone Property. These Management Guidelines establish a set of general criteria for the protection of coastal resources and the establishment of land use priorities that the Commission could use in examining future location approvals.

i. Protection of Coastal Resources

The ISFSI has been designed to minimize intrusion into coastal and other natural resources on the Property. The ISFSI will have no impact on tidal or inland wetlands on the Property. Certain drainage improvements associated with the ISFSI project will result in temporary wetland impacts near the drainage outlet east of the ISFSI Site while other drainage improvements will encroach into the municipal upland review area near Building 532. These impacts have been evaluated and were found to be insignificant. (See Attachments 7 and 9). The ISFSI Site is located outside of the 100-year flood plain and will have no effect on the natural shorefront and associated estuarine resources. (See Attachment 9, Sections 4.3 through 4.5). The ISFSI does not encroach into the forty-foot wide buffer along the Property boundary and will not impact the existing ball fields in the northeast corner of the Property.

ii. Land Use Priorities

The ISFSI is a use directly associated with the continuing operation of Millstone and the storage of spent fuel is incidental to the principal use of the Property for generation of electricity. While proximity to the power generating units is not mandatory, the ISFSI does require direct access to the plant and its spent fuel pools. Of the alternative sites investigated, the location of

the ISFSI on the SAP parking lot was determined to be the preferred location. (See Attachment 6).

The ISFSI project is therefore consistent with the Town's Management Guidelines.

11. Existing and Future Development

The Millstone power generating units, turbine buildings, and associated support buildings are located in the southernmost portion of the Property within the Protected Area. The Property outside of the Protected Area is developed with employee parking areas, office and storage buildings, training facilities, an electric switchyard and a transmission line corridor extending from the switchyard to the north. In the northeast portion of the Property, DNC maintains baseball, soccer and football fields used by the Town of Waterford. To accommodate security considerations, a nature trail located south of Millstone's main access point off Route 156 has now been closed to the public. All future development proposals at Millstone will be subject to appropriate regulatory approval processes, in accordance with State statutes and local regulations.

12. Adjacent Land Uses

The Property is bounded on the west by Niantic Bay, on the south by Long Island Sound and Jordan Cove, on the east by Gardiner's Wood Road and on the north by Rope Ferry Road (Connecticut Route 156). The nearest residential area is located approximately 1,700 feet to the northeast of the ISFSI Site. Additional residential areas exist as close as approximately 2,700 feet to the northwest of the ISFSI Site.

13. Mitigation Measures to Minimize Effects

The ISFSI project has been specifically designed to include various measures to mitigate or avoid adverse impacts both to the environment on the Property and to the surrounding community. Mitigation measures include:

- the use of specific construction techniques and methods designed to limit the potential for off-site impacts and minimize on-site impacts;
- use of best management practices in the design and operation of a stormwater drainage system;
- incorporation of appropriate soil erosion and sedimentation control as to avoid impacts to nearby wetlands and watercourses;
- the incorporation, for radiological shielding purposes, of additional reinforced concrete ranging in thickness from two and one half to three feet in the roof sections of the HSMs; and
- adherence to strict regulatory requirements governing the operation of the ISFSI to protect public health and safety.

A detailed discussion of mitigation measures incorporated into the ISFSI project is included in Section 6.0 of the ESA (Attachment 9).

C. Consultations with Federal, State and Local Officials

1. U.S. Nuclear Regulatory Commission

At a public meeting held on December 12, 2002 at the NRC's King of Prussia office, DNC presented its plans to construct and operate the ISFSI at Millstone. Subsequently, the NRC established a docket for future communications regarding the ISFSI project. As set forth in Section III.A.6 of this filing, DNC intends to use the Transnuclear Standardized NUHOMS® System under a general license issued by the NRC pursuant to 10 CFR § 72.210. As indicated in 10 CFR § 72.214, the NRC has approved and issued a Certificate of Compliance (Certificate Number 1004) for the NUHOMS® System for the storage of spent fuel. Subject to confirmation that the NUHOMS® System to be utilized at Millstone will satisfy the conditions of the general license

described in 10 CFR § 72.212, no additional licensing or certification is required from the NRC. However, and as discussed in Section III.A.6 above, notification to the NRC is required and construction and operation of the ISFSI will be subject to continuing NRC oversight, including applicable NRC inspection programs.

2. Connecticut Department of Environmental Protection

Attachment 12 contains a copy of DNC's request for review of the proposed ISFSI project by the Department of Environmental Protection ("DEP"), Environmental and Geographic Information Center, and the DEP's response that no extant populations of Federal or State Endangered or Threatened or Special Concern species will be impacted by the ISFSI project. The ESA, included as a part of this filing, has reached the same conclusion. (See Attachment 9).

3. Connecticut Historical Commission/State Historic Preservation Officer

As discussed in Section III.B.5 above, Attachment 10 includes DNC's request for review and comment by the SHPO and the SHPO's determination that the proposed ISFSI project will have "no effect" on historic or archeological resources listed on or eligible for the National Register of Historic Places.

4. Municipal Consultation - Town of Waterford

Pursuant to the provisions of Conn. Gen. Stat. Section 16-50x(d), DNC participated in the local review process involving the Waterford Planning and Zoning Commission and Conservation Commission. As a part of this process, technical information was provided to Town of Waterford officials on June 17, 2003 and was formally received by the Planning and Zoning Commission on June 23, 2003. DNC representatives formally presented the ISFSI project to the Waterford Planning and Zoning Commission and Conservation Commission at a joint meeting on August 5, 2003. At that meeting, DNC representatives responded to questions from the Town commissioners and heard comments from members of the public in attendance. On August 18, 2003, the Waterford Planning

and Zoning Commission issued an "Order Pursuant to 16-50x(d)". This order was transmitted to the First Selectman on August 21, 2003. Comments prepared by the Waterford Conservation Commission, for the Millstone ISFSI were transmitted to the First Selectman on August 15, 2003. The Planning and Zoning Commission's order and the Conservation Commission's comments (collectively referred to as the "Location Approval") are included as a part of this filing as Attachment 13. The Location Approval includes a request that the Council impose certain conditions on the proposed modification. These conditions relate to the use of the ISFSI, the future use of the Property, reporting obligations, the location and size of the ISFSI and the physical improvements required for construction and installation of the ISFSI.

a. Use

Condition 1 of the Location Approval states that "[t]he permanent storage facility is not on this site." DNC agrees that the ISFSI should not be the permanent storage facility for spent fuel. The Location Approval also states that the ISFSI should be removed "prior to or as part of the plant decommissioning." (See Location Approval, Condition 3). As discussed above, the ISFSI is intended to be used for the *interim* storage of spent fuel at Millstone until the U.S. Department of Energy fulfills its statutory and contractual obligations and accepts the fuel for permanent disposal. The ISFSI is not intended to be a long-term repository. Once the federal government begins accepting spent nuclear fuel for disposal, DNC anticipates that the spent fuel will be removed as quickly as possible in accordance with the schedule established by the federal government.

Condition 5 of the Location Approval states that "[t]emporary dry cask storage will be restricted to waste generated on site." As discussed in Section III.A.3 above, only spent fuel from the Millstone units will be stored in the Millstone ISFSI.

b. Future Use of Property

Condition 6 of the Location Approval states that the "temporary use will not preclude the future use of the facility for business, water dependent or industrial use(s) as permitted in the Zoning Regulations of the Town of Waterford." The construction and operation of the ISFSI on the former SAP parking lot would not impact these future uses of the Property.

c. Reporting Obligations

Condition 8 of the Location Approval requests that DNC submit a written report to the Commission at least every five years "on the status of construction, module installation, continued need, changes in plans for off site disposal and other information that would keep the commission informed on changes impacting the duration of the storage." DNC agrees with the Commission that it is important to keep open lines of communication with the Town of Waterford. Currently, DNC provides the Town of Waterford with informal reports on the status of Millstone's operations. DNC will agree to formalize this process and provide the Town of Waterford with *annual* reports on the status of Millstone's operations, including the information requested on the ISFSI, as well as information on the status of the federal repository and a 5-year projection of DNC's anticipated spent fuel storage needs.

In its comments, the Conservation Commission requests the preparation and implementation of a groundwater and surface water monitoring plan and the submission of the results of such monitoring for review by the Town of Waterford. The Conservation Commission also requests a monitoring program for the ISFSI itself including parameters to be tested, methods of testing, frequency of monitoring, acceptable limits and tolerances, and threshold detection limits and requests the results of this program be presented to the Town of Waterford for review. DNC already operates under rigorous monitoring and reporting requirements

imposed by both the NRC and DEP, and will continue to do so following the development of the ISFSI.

d. Location

In its comments, which are incorporated as Condition 9 in the Location Approval, the Conservation Commission states that "[t]he location of the HSM modules on the selected ISFSI site should be restricted to the western edge of the proposed pad proximal to the existing structure and the existing perimeter security fence." As discussed in Section III.A.4 above, the SAP parking lot is located directly beneath the Units 1, 2 and 3 transmission lines extending from the power generating units to the electric switchyard to the north. The location proposed by the Conservation Commission would place the ISFSI directly under the energized Unit 2 transmission lines. OSHA imposes certain restrictions on construction activities under these energized lines. Furthermore, the construction of the ISFSI at the location suggested by the Conservation Commission would also impact underground connections and circuits in the area, which connect the generating units to the transmission switchyard. Disruption of these areas could jeopardize the connection between the power generating units and the transmission grid.

e. Size

The Conservation Commission also states that "[t]he size of the concrete pad and expanded security area should be restricted to that area necessary to store 10 modules by 2005 and 19 total modules by 2013." Given the construction and engineering constraints discussed above, the ISFSI Site should remain in the easternmost portion of the SAP parking lot. If the Conservation Commission's restriction on the size of the ISFSI Site is imposed at the location proposed by DNC, a separate and distinct protected area, only 200 feet from the existing security Protected Area, would need to be created for the ISFSI. This requirement would create technical

and operational difficulties and potential security concerns. This requirement would also leave a portion of the haul path for the spent nuclear fuel outside of any protected area. Furthermore, if the ISFSI Site has to be expanded in the future to accommodate additional modules on an as-needed basis, the security fence, either of the existing Protected Area or the new protected area, would need to be moved each time to accommodate this expansion.

The Location Approval further states that the ISFSI proposal and extension of the Protected Area should be reduced to the area required to accommodate the first phase of the project with dry cask storage of up to 18 modules plus one empty module. According to the Location Approval, the Planning and Zoning Commission believes this restriction is appropriate because "this quantity has been determined to be necessary for the continued operation of unit 2 through its current license period." Condition 4 of the Location Approval states that "[t]emporary dry cask storage is not needed to accommodate spent fuel from Unit 1 or 3." However, as discussed in Section III.A.4 above, the ISFSI Site has been designed to accommodate a total of 135 HSMs because this number of HSMs, *used in conjunction with the existing spent fuel pools*, would provide sufficient spent fuel storage to allow for full core reserve capability for Millstone Units 2 *and* 3 through the end of the units' license periods *including* license renewal,[6] and, if necessary, the storage of spent fuel to support changes in use of the shutdown Millstone Unit 1.

As discussed in Section III.A.4 above, the ISFSI will be developed in a phased approach on as-needed basis. However, in order to prepare the entire ISFSI Site, the first phase of the project will involve site regrading and preparation, installation of temporary and permanent stormwater drainage structures, and the construction of a concrete pad that can accommodate the installation of 20 HSMs. By preparing the entire ISFSI Site, DNC would only need to disturb

[6] DNC anticipates applying for and receiving license extensions of 20 years for Millstone Units 2 and 3, extending the operating life of Unit 2 to 2035 and Unit 3 to 2045.

the area once and then all operational and security controls would be in place. Furthermore, the installation of temporary and permanent stormwater drainage structures would only need to occur once. In addition, the construction of the pad for only the first 20 HSMs and the addition of new modules only on an as-needed basis will lessen any potential impacts. Lastly, by allowing DNC to prepare the entire site, the security fence encompassing the current Protected Area would only need to be moved once.

f. Physical Improvements

Condition 7 of the Location Approval states that any other physical improvements or outdoor use of land required to move the storage unit components onto the site should be submitted to the Planning and Zoning Commission for review. DNC does not anticipate having to make any additional physical improvements in order to move the storage unit components onto the site.

5. Municipal Consultation - Town of East Lyme

Pursuant to the requirements of Conn. Gen. Stat. §§ 16-50*l*(b)(1) and 16-50*l*(e) and because a portion of the Millstone property is located within 2,500 feet of the East Lyme municipal boundary, DNC's pre-application consultation process included the Town of East Lyme. On June 17, 2003, following its meeting with Waterford officials, DNC representatives met with the East Lyme First Selectman, Wayne Fraser, to discuss the ISFSI project, the Siting Council process and the role of the Town of East Lyme. Mr. Fraser was also provided with a copy of the technical information prepared for the ISFSI project. More recently, DNC notified Mr. Fraser of the date of the joint meeting of the Waterford Planning and Zoning and Conservation Commissions and invited him to attend that meeting.

6. Public Information Sessions

Although not required by the Town of Waterford or the Siting Council's statutes or regulations, DNC held two public information sessions at Millstone on the ISFSI proposal. DNC sent out over 400 invitations to its closest neighbors and local civic and political leaders and advertised the information sessions in the *New London Day*. At each session, DNC displayed detailed information on the ISFSI, described the need for the facility and discussed how dry storage works. Attendees were shown a model of the proposed ISFSI and a video presentation of the ISFSI loading process. These sessions were held on Thursday, July 31, 2003, from 5:30 p.m. to 8:00 p.m., and Saturday, August 2, 2003, from 10:00 a.m. to 1:00 p.m.

D. Estimated Cost and Schedule

1. Construction Costs

DNC estimates that the cost of construction of Phase I of the ISFSI project will be approximately $24 million. This estimate includes costs for site work, engineering and material as well as the cost of the 19 HSMs and 18 DSCs. Following Phase I, DNC will add HSMs only on an as-needed basis. The costs associated with the full build-out of the ISFSI, if necessary, including site work, engineering and materials as well as an additional 116 HSMs and 117 DSCs is estimated to be approximately $95 million.

2. Construction Schedule

Site preparation and engineering for Phase I would commence immediately following the Council's approval of this modification request and the associated D&M Plan. It is anticipated that site preparation work and the complete installation of Phase I site improvements will be completed in the third quarter of 2004. DNC expects to receive delivery of 10 of the first 19 HSMs in the fourth quarter of 2004, and intends to begin transferring fuel to the ISFSI in November 2004.

IV. CONCLUSION

The electric power generated at Millstone is vital to the State of Connecticut and the New England Region. The storage of spent fuel is incidental to the principal use of the Property for generation of electricity. The ISFSI is simply an alternative method of storing spent fuel in support of Millstone's existing power generating operations and will not change the existing use of the Property. The proposed dry storage system will allow for the continued safe operation of Millstone for years to come. Based on the facts and supporting documentation contained in this submission, DNC respectfully submits that the modification of the Millstone Power Station, as proposed, will not have any substantial adverse environmental effects.

Respectfully submitted,

DOMINION NUCLEAR CONNECTICUT, INC.

By:_____

J. Alan Price
Site Vice President – Millstone