



Docket No. 70-1100
License No. SNM-1067
TAC No. L30875

April 16, 1997

Mr. Michael F. Weber, Chief
Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Amendment Request To Downgrade License No. SNM-1067

- References: (A) Letter, I. C. Rickard (CE) to R. C. Pierson (NRC),
"Amendment Request To Downgrade SNM License,"
dated April 23, 1996.
- (B) Letter, I. C. Rickard (CE) to R. C. Pierson (NRC),
"Response To NRC Request For Additional Information On
Amendment Request To Downgrade License No. SNM-
1067," dated December 20, 1996.
- (C) Letter, L. Bickwit, Jr. (Miller and Chevalier) to Robert L.
Fonner (NRC), dated March 4, 1997.
- (D) Letter, R. L. Fonner (NRC) to L. Bickwit, Jr. (Miller and
Chevalier), dated March 28, 1997.

Dear Mr. Weber:

Reference (A) requested a downgrade of License SNM-1067 to reflect the proposed reduction in activities and material possession authorization and the transfer of laboratory activities to the Windsor site Broad Scope License. Reference (B) responded to questions from the NRC on the Reference (A) request. After some further discussions, we agreed with your Staff to resubmit the entire Application document with the revisions proposed to References (A) and (B) and in the discussions with your Staff. Therefore, this submittal supersedes and completely replaces those submittals. Unaffected portions of the currently approved Application are reproduced in this submittal and related statements and representations made by CE in previously approved submittals are hereby reaffirmed, except as changed or removed by this Application.



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ABB Combustion Engineering Nuclear Power

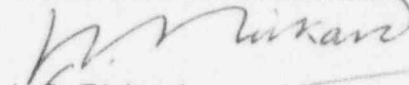
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This Application is intended to be consistent with the understanding of Combustion Engineering given in Reference (C) and the concurrence of NRC Counsel as stated in Reference (D), regarding the possession of uranium wastes on the Windsor site that have been collected by CE and that are to be included in the DOE Formerly Utilized Sites Remedial Action Program ("FUSRAP") for disposal.

Enclosure (1) provides a description of the proposed revisions to the currently approved version of the Application, including the applicable revisions proposed in References (A) and (B). Enclosure (2) provides a list of the pages of the currently approved version of the Application and of the pages in this submittal that would replace them. Enclosure (3) provides a listing of the resulting effective pages of the Application. Enclosure (4) provides the entire Application containing all the changes. Six (6) copies are enclosed for your use.

If there are questions or comments regarding this matter, please feel free to contact me or Mr. J. F. Conant at (860) 285-5002.

Very truly yours,
COMBUSTION ENGINEERING, INC.



I. C. Rickard
Director of Operations Licensing
ABB-CE Nuclear Operations

xc: Dr. S. Soong (NRC)
J. J. Kottan (NRC-Region I)

Enclosures: As stated

April 16, 1997
Enclosure (1)

COMBUSTION ENGINEERING, INC.
WINDSOR SPECIAL NUCLEAR MATERIAL LICENSE
AMENDMENT REQUEST TO DOWNGRADE LICENSE NO. SNM-1067
EXPLANATION OF CHANGES

This amendment request would delete from License No. SNM-1067 references to all buildings except Building 21 and all activities except those related to the decommissioning of Building 21 and to the SNM waste from prior operations collected by CE at the Windsor site. With these exceptions, all possession and licensed laboratory activities and operations with SNM and SM at the Windsor site have been licensed under the Broad Scope Materials License 06-00217-06, Amendment No. 42, dated October 1, 1996, and would be no longer covered under SNM-1067.

This amendment request would delay the decommissioning of Building 17, the former fuel manufacturing facility. The delay is requested in order to allow the building to be used for processing equipment returned from reactor sites and contaminated with byproduct material. Use of Building 17 would make it unnecessary for Combustion Engineering to develop a new building on the Windsor site for such work. Such a delay in decommissioning would be pursuant to the specific provisions of 10 CFR 70.38. This matter was discussed with the Licensing Branch staff and the Region I staff in a meeting with Combustion Engineering at White Flint on February 7, 1996. We understand that the approved Decommissioning Plan for the Building 17/21 complex would remain in effect during the delay while Building 17 is being used for processing byproduct material. The operations in Building 17 would be conducted under the Broad Scope license. Building 21 continues to be decommissioned without delay under SNM-1067.

The Broad Scope license application, approved by License Amendment No. 42, dated October 1, 1996, includes provision for decommissioning funding for the facilities that were added to the Broad Scope license. The existing decommissioning funding for License No. SNM-1067 would be continued while Building 21 is being decommissioned.

The possession authorization in Section 1.4 would be changed to delete Items 1, 2, and 3, for enriched uranium, natural and/or depleted uranium and sealed plutonium sources. The authorization for 1000 grams U-235 in uranium enriched to greater than or equal to 5% by weight would remain and would become Item 1. The possession authorization for uranium enriched to less than 5% would be reduced to 150 grams U-235 and would become Item 2.

The proposed authorized location for material greater than 5% would be limited to Specified Storage Areas, defined in Section 1.5 as locked, trailer sized, ground level containers and the paved area in the wooded section of the Windsor site and the DOE FUSRAP-designated (Formerly Utilized Sites Remedial Action Program) Building 3 and its environs. The proposed authorized activities for this material would be specified in Section 1.5 as packaging, repackaging, evaluation, storage, handling, and transportation.

This proposed scope of authorized activities is consistent with the understanding of Combustion Engineering of the positions taken by the NRC staff and CE regarding the Windsor site and License No. SNM-1067 governing special nuclear materials on the site. CE understands that the possession limitation relating to 1000 grams of U-235 material contained in uranium enriched to levels of 5 percent and greater in U-235 applies only to enriched uranium low level wastes located on the Windsor site that have been collected, and that may be collected, by CE and are to be included in the DOE FUSRAP for disposal.

The proposed authorized location for the material less than or equal to 5% would be limited in Section 1.4 to Building 21, and the authorized activity would be limited to decommissioning Building 21, the former commercial nuclear fuel manufacturing facility warehouse.

In Section 1.5, authorized activities in all buildings except Building 21 would be deleted. These activities and buildings are authorized under the Broad Scope license. Accordingly, throughout the Application, reference to the laboratories and laboratory activities would be deleted.

The deletion of laboratory activities from the Application and the delay in the decommissioning of Building 17 would remove potential sources of liquid and airborne effluents related to the activities authorized by this license. Accordingly, references to radioactive effluents and environmental monitoring would be deleted throughout the Application, including from Sections 2.9, 3.1.3, 4.1.2, 4.2, 10.0, 11.1, 11.2, and 11.3, along with the associated tables and figures. Environmental monitoring is provided by reference to the site Broad Scope license, as noted in Section 4.2 of this Application.

The personnel organization would be changed to reflect the proposed reduced scope of SNM activities to only activities related to waste material. A statement is added to Section 2.1.2 that CE management is responsible for safe operation under the license. The Radiation Safety Officer would be given responsibility for the related radiological activities. The RSO's immediate superior, formerly the Supervisor, Chemistry Services, would be deleted from Section 2.2.1 of Part I of the Application and replaced in Part II by the Radiological Services Leader, who reports to the Senior Project Manager, Site Remediation. A revised Figure 8-1 would show the changes to the personnel organization.

Section 2.3, Safety Committee, would be deleted, consistent with the proposed reduced scope of activities. There would be little activity for a formal Safety Committee to review. However, the annual report to the Radiological Services Leader, the supervisor of the RSO, would be continued. Routine RSO inspections and the annual audit of the Health Physics program would provide management control. Reference to the Safety Committee would be deleted from Section 2.9, Records, and Section 3.1.3, Annual Report. Section 3.1.1, ALARA, would be changed to remove the setting of ALARA targets, consistent with the minimal proposed activity and potential exposure.

The deletion of buildings from this application would make the discussion of laboratory hoods and ventilation systems in Section 3.2.3 unnecessary. This section would be revised to make it consistent with the proposed reduced scope of authorized activities. The discussion in Section 3.2.7, Contamination Surveys, would be revised to reflect removal of laboratory activities and the discussion in Section 3.2.8 Respiratory Protection, would be revised to reflect the proposed reduced scope of activities.

Section 3.2.10 specifies the requirements for control and testing of sealed sources. Since the proposed authorized material possession would not include sources, the entire Section 3.2.10 would be deleted.

In Section 3.2.1, Control of Licensed Material, and Section 4.1.1, Low-Level Radioactive Waste, minor wording changes would be made consistent with the proposed reduced scope of authorized activity and the definition in Section 1.5 for Specified Storage Areas.

In Part II of the Application, in Section 6.1, changes are proposed to update the corporate information for Combustion Engineering, Inc. Also, the information in Section 6.1.3, Company Background, and Section 6.6, History of Licensed Activities In Buildings On Site, would be revised consistent with the transfer of laboratory activities to the site Broad Scope license. Figure 6-3, Location of Buildings On the Windsor Site, would be revised to add the proposed Specified Storage Areas that would be defined in Section 1.5.

In Section 6.2, the Operating Objective would be revised to include only the conduct of activities related to residual material from prior operations.

Section 7.1, Use of Buildings, would be deleted except for a statement about Building 21, which would be the only building remaining under this license. Section 7.2, Fire Protection, would be revised to reflect the fact that there would be no remaining facilities or activities that would require protection or that might potentially initiate emergency response action.

The resume in Section 8.2 for the Supervisor, Chemistry Services, would be deleted. That would leave the Application with the resume for only the RSO,

consistent with the proposed reduced scope of authorized activities under this license.

The street address for the Windsor site has been changed by the town of Windsor, CT from 1000 Prospect Hill Road to 2000 Day Hill Road. This change would be made in several places in the Application. There is no change in the physical location of the facilities.

April 16, 1997
Enclosure (2)

COMBUSTION ENGINEERING, INC.
WINDSOR SPECIAL NUCLEAR MATERIALS LICENSE
AMENDMENT REQUEST TO DOWNGRADE LICENSE NO. SNM-1067
LIST OF AFFECTED PAGES

Combustion Engineering, Inc. is superseding its requests dated April 23, 1996 and December 20, 1996 to amend the application for the Windsor Special Nuclear Materials License No. SNM-1067 by replacing the pages of those requests and all other pages of the Application with this Amendment Request. The pages of the currently approved version of the Application and the pages of this Amendment Request which relate them are listed below:

DELETE PAGES

Page Date

i	1/17/95
ii	5/4/95
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iv	1/17/95
1-1	5/4/95
1-2	12/8/95
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ADD PAGES

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April 16, 1997
Enclosure (3)

COMBUSTION ENGINEERING, INC
WINDSOR SPECIAL NUCLEAR MATERIALS LICENSE
AMENDMENT REQUEST TO DOWNGRADE LICENSE NO. SNM-1067
LIST OF EFFECTIVE PAGES

Combustion Engineering, Inc. is superseding its requests dated April 23, 1996 and December 20, 1996 to amend the Application for the Windsor Special Nuclear Materials License No. SNM-1067 by replacing the pages of those requests and all other pages of the Application with this Amendment Request. The following is a comprehensive List of Effective Pages for the resulting Application.

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<u>Chapter 9</u>	
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<u>Pages</u>	<u>Date</u>
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<u>Chapter 11</u>	
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April 16, 1997
Enclosure (4)

COMBUSTION ENGINEERING, INC.
WINDSOR SPECIAL NUCLEAR MATERIALS LICENSE
AMENDMENT REQUEST TO DOWNGRADE LICENSE NO. SNM-1067
AFFECTED PAGES

WINDSOR SNM LABORATORY

LICENSE APPLICATION

PARTS I & II

COMBUSTION ENGINEERING, INC.
2000 Day Hill Road
Windsor, Connecticut 06095-0500

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WINDSOR SNM LABORATORY
LICENSE APPLICATION
PART I - LICENSE CONDITIONS

PART I - LICENSE CONDITIONS

1.0 STANDARD CONDITIONS AND SPECIAL AUTHORIZATIONS

1.1 NAME

Combustion Engineering, Inc., is incorporated in the State of Delaware with a principal office at 2000 Day Hill Road in Windsor, CT. The location where licensed activities are conducted is at 2000 Day Hill Road in Windsor, CT.

1.2 LOCATION

The mailing address for all license correspondence is:

Combustion Engineering, Inc.
2000 Day Hill Road
Windsor, CT 06095-0500

1.3 LICENSE NUMBER

Activities are covered by NRC License SNM-1067; Docket 70-1100.

1.4 POSSESSION LIMITS AND LOCATION

Combustion Engineering, Inc., requests authorization at its Windsor Site for the following quantities of radioactive materials:

	<u>Material</u>	<u>Form</u>	<u>Quantity</u>	<u>Location</u>
(1)	Uranium enriched to greater than or equal to 5.0 weight percent ^{235}U	Residue (LLRW)	1000 gms ^{235}U	Specified Storage Areas
(2)	Uranium enriched to less than or equal to 5.0 weight percent ^{235}U	Residual Uranium Oxides (LLRW)	150 gms ^{235}U	Building 21

As stated in the letter from L. Bickwit, Jr. (Miller and Chevalier) to R. L. Fonner (NRC), dated March, 4, 1997, the material in Item 1, above, applies only to enriched uranium low-level wastes now located on the Windsor site that have been collected by CE and are to be included in the DOE Formerly Utilized Sites Remedial Action Program ("FUSRAP") for disposal. The 1000- gram possession limit also covers any such FUSRAP U-235 that is further collected by CE for disposal. CE believes that these wastes originated under contracts performed by CE for the Atomic Energy Commission in the late 1950's and early 1960's and that the wastes are covered or should be covered by the Department of Energy's designation of the Windsor site under FUSRAP. All other uranium residues that originated under the contracts referred to and have not been collected by CE should not be regarded as covered by, or subject to the possession limitations of, the license until such residues are collected by CE.

1.5 AUTHORIZED ACTIVITIES

The activities carried out with Special Nuclear Material (SNM) at the Windsor Site are limited to activities involving LLRW as follows:

Specified Storage Areas* -	Packaging, repackaging, evaluation, storage, handling, and transportation of waste from prior operations for the purpose of SNM control. These activities pertain to the material under Item 1 of Section 1.4.
Building 21 -	Decommissioning the former commercial nuclear fuel manufacturing facility warehouse under an approved Decommissioning Plan. This activity pertains to the material under Item 2 of Section 1.4.

1.6 EXEMPTIONS AND SPECIAL AUTHORIZATIONS

- 1.6.1 In accordance with the exemptions allowed in 10 CFR 70.24(d), the Specified Storage Areas* and Building 21 shall be exempt from the requirement of a criticality monitoring system as specified in 10 CFR 70.24(a)(1). CE shall separate the wastes into batches no larger than 350 g contained ^{235}U and shall maintain a minimum separation of 12 feet between batches.

* The Specified Storage Areas are defined as locked, trailer sized, ground level storage containers and the paved area in the wooded section of the Windsor site and the DOE FUSRAP- designated Building 3 and its immediate environs. Analyses may be made, under License No. 06-00217-06, on samples of waste.

2.0 ORGANIZATION AND ADMINISTRATION

2.1 ORGANIZATION RESPONSIBILITIES AND AUTHORITY FOR KEY POSITIONS IMPORTANT TO SAFETY

2.1.1 (Deleted)

2.1.2 Radiation Safety Officer (RSO)

CE management is responsible for safe operation under this license. The Radiation Safety Officer is responsible for defining and implementing procedures related to radiological safety. Procedures address safety criteria, monitoring, and training necessary to ensure the protection of employees, the public and the environment.

The Radiation Safety Officer is responsible for supervising the radiological protection team. The radiological protection team performs radiological surveys, air sampling, and radiological safety job coverage. If the Radiation Safety Officer believes an operation to be unsafe, he or she has the authority to halt that operation, and to restart such operation.

2.2 PERSONNEL EDUCATION AND EXPERIENCE REQUIREMENTS FOR KEY
POSITIONS IMPORTANT TO SAFETY

2.2.1 (Deleted)

2.2.2 Radiation Safety Officer

The minimum qualifications for this position are a bachelor's degree in one of the sciences or engineering or its equivalent with two (2) years experience in health physics.

2.3 (Deleted)

2.4 APPROVAL AUTHORITY FOR PERSONNEL SELECTION

The personnel for key positions important to safety who are involved in activities within the scope of this application are approved by a higher level of management than the position of concern.

2.5 TRAINING

Training for personnel working with licensed material is provided commensurate with the hazards faced by the worker. The training program defines training requirements for in-house workers, contractors, and visitors. Personnel will not work unsupervised with licensed material prior to completion of the minimum training requirements.

Topics that are included in personnel training programs for persons working with licensed material include:

- (1) Procedures for the storage, transfer, and use of radioactive materials.
- (2) Health protection problems associated with exposure to the types of radioactive materials and radiation that are encountered.
- (3) Precautions or procedures to minimize exposure.
- (4) The purposes and functions of protective devices and/or equipment employed.
- (5) The need to observe the applicable provisions of Nuclear Regulatory Commission regulations and licenses for the protection of personnel from exposures to radiation or radioactive material, especially for the purpose of ensuring the worker has the ability to recognize and mitigate the hazards to which he is exposed.

- (6) The responsibility of the worker to promptly report to Combustion Engineering, Inc., management any condition which may lead to or cause a violation of Nuclear Regulatory Commission regulations and licenses or unnecessary exposure to radiation or to radioactive material.
- (7) The appropriate response to warnings made in the event of an unusual occurrence or malfunction that may involve exposure to radiation or radioactive material.
- (8) The radiation exposure reports which workers may request (as referenced in 10 CFR §19.13).

Training methods include lecture, classroom participative training, programmed instruction, challenge testing, on-the-job training, or other training methods as appropriate. The effectiveness of training shall be suitably demonstrated; e.g., by written, oral or practical examination, or other suitable means. The adequacy of each individual's training shall be evaluated on a biennial basis, and retraining shall be provided as appropriate.

2.6 OPERATING PROCEDURES

Activities involving licensed materials are conducted in accordance with approved written procedures and radiation work permits. Health physics activities shall be conducted in accordance with written procedures approved by the RSO and reviewed for potential update on a biennial basis.

2.7 INTERNAL INSPECTIONS

Inspections are performed to determine if operations are being conducted in accordance with applicable license conditions and written procedures. Annual inspections cover radiological and environmental safety and are conducted based upon a written plan. Qualified personnel having no direct responsibility for the operation being inspected are used as inspectors to ensure unbiased and competent results. The annual inspection for

radiological safety shall be performed by an individual with at least two years experience in applied health physics. Items requiring corrective action are documented in a report distributed to the Radiological Services Leader. Follow-up actions will be documented.

2.8 INVESTIGATIONS AND REPORTING

Abnormal occurrences are investigated and reported to the Radiological Services Leader. Reports to the Nuclear Regulatory Commission are made in accordance with specific conditions of this application and the applicable Federal Regulations. The level of investigation and the need for corrective action are determined based on the severity of the incident.

2.9 RECORDS

Records pertaining to health and safety, abnormal occurrences, inspections, employee training, personnel exposures, and routine radiation and contamination surveys are retained to demonstrate compliance with the conditions of this application and the applicable Federal, State and local regulations. Such records are retained for at least two years, unless otherwise specified in the governing regulations.

3.0 RADIATION PROTECTION

3.1 SPECIAL ADMINISTRATIVE REQUIREMENTS

3.1.1 ALARA Commitment

Combustion Engineering has a strong commitment to the ALARA philosophy. In support of this commitment, the Radiological Services Leader periodically reviews safety related activities, including abnormal occurrences and the implementation of ALARA policies. The following policies are implemented for work at the site:

- (1) The key ALARA objective is to minimize exposure to radioactive material for the public, the environment, and the workers at the Windsor site.
- (2) In the interest of limiting exposures to the public, the objective is to have minimal effluents from the activities under this license.
- (3) The preferred method of limiting intake is the use of engineering controls. Engineering control of intake is achieved with ventilation control as described in Section 3.2.3, and, when engineering controls are not adequate, intake is limited by the use of respiratory protection as described in Section 3.2.8.

3.1.2 Radiation Work Permit

Work with licensed materials is covered by Radiation Work Permits (RWP). The Radiation Safety Officer (RSO), or his designee (with a minimum of 2 years experience in applied health physics with material similar to that authorized by this license), approves RWPs. RWPs specify applicable radiological controls for the activity, such as special radiological equipment, special personnel monitoring devices, protective clothing or air sampling requirements. Radiation Protection Technicians are responsible for ensuring the proper implementation of radiation work permits. RWPs which remain open for more than a month are reviewed on a monthly basis to ensure the controls are effective; RWPs which are no longer needed are closed.

3.1.3 Annual Report

The Radiation Safety Officer shall submit to the Radiological Services Leader an annual report that reviews the employee radiation exposures to determine:

- (1) if there are any upward trends developing in personnel exposures,
- (2) if personnel exposures might be lower under the concept of As Low As Reasonably Achievable (ALARA); and
- (3) if equipment for personnel exposure control is properly used, maintained, and inspected.

This report shall include the review of other required audits and inspections performed during the past 12 months and review of the data from the following areas as applicable: employees exposures (internal and external), bioassay results, and unusual occurrences.

3.2 TECHNICAL REQUIREMENTS

3.2.1 Control of Licensed Material

Access to licensed material is controlled.

3.2.2 Protective Clothing and Personnel Monitoring Requirements

Protective clothing, when required, is prescribed by the applicable radiation work permit.

Personnel exiting contaminated areas are required to survey themselves after removing protective clothing to ensure that they are free of contamination. Emergency evacuations are an exception to the personnel survey requirement.

3.2.3 Ventilation Requirements

Airborne effluents generated from operations involving licensed material, other than operations potentially involving trace amounts of licensed material, shall be controlled as necessary, in accordance with good health physics practices. When ventilation systems are required, they are designed and maintained to limit the spread of contamination into the environment. Exhaust from systems will be sampled, monitored and controlled pursuant to 10 CFR 20.3.2.3

3.2.4 Instrumentation

Instruments used for radiation detection and measurement have capabilities as follows (more than one instrument may be utilized to cover the specified range):

Alpha/Beta Counting Systems:	1 DPM to 1×10^5 DPM (disintegrations per minute)
Alpha Survey Meters:	10 CPM to 1×10^5 CPM (counts per minute)
Beta/Gamma Survey Meters:	1 mR/h to 5,000 mR/h (millirem per hour)
Gamma Survey Meters:	1 μ R/h to 50 mR/h (microrem/millirem per hour)

Radiation detection instruments are calibrated semiannually and after each repair that would affect accuracy.

3.2.5 Radiation Exposures

The intake of radioactive material shall be monitored for individuals likely to receive in excess of 10% of the applicable Annual Limit on Intake (ALI). Soluble uranium intake shall be limited to less than 10 milligrams per week per individual. Work activity restrictions shall be imposed when an individual reaches 50% of the applicable limit; i.e., 0.5 ALI (1,000 DAC hours) and 5 milligrams per week for soluble uranium. A diagnostic study to evaluate intakes shall be started at these action levels.

Exposure to radiation shall be monitored for individuals likely to receive, in one year from sources external to the body, in excess of 10% of the occupational dose limits of 10 CFR 20. The personnel monitoring device will be a thermoluminescent dosimeter (TLD). TLDs shall be processed for dose reading on at least a quarterly basis by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited dosimetry processor. The action level for investigation and possible work restrictions shall be 1 rem for deep dose equivalent (DDE) on an annual basis.

Total Effective Dose Equivalent for occupational exposures shall be calculated in accordance with 10 CFR 20 using a combination of personal lapel air sampling data, personnel radiation exposure data and/or bioassay measurement data.

The primary method of calculating Committed Effective Dose Equivalent is by using personal lapel air sampling results. Personal lapel monitors shall be counted on a daily basis when in use for this purpose.

3.2.6 Bioassay Program

If a respiratory protection program is utilized or personnel are likely to receive greater than 10% ALI such that monitoring is required, then a bioassay program shall be maintained for confirmation and evaluation of intakes. If a bioassay program is required, then bioassay assessments of intakes shall be performed on an annual basis, or, for personnel exposed to soluble uranium, bioassay assessment shall be on a monthly basis. Bioassay assessment may also be used to perform the diagnostic study at the action levels of Section 3.2.5.

3.2.7 Contamination Surveys

Contamination surveys are performed at a minimum of once per week in loose surface contaminated areas where work involving radioactive materials may be in progress. Surveys in step-off pad areas in use are performed on a daily basis. Contamination surveys are performed on a quarterly basis in clean areas designated by the RSO, based on their potential to become contaminated. Surveys conducted in support of work performed under a Radiation Work Permit (RWP) may be used to meet the survey requirement.

RWP termination surveys will include alpha/beta scans to verify that no contamination has resulted from the work performed under the RWP. The following are action levels for contamination control:

<u>Area</u>	<u>Action Level*</u>
Contamination Control Area	5,000
Step-Off Pad Areas (in use)	50
Clean Areas	10

* $\text{dpm alpha} / 100 \text{ cm}^2$ as determined by smear survey

Clean up action is started within 24 hours when removable surface contamination exceeds the action level limits specified above.

3.2.8 Respiratory Protection

To the extent practicable, process or other engineering controls will be used to control the concentration of radioactive material in air. When it is not practicable to apply these controls to limit the concentration of radioactive material in air to values below those that define an airborne radioactivity area, other controls will be implemented to limit intake, which could include use of respiratory protection equipment. Respiratory protection will be consistent with 10 CFR 20.

3.2.9 Materials and Equipment Released for Unrestricted Use

Release of equipment and materials from restricted areas to clean areas on-site or unrestricted areas shall be in accordance with the NRC's "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated April, 1993.

3.2.10 Nonexempt Sealed Source Control

(This section is deleted. There are no sealed sources under this license application.)

4.0 ENVIRONMENTAL PROTECTION

4.1 EFFLUENT CONTROL SYSTEMS COMMITMENTS

4.1.1 Low-Level Radioactive Waste

Low level radioactive wastes (LLRW) will be packaged in accordance with applicable regulations and delivered to a carrier for transport to an approved waste processor and/or disposal facility. Current copies of processor or disposal facility licenses shall be maintained.

LLRW packages awaiting shipment to a processor or disposal facility may be temporarily stored for up to one year on site. LLRW packages in such temporary storage will be checked quarterly for integrity and exterior contamination. LLRW storage areas shall be appropriately posted and LLRW shall be secured from unauthorized removal. Prior to being placed into storage, packages will be checked for exterior contamination and labeled as radioactive material and, for SNM, as to ^{235}U content. LLRW packages may be stored for up to ten years as interim storage provided they are protected from the elements. Interim LLRW storage shall be in the Specified Storage Areas defined in Section 1.5. LLRW in interim storage will be checked annually for integrity and exterior contamination.

Records will be maintained of the contents of the LLRW packages. All packages will be stored on raised platforms (e.g., built in or portable pallets) or legs and stacking will be limited to three (3) high. When placed into storage, the packages shall be sealed in a manner which precludes casual entry (e.g., by the use of steel clips or strapping) until final sealing is accomplished prior to shipment to the processor or disposal facility.

Containers containing liquid wastes shall not be stored outside, shall be segregated from solid waste containers (e.g., stacked separately) and shall be appropriately labeled.

4.1.2 Liquid Effluents

There are no liquid effluents.

4.1.3 Airborne Effluents

Airborne effluents are monitored in accordance with Section 3.2.3.

4.2 ENVIRONMENTAL MONITORING PROGRAM

The only materials authorization requested in this application is for residual material in the form of Low Level Radioactive Waste. The effectiveness of the controls over this material will be monitored under the Windsor Broad Scope Radioactive Materials License No. 06-00217-06. Section 10.7 of the Application for the Broad Scope License describes the environmental monitoring program.

5.0 DECOMMISSIONING FUNDING PLAN

Combustion Engineering reaffirms that, upon terminating activities involving materials authorized under license SNM-1067, the premises where the licensed activities were carried out will be decommissioned in a manner that will protect the health and safety of the public in accordance with 10 CFR 70.38. Combustion Engineering's financial assurances in the letters dated July 19, 1990, July 2, 1992, November 10, 1993, May 23, 1994, and July 30, 1994, should be considered a part of this license application.

WINDSOR SNM LABORATORY
LICENSE APPLICATION
PART II - SAFETY DEMONSTRATION

PART II - SAFETY DEMONSTRATION

6.0 OVERVIEW OF OPERATIONS

6.1 CORPORATE INFORMATION AND FINANCIAL QUALIFICATIONS

6.1.1 Name and Address of Licensee

Combustion Engineering, Inc.
2000 Day Hill Road
Windsor, CT 06095-0500

Combustion Engineering, Inc. is incorporated in the State of Delaware. The principal office location is in Windsor, Connecticut.

6.1.2 Name, Address and Citizenship of Principal Officers

The following is a listing of all directors and principal officers of Combustion Engineering, Inc.

Directors

R. F. Cronin*	D. M. Kuzmak*
R. G. Kemp, Jr.	R. S. Siudek*

Officers

R. F. Auclair*	R. F. Cronin*	D. E. Lewis*	A. M. Pfeffer
R. D. Austin*	A. E. Fournier, Jr.*	T. E. Liggett	V. B. Probst*
G. F. Barcikowski*	J. Guarino	E. B. Lyon	T. N. Sacco*
M. F. Barnoski*	D. E. Harris*	D. J. McDermott*	D. H. Simpson*
R. S. Bell, Jr.*	R. W. Jewell	J. H. Mulholland*	R. S. Siudek*
J. P. Brett	R. G. Kemp, Jr.	R. E. Newman*	D. R. Zabilansky*
E. Bysiek	D. M. Kuzmak*	T. L. Pajonas*	

These individuals are citizens of the United States of America. Except for the individuals with an asterisk, whose address is shown in Section 6.1.1, a common address is given below:

Combustion Engineering, Inc.
501 Merritt 7
Norwalk, CT 06856-5308

6.1.3 Company Background

Combustion Engineering, Inc. is a wholly owned subsidiary of Asea Brown Boveri Inc., also a corporation organized under the corporation law of the state of Delaware. Asea Brown Boveri Inc. is a wholly owned subsidiary of ABB Asea Brown Boveri Ltd., a Swiss corporation which is jointly owned by ABB AB, a publicly held Swedish corporation, and ABB AG, a publicly held Swiss corporation.

The commercial nuclear fuel manufacturing history of the Windsor site dates from late 1968, when SNM-1067 was first issued to Combustion Engineering, Inc. Commercial activities covered by SNM-1067 have involved development and production of fuel products for the commercial nuclear industry. Initially, uranium dioxide (UO₂) fuel pellets purchased from an outside supplier were processed and loaded into fuel rods in Building 17, the manufacturing facility at the Windsor site. In 1970, a fuel pellet operation was added to the already existing fuel pellet loading and fuel assembly operation. At that time, Building 17 began to receive uranium dioxide powder, which was subsequently pressed into fuel pellets. UO₂ pellet pressing and powder handling operations continued until permanently halted in December of 1989.

Upon the cessation of powder operations, a major decontamination project was undertaken in the pellet shop of Building 17, resulting in greatly reduced contamination levels in the manufacturing facility. Since that time, manufacturing activities in Building 17 have been limited to producing finished fuel assemblies from sintered UO_2 pellets manufactured at and received from another site. Uranium bearing fuel manufacturing operations ceased on September 30, 1993. Following the cessation of uranium handling operations, Combustion Engineering Inc. initiated the decontamination and decommissioning of the Building 17/21 Complex. Laboratory activities, which were continued in the SNM Laboratory facilities, have since been transferred to another license, as was the use of the Building 17 facility for byproduct material. Decontamination of Building 21 is complete and the building is intended to be free released.

6.1.4 Information Known to Applicant Regarding Foreign Control

Information regarding foreign ownership of Combustion Engineering, Inc., was provided to the NRC in a letter dated November 21, 1989.

6.1.5 Financial Qualifications

Combustion Engineering, Inc. is financially qualified to engage in the proposed activities of this license application.

The decommissioning funding plan for the Windsor site areas is referred to in Part I Chapter 5 herein.

6.2 OPERATING OBJECTIVE

The operating objectives are as follows:

- (1) Perform the activities involving waste from prior operations as described in Section 1.5.
- (2) Perform testing and analyses to support the operational activities.

6.3 SITE DESCRIPTION

The Combustion Engineering Windsor site is located in north central Connecticut (Figure 6-1). The site is approximately 600 acres along the section of the Farmington River known as the Rainbow Reservoir in the town of Windsor, Connecticut (Figure 6-2).

6.4 LOCATIONS OF BUILDINGS ONSITE

The locations of buildings on the Windsor site are shown in Figure 6-3.

6.5 HISTORY OF LICENSE

Combustion Engineering first applied for this license to process low enriched uranium in 1968. License SNM-1067 was then issued for a period of 5 years by the U.S. Atomic Energy Commission (AEC). The license has been renewed at approximately 5 year intervals since then.

6.6 HISTORY OF LICENSED ACTIVITIES IN BUILDINGS ON SITE

License SNM-1067 was initially issued in 1968 to allow use of low enriched uranium special nuclear material and source material in Building 17 for the purpose of commercial nuclear fuel manufacturing. Later, Building 21 was added as a warehouse and shipping and receiving building. Such activities continued in the Building 17/21 Complex until 1993, when commercial nuclear fuel manufacturing of SNM ceased, and decommissioning of those buildings was initiated. In 1996, the decommissioning of Building 17 was delayed while the building is used for processing of equipment returned from reactor sites and contaminated with byproduct material.

In Buildings 1/1A and 2A licensed activities included the storage of source material.

In Building 2, licensed activities have consisted of storage of sealed test rods containing SNM and mechanical testing using sealed simulated fuel rods containing source material. In addition, archived special nuclear material had, in the past, been stored in Building 2.

In Building 3/3A, the primary licensed activities involved the use of sealed sources and sealed testing specimens (e.g., for x-ray measurements).

The primary licensed activities performed in Building 5 have been past developmental fuel manufacturing and the laboratory activities previously associated with the current license application.

In Building 6, activities involving SNM have been radioactive liquid waste processing and low level radioactive waste storage.

In Building 16, the primary licensed activities were the use of sealed sources and source material handling.

In Building 18, the primary licensed activities have been hydraulic loop testing using sealed simulated fuel rods containing source material.

Figure 6-1

Combustion Engineering Location within Connecticut

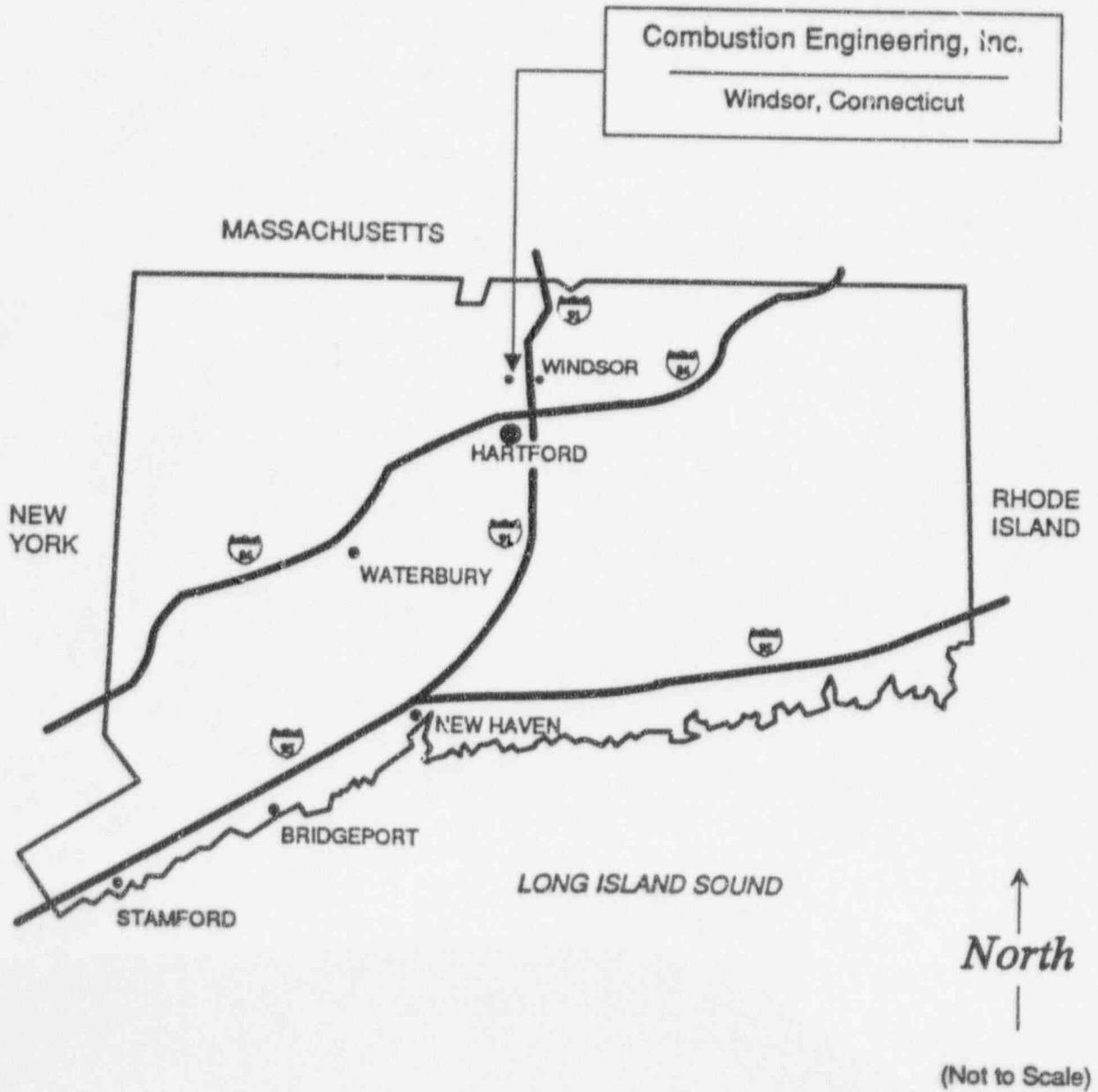


Figure 6-2

Combustion Engineering Location - Local Area

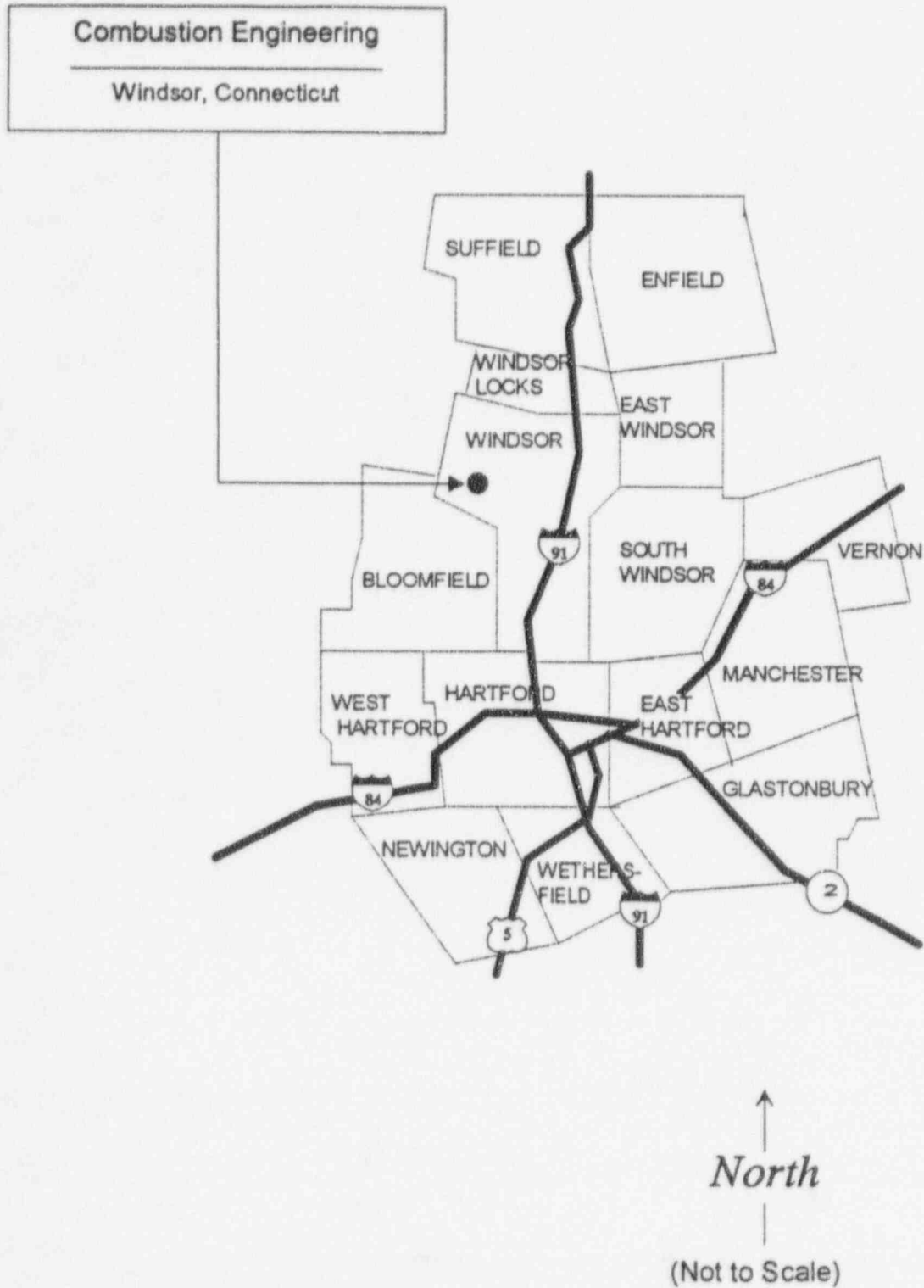


Figure 6-3
Location Of Buildings On The Windsor Site



7.0 FACILITY DESCRIPTION

7.1 USE OF BUILDINGS

Building 21 is the former commercial nuclear fuel manufacturing facility warehouse. It has been decontaminated under an approved decommissioning plan and is awaiting free release.

7.2 FIRE PROTECTION

Under this license application, there are no facilities that require fire protection and no activities that may potentially initiate emergency response action.

8.0 ORGANIZATION AND PERSONNEL

The Windsor SNM personnel organization structure is depicted in Figure 8-1.

8.1 FUNCTIONS OF KEY PERSONNEL

The function, responsibilities and authorities of key personnel important to safety are described in Part I, Section 2.1 of this application. This section provides similar information for the remaining "Facility" personnel.

8.1.1 Radiation Safety Engineer

The Radiation Safety Engineer is responsible for assisting the Radiation Safety Officer in the many facets of his duties. This includes procedure development, radiation work permit development, radiological control planning, etc. When deemed qualified, the Radiation Safety Engineer may be delegated functions of the Radiation Safety Officer.

8.1.2 Health Physics Technicians

Health physics technicians ensure that the radiological controls requirements established by the Radiation Safety Officer are carried out; this includes monitoring of radiation exposures.

8.2 RESUMES OF KEY PERSONNEL IMPORTANT TO SAFETY

Resumes of key personnel important to safety are provided on the following pages.

JAMES M. LIMBERT - RADIATION SAFETY OFFICER

Education:

Central High School - Red Wing, Minnesota, Graduated 1960

Dunwoody Industrial Institute - Minneapolis, MN, 1960 - 1961

U. S. Naval Nuclear Power School, 1963

U. S. Naval Nuclear Prototype, 1964

U. S. Naval Nuclear Laboratory Technician School, 1964

U. S. Naval Nuclear Laboratory Technician Refresher, 1965

University of Hartford - Calculus I & II, 1973 - 1974

Charter Oak College Continuing Education - Liberal Arts, 1980

NRRPT Certified

Experience:

ABB COMBUSTION ENGINEERING SUPPORT SERVICES 1994 -Present

ABB COMBUSTION ENGINEERING NUCLEAR OPERATIONS 1970 -1994

Radiation Safety Officer

1988 - Present

Duties and responsibilities include oversight reviews and maintenance activities associated with NRC broad scope materials and special nuclear materials licenses.

Special Projects:

Assigned to the independent fuel manufacturing task force charged with the responsibility to conduct an in-depth audit of the fuel facility in Windsor. Areas of responsibility included:

1. Radiological Protection
2. Environmental Protection
3. Industrial Hygiene and Safety

Promoted to Radiation Safety Officer in 1988.

Radiation Safety Engineer

1973 - 1988

Responsible for planning, advising and administering health physics and radiation protection programs in the Development Department. Developed and maintained radiation workers training programs.

JAMES M. LIMBERT (continued)

Assisted in developing hazardous waste management program for the Nuclear Laboratory.

Developed and administered security accounting programs for special nuclear materials in the Nuclear Laboratories.

Developed and supervised a decontamination project involving the reclamation of land contamination with high levels of Natural Thorium and High Enriched Uranium.

Senior Radiological Safety Assistant

1972 - 1973

Responsible for developing, administering and performing the health physics program for the Nuclear Laboratories of the Development Department. Promoted to Radiation Safety Engineer.

Senior Radiochemistry Technician

1970 - 1972

Performed radiochemistry analyses and environmental analyses associated with fuel manufacturing and reactor site surveillance programs. Promoted to Senior Radiological Safety Assistant, 1972.

U. S. NAVY

1961 - 1970

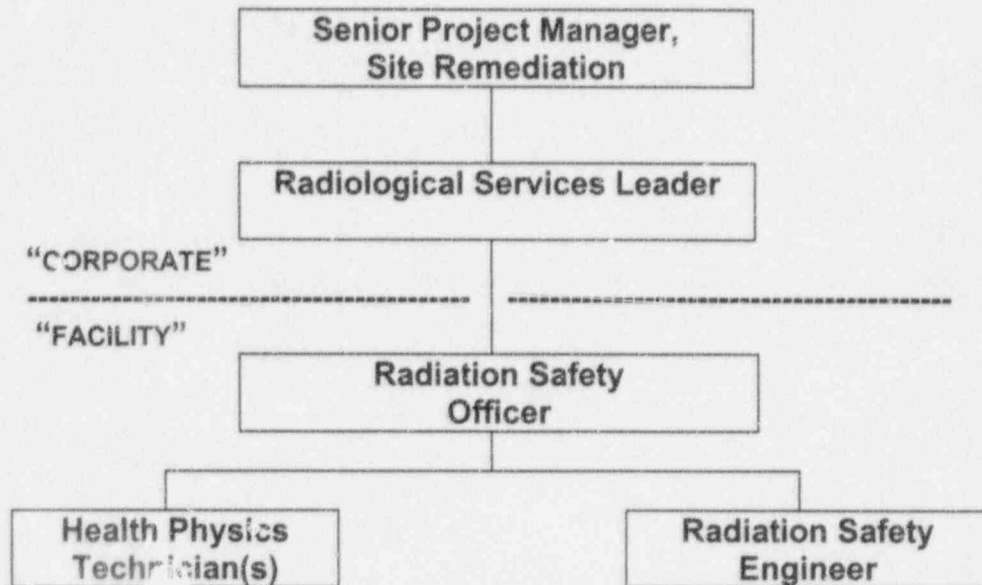
Leading Petty Officer - Engineering Laboratory Technician and Radiological Protection Groups. Responsible for all radiological controls and chemistry operations at a naval nuclear prototype.

Senior Operator Instructor - Classroom Phase - responsible for operation and maintenance of classroom instruction of sixty (60) students and staff of 8 instructors at a naval nuclear prototype.

Leading Petty Officer - In charge of chemistry, radiological control and mechanical operators aboard three nuclear powered submarines.

Figure 8-1

Personnel Organization



9.0 RADIATION PROTECTION PROCEDURES AND EQUIPMENT

9.1 PROCEDURES

Operations involving licensed materials are conducted in accordance with written procedures and/or radiation work permits. Radiation work permits are approved by the Radiation Safety Officer or his designee (e.g., Radiation Safety Engineer).

9.2 INSTRUMENTS

Alpha/Beta counting systems are used for radiation detection and measurement. The Alpha/Beta counting systems are calibrated quarterly and checked daily when in use through background and efficiency checks.

Gamma spectroscopy systems are also used for radiation detection and measurement. Operational integrity of the gamma spectroscopy systems is verified by weekly gamma energy and efficiency calibration checks.

Radiation sources used in the instrument calibrations are NIST certified.

10.0 OCCUPATIONAL RADIATION EXPOSURES

With cessation of the uranium processing operations the potential for a release of radioactive material is greatly diminished. Combustion Engineering will continue its emphasis on exposure control to minimize intake of uranium. The indicators used include the following:

- (1) Shallow Dose Equivalent: Shallow Dose Equivalent is the external dose to the skin.
- (2) Total Effective Dose Equivalent (TEDE): TEDE is the sum of the deep dose equivalent and committed effective dose equivalent.
- (3) Airborne Radioactivity: A measure of the concentration of radioactivity in the ambient work place air. It is measured through the use of air sampling equipment and expressed in units of $\mu\text{Ci/ml}$ (Bq/m^3).
- (4) Contamination: This is a measure of the amount of uranium surface contamination in the work environment, expressed in units of $\text{dpm}/100\text{cm}^2$.

When thermoluminescent dosimeters (TLD) are used as monitoring devices, they are processed on at least a quarterly basis by an accredited dosimetry processor.

11.0 ENVIRONMENTAL SAFETY

The effectiveness of the controls over the licensed material will be monitored as described in Section 4.2 of this application.