SIEMENS

70-1257

November 11, 1996
JBE:96:108

U.S. Nuclear Regulatory Commission
Attn.: Mr. Robert C. Pierson, Chief
Licensing Branch
Division of Industrial & Medical Nuclear Safety, NMSS
Washington, DC 20555

Dear Mr. Pierson:

Reference: Letter, J.B. Edgar to R.C. Pierson, dated October 28, 1996

As a result of the review by M.T. Adams of your staff of the reprinted license application transmitted with the referenced letter, enclosed are two copies of the following revised application pages:

Page No.	Changes
1-5	In the penultimate line of section 1.6.8, "...periodic surveys..." has been changed to "...continuous surveys...". This change was made at the request of E.Q. Ten Eyck during a telephone conversation on November 6, 1996.
1-6	Item 3 of section 1.6.11 has been changed to read "...≤ 3 pCi/ml." to correct a typographical error.
2-21	Item 4 of section 2.8 has been changed to add "...and 10 CFR 70.50..." after "20.2202" in the second line. This change was made at the request of M.T. Adams in a telephone conversation on November 8, 1996.
2-26	In Figure I-2.3 the line describing review and approval responsibilities for Engineering Change Notices has been replaced by a line describing review and approval responsibilities for the Engineering Change Notice Procedure. This change was made at the request of M.T. Adams in a telephone conversation on November 8, 1996.
3-13	In the second column of Table I-3.2 the letters a,b, and g have been replaced by the symbols α, β, and γ to correct a typographical error.

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Change: PDR LTR 1 ENCL INP NFPD 1/1

9612020021 961111
PDR ADOCK 07001257
C PDR

4-1 The second paragraph of chapter 4 has been revised to specify the double contingency principle as described in the telephone conversation between NRC and SPC personnel (E.Q. Ten Eyck, R.C. Pierson, R.E. Vaughan, et.al.) on November 12, 1996 and faxed by M.T. Adams to J.B. Edgar.

5-5 In section 5.2.2 "chloride" has been replaced by "fluoride" in the list of constituents for which analyses of samples from groundwater monitoring wells are undertaken. This change corrects a typographical error.

6-1 In the penultimate line of the second paragraph of section 6-1 the parenthetical "pages 15-23 and 15-24" has been changed to "pages 15-43 and 15-44" due to a reorganization of chapter 15. In addition copies of pages 15-43 and 15-44 marked "proprietary" are included.

As agreed to in our various conversations on this subject, the revised license application pages are dated October 28, 1996.

If you have any questions regarding the information presented, please call me at 509-375-8663.

Very truly yours,

James B. Edgar
Staff Engineer, Licensing

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Enclosures

cc: C. A. Hooker, NRC Region IV
WCFO

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1.6.5.2 Material Control and Accounting

SPC shall follow the special safeguards conditions given in the Safeguards Amendment SG-2 and the NRC approved Fundamental Nuclear Material Control Plan (FNMC) submitted in accordance with 10 CFR Part 74.31(b). The NRC approved FNMC Plan is:

> EMF-12(P), "Nuclear Material Safeguards Procedures Description for the Fuels Fabrication Plants." This document shall be maintained in a current and approved status and shall be properly implemented.

1.6.6 Authorization at Reactor Sites

SPC is authorized to possess fuel assemblies or fuel rods at reactor sites for the purpose of loading them into shipping containers and delivering them to a carrier for transport.

1.6.7 Authorized Release Guidelines

SPC is authorized to release equipment, scrap or facilities for unrestricted use, or for termination of license according to the "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material" as published by the U.S. Nuclear Regulatory Commission dated April 1993.

1.6.8 Authorized Criticality Alarm System Outage

SPC is granted an exemption from 10 CFR 70.24(a) for the purpose of performing maintenance on the criticality alarm system. Sections of the criticality alarm system may be taken out-of-service provided that all movement or processing of fissile material in affected areas is halted for the duration of the outage. Health and Safety Technicians shall conduct continuous surveys of the areas during the criticality alarm system outage.

1.6.9 Notification

Notifications to the NRC shall be made as required by regulations with the exception of 10 CFR 20.2202(a)(2) and (b)(2) as they apply to restricted areas. Reports to the NRC shall be made as required by regulations with the exception of those paragraphs in 10 CFR 20.2203 which refer to 10 CFR 20.2202(a)(2) and (b)(2) as they apply to restricted areas.

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1.6.10 Authorized Workplace Air Sampling Adjustments

SPC is authorized to adjust Derived Air Concentration (DAC) limits and Annual Limit of Intake (ALI) values in process areas to reflect actual physical characteristics of the airborne uranium.

1.6.11 Authorized Release Guidelines for Hydrofluoric Acid

SPC is authorized to release hydrofluoric acid manufactured by the dry conversion process for unrestricted commercial use providing the following conditions are met:

1. A representative sample of each batch of hydrofluoric acid product shall be obtained and analyzed for uranium;

2. A batch shall be no larger than 20,000 liters;

3. The specific activity of any batch released for unrestricted use shall be ≤ 3 pCi/ml.

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2.7.5 Environmental Protection Inspections

The Environmental Engineering Component shall monitor the levels of regulated material released to the environment. Health and Safety Technicians are responsible for the field sampling under the guidance of the Environmental Engineering Component. Action levels and descriptions of actions to be taken as a result are found in SPC's plant Safety Manual. Results of this monitoring shall be documented and distributed to the Manager, Safety, Security, and Licensing.

The Health Physics Component shall perform quarterly inspections of environmental protection practices and exposure controls. These inspections shall be made in accordance with a written plan. Results of these inspections shall be documented, including any recommended corrective actions, and distributed to the respective facility management, and to the Manager, Safety, Security, and Licensing. The Health Physics Component shall follow up on each detected discrepancy and recommended corrective action in subsequent inspections until there is satisfactory resolution. The Health and Safety Council shall monitor progress toward such resolution.

2.8 Investigations and Reporting of Reportable Incidents

In addition to and/or in-line with the reporting requirements specified in other sections of this License, the following reporting schedule shall be adhered to:

1. Employee and former employee radiation exposure information shall be reported to said individuals in accordance with 10 CFR 19.13;

2. Employee exposures and monitoring information shall be reported to the NRC in accordance with 10 CFR 20.2206;

3. Overexposures and excessive levels and concentrations shall be reported to the NRC in accordance with 10 CFR 20.2203 with the exception of those resulting from 20.2202(a)(2) and (b)(2) with reference to releases in restricted areas;

4. The NRC shall be notified of incidents in accordance with 10 CFR 20.2202 and 10 CFR 70.50 with the exception of those resulting from 20.2202(a)(2) and (b)(2) with reference to releases in restricted areas;

5. Theft, or loss of licensed material, shall be reported in accordance with 10 CFR 20.2201;

6. Effluent monitoring information shall be reported to the NRC in

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accordance with 10 CFR 70.59;

7. In the event that the radioactivity in plant gaseous effluents exceeds 50 microcuries per calendar quarter, a report shall be submitted within 30 days to the NRC (Document Control Desk, with a copy to NRC Region IV Office), identifying the cause for exceeding this value, and the corrective actions to be taken to reduce release rates;

8. If parameters important to dose assessment of the public relative to gaseous effluents from the plant change, a report shall be submitted to the NRC (Document Control Desk, with a copy to NRC Region IV Office) within 30 days identifying the changes in parameters, and providing an estimate of the resultant change in dose commitment;

9. Reports of excessive radioactive contamination on packages of radioactive material, and excessive radiation levels external to the packages on receipt, shall be reported to the NRC immediately in accordance with 10 CFR 20.1906;

10. Accident reports on transportation of licensed material shall be reported to the NRC and DOT in accordance with 10 CFR 71.5(b) and 49 CFR 171.15 and 49 CFR 171.16.

The Manager, Safety, Security, and Licensing, has the responsibility for investigating, recording, reporting, and following up on actions taken for reportable incidents in accordance with NRC reporting requirements.

2.9 Records

In addition to or in accordance with the documentation requirements specified in other sections of this Application and the applicable parts of 10 CFR, the following records shall be retained:

1. Personnel radiation exposure histories and determinations of personnel accumulated dose. (Information on personnel prior radiation exposure histories is obtained in accordance with 10 CFR 20.2104.)

2. Employee radiation exposures, external and internal, including dose evaluations.

3. Health and Safety Technicians' radiation and contamination surveys, including room air and exhaust air monitoring.

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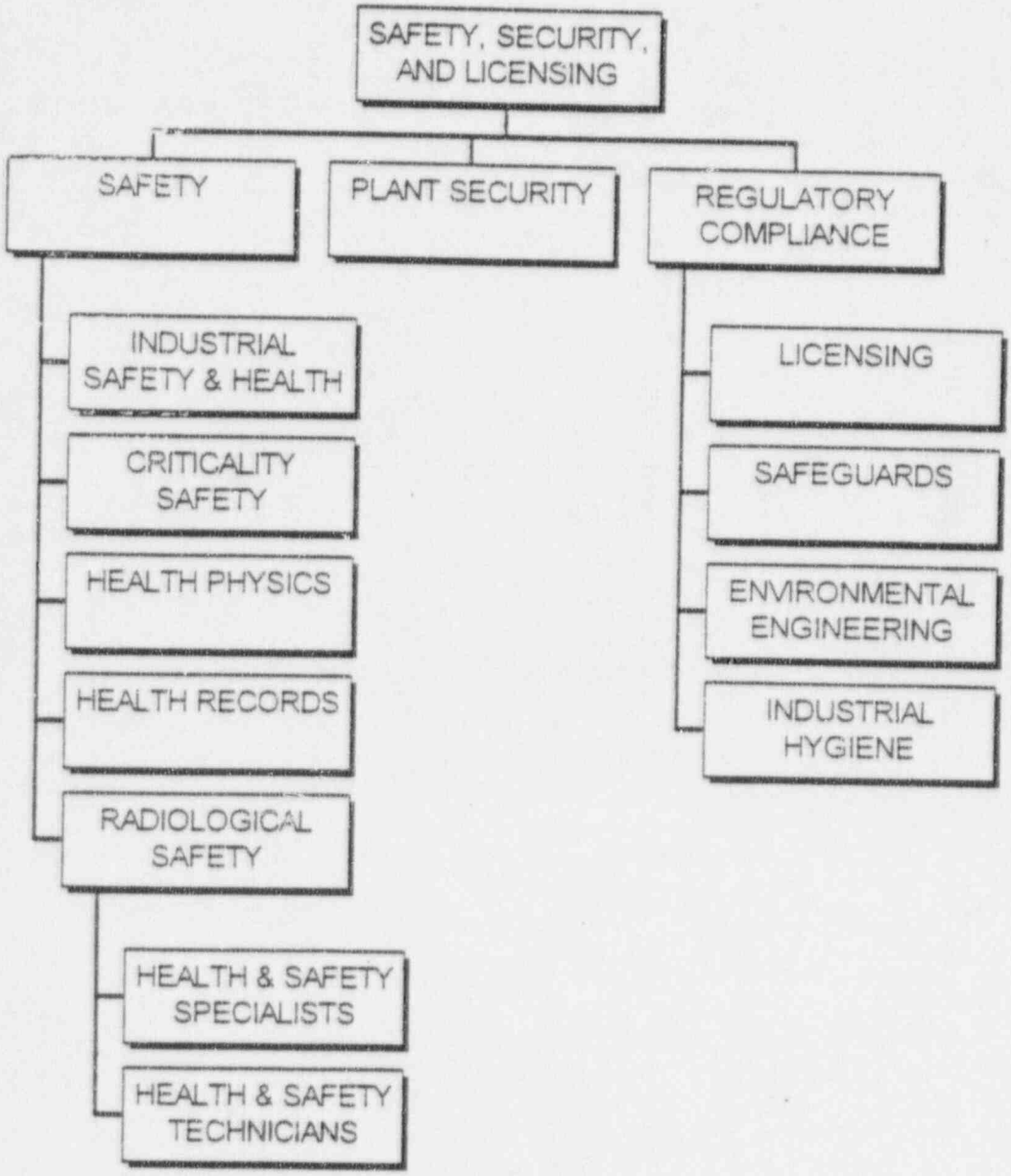
FIGURE I-2.2



Siemens Power Corporation Nuclear Division	Special Nuclear Material License No. SNM-1227, NRC Docket No. 70-1257	AMENDMENT APPLICATION DATE:	PAGE NO.:	EMF-2:

FIGURE I-2.3 APPROVAL AND RESPONSIBILITY MATRIX

A - Prepare/Initiate

B - Approve: Overall agreement that proper reviews have been conducted.

C - Concur: Agreement within area of expertise.

D - Accept: Agreement to comply with imposed conditions.

E - Audit

A primed letter (') indicates signatory action limited to area of responsibility.

	Vice President Engineering & Manufacturing	Manager Manufacturing Engineering	Manager Process Engineering	Manager Plant Engineering	Project Engineer	Manager Plant Operations	Manager Inspection Services	Manager Analytical Services	Manager Materials and Scheduling	Supervisor Traffic and Warehousing	Manager Safety, Security, and Licensing	Manager Regulatory Compliance	Environmental Engineering Component	Industrial Hygienist	Manager Safety	Criticality Safety Component	Health Physics Component	Manager Product Mechanical Engineering	Manager Manufacturing Technology	FA Development and Testing Component	Director, Quality
Radiation Protection Standards	B	D				D	D	D	D		C						A/C/E	D			
Radiation Safety Operating Procedures												C			B		A/C/E				
Radiation Work Procedures		D'			D'	D'	D'	D'		D'							A/B/E		D'	D'	
Nuclear Criticality Safety Criteria	B										C	C				A/C					
Nuclear Criticality Safety Analysis	D	D				D					C					A/B					
Nuclear Criticality Safety Standards	B	D'				D'	D'	D'	D		C	C				A/E		D'			
Criticality Safety Specifications	D	D'				D'	D'	D'	D'						B	A/E		D'	D'	D'	
Criticality Safety Limit Cards						D'	D'	D'		D'					B	A/E		D'	D'	D'	
Environmental Safety Standards	B	D'				D'			D'		C	C	A/E		C		A'	D'	D'		
Industrial Safety Standards	B	D				D	D	D	D		C	C		A/E	C			D			
Emergency Plan	B	D				D					C	A/E									
Engineering Change Notice Procedure		A/B				B					B										
Process Test Authorization		B	A	C'		D	C'								C'				C'		
Radioactive Material Shipping Standards	B					D'			D'		C	A'					A'/E				
Operating Procedures			B'	B'		A'/B'	A'/B'	A'/B'	A'	A'/B'	C				C				A'		E

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TABLE I-3.2

RADIATION SAFETY INSTRUMENT CAPABILITIES			
Type of Instrument	**Radiations Detected**	**Range**	**Lower Detection Level**
Air sample analyzers	α	0-10^6 cpm	1 cpm
Air contamination monitors	α	0-5x10^3 cpm	1 cpm
AC-Operated survey meters	α	0-10^6 cpm	20 cpm
Portable survey meters	α	0-5x10^5 cpm	20 cpm
Portable survey meters	β,γ	0-5x10^4 cpm	20 cpm
Portable low energy dose rate survey meters	β,γ,x	0-300 mR/hr	0.1 mR/hr
Portable dose rate meters	β,γ,x	0-25 R/hr 0-100 R/hr 0-300 R/hr 0-500 R/hr	0.5 mR/hr 1.0 mR/hr 0.1 mR/hr 0.2 mR/hr
Portable dose rate meters	n	0-2 rem/hr	0.01 mrem/hr
Direct-Reading dosimeters	γ,x γ γ	0-200 mR 0-10 R 0-600 R	10 mR 500 mR 20 mR

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TABLE I-3.3

ROUTINE URINALYSIS PROGRAM ACTION LEVELS AND ACTIONS

(Transportable Uranium Compounds)

Sample Results Exceed:	Required Action
15 mgU/l	Confirm result Document investigation
130 mgU/l	Confirm result Impose work restriction Collect and analyze additional urine sample(s) Document investigation Test urine sample for indications of kidney damage Initiate appropriate corrective action
400 mgU/l	Confirm result Impose work restriction Collect and analyze additional urine sample(s) Contact medical personnel and inform of results Document investigation Test urine sample for indications of kidney damage Initiate appropriate corrective action

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5.2 Environmental Monitoring

SPC shall conduct a routine environmental surveillance program in relation to the operation of the Engineering and Manufacturing Facility. Surface and groundwater samples shall be collected from strategic locations in the environment and analyzed for pertinent chemicals and uranium.

5.2.1 Surface Sampling

Sampling stations shall be established both on-site and off-site near points of expected maximum concentrations. The schedules for the various sampling stations are identified below. See Figure I-5.1 for the location of the stations.

Sample Station	Sample Type	Sampling Frequency	Analysis
1	Soil	Quarterly	Uranium
2	Soil	Quarterly	Uranium
3	Air	Monthly	Fluoride
4	Air	Monthly	Fluoride
5	Forage	Monthly[1]	Fluoride
6	Forage	Monthly[1]	Fluoride

5.2.2 Groundwater Sampling

Section 5.1.3 describes the between-liners sampling of the lagoons as well as the actions taken to confirm and repair possible leaks. The groundwater sampling program is described below. See Figure I-5.2 for the locations of the sample stations.

Presence of liquid	Monthly	Lagoon interliner sampling system	Grab
Gross Alpha/Beta[2], fluoride, NO_3-N, NH_3-H, and pH	Quarterly	GM Wells 1, 5, 6, 7, and 8 and TW Wells 6, 7, and 21	Grab

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[1] During the growing season only (April-October).

[2] The analytical method shall be capable of detecting 5 picocuries/liter alpha and 15 picocuries/liter beta.

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5.2.3 Sanitary Sewer Sludge Sampling

The release of radioactive material to the sanitary sewer system shall be controlled and monitored as described in Section 5.1.2. At the Richland sewage treatment facility, the sludge is removed from the process, de-watered to a semi-dry solid, and trucked to a sanitary landfill on a daily basis. Samples of sludge taken to the landfill shall be taken monthly by SPC and analyzed for uranium and moisture. The analyses shall be converted to picocuries of uranium per gram of sludge as transferred to the landfill. If a running average of the analyses over a six-month period exceeds 25 picocuries per gram or any single confirmed result equals or exceeds 30 picocuries per gram, an investigation shall be required, and a plan of action instituted. The action plan, as a minimum, shall require a reduction of discards to the sewer system until the sewer sludges contain less than 25 picocuries uranium per gram. Any confirmed monthly sludge sample result of 25 picocuries per gram or higher shall be brought to the attention of Chief, Fuel Cycle Licensing Branch, NRC.

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CHAPTER 4 NUCLEAR CRITICALITY SAFETY

Nuclear criticality safety shall be assured through both administrative and technical practices. Administrative practices include establishing the responsibilities for nuclear criticality safety, providing adequate and skilled personnel, preparing written standards and procedures, conducting process analyses, establishing materials and operational controls, performing operational and incident reviews, and establishing emergency procedures. Technical practices include exercising control over the mass and distribution of significant quantities of special nuclear material (SNM) and the mass, distribution, and nuclear properties of all other materials with which SNM is associated.

It is SPC's policy that the Double Contingency Principle (ANSI/ANS-8.1-1983 (R 1988)) will be the basis for design and operation of processes within the Richland Fuel Fabrication Facility using special nuclear materials. Where practicable, all process designs will incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible. In those instances where at least two independent controls are utilized to prevent changes in one control type parameter, sufficient redundancy and diversity of controls will be utilized. For each significant portion of the process, a defense of one or more system parameters will be employed and documented within the Criticality Safety Analysis. The defense is comprised of the set of bounding assumptions, criticality safety limits, and criticality safety constraints that, as a set, are uniquely sufficient to maintain the minimum subcritical margin against an initiating event.

4.1 Administrative Practices

The responsibilities and authorities for nuclear criticality safety as well as the professional requirements for criticality safety personnel are described in Chapter 2.

4.1.1 Criticality Safety Standards

SPC shall establish and maintain a system of written Criticality Safety Standards for processes, equipment, and facilities involving SNM. These Standards shall be prepared and maintained by the Criticality Safety Component of the Safety, Security, and Licensing Department and shall be approved and accepted in accordance with Figure I-2.3.

The purpose of these standards is to establish SPC's policies, administrative practices and criteria concerning nuclear criticality safety, and to implement a program that assures with a high degree of confidence that a criticality accident will not occur.

These standards shall be reviewed annually and updated as appropriate.

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4.1.2 Criticality Safety Analyses

Before any operation or process with SNM is begun or changed, it shall be determined that the entire operation or process will be subcritical under both normal and credible abnormal conditions within the technical criteria specified in Section 4.2.

Criticality Safety Analyses (CSAs) shall be performed for all applicable operations in accordance with Section 2.1.16. All determinations of nuclear criticality safety shall be reviewed and approved by a second-party reviewer in accordance with the requirements specified in Section 2.1.16. CSAs shall be performed and/or reviewed by personnel who meet the professional requirements specified in Section 2.2.7. Such personnel may either be SPC or contractor employees. Records of CSAs and reviews shall be documented and retained in accordance with Section 2.8. Additionally, basic criteria, data, methods, and references pertaining to nuclear criticality safety shall be documented and retained in company files by the Criticality Safety Component.

4.1.3 Confirmation of Analysis Assumptions

Prior to the introduction of SNM into a new or changed operation or process and after the CSA is performed, the Criticality Safety Component shall inspect the facility and equipment and confirm that the controls assumed in the CSA are in place. The results of these inspections shall be appropriately documented.

4.1.4 Materials and Operational Controls

Sections 4.1.4.1 through 4.1.4.5 detail how the material and operational controls involving SNM are administered.

4.1.4.1 Criticality Safety Specifications (CSSs)

The Criticality Safety Specifications (CSSs) describe materials control practices. CSSs shall be prepared when the Criticality Safety Component determines an analysis has plant-wide applications; when requirements from several analyses need to be combined into a single document for administrative convenience; or when administrative controls not specified on a Criticality Safety Limit Card are required. Criticality Safety Limit Cards contain a concise statement of CSS or CSA limits applicable to an operation or area.

The CSSs shall be accepted and approved in accordance with Figure I-2.3.

CSSs shall be prepared based on limits established in criticality safety analyses and shall be in a standardized format containing the following information: work location(s), equipment description, SNM description (element, isotope, enrichment,

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CHAPTER 6 SPECIAL PROGRAMS

6.1 Proprietary Information

With application for license amendment dated June 12, 1985 for operation of a dry conversion process, Advanced Nuclear Fuels submitted copies of document XN-NF-837, Part II, "License Amendment Application, Dry Conversion Process, Proprietary Supplement," dated June 1985, and requested that it be withheld from public disclosure pursuant to 10 CFR 2.790. An accompanying affidavit dated June 13, 1985 was also submitted. The U.S. Nuclear Regulatory Commission (NRC) determined that the submitted document did contain trade secrets or confidential or proprietary commercial information (letter, R. E. Cunningham to C. W. Malody, dated July 19, 1985). Amendment No. 26, dated November 7, 1986, was subsequently issued permitting operation, and no additional conditions of license were imposed.

With a change to the safety demonstration in Chapter 15, SPC requested in letters dated March 26, 1992 and April 17, 1992 that the fact that it was conducting certain operations be withheld from public disclosure. By letter of July 9, 1992 (R. E. Cunningham to J. B. Edgar) the NRC agreed that the submitted information did contain trade secrets or confidential commercial information and further agreed to withhold SPC's March 26, 1992 and April 17, 1992 letters and applicable pages from the safety demonstration in Chapter 15 (pages 15-13 and 15-15) from public disclosure. The applicable pages in this application (pages 15-43 and 15-44) shall also be withheld from public disclosure.

6.2 Occupational Safety

SPC follows the current American Conference of Governmental Industrial Hygienists (ACGIH), Washington Industrial Safety and Health Administration (WISHA), Washington State Department of Ecology (WDOE), U.S. Environmental Protection Agency (USEPA), and the U.S. Nuclear Regulatory Commission (USNRC) maximum permissible concentrations, threshold value limits, and permissible exposure limits for radioactive and hazardous chemicals in the design and operation of its Engineering and Manufacturing Facility.

In case of a known release, Plant Operations personnel shall contact Safety, Security, and Licensing personnel to ascertain the concentration levels and the recommended personnel protective equipment required for cleanup operations to proceed. Safety, Security, and Licensing personnel shall conduct routine or periodic surveys, as appropriate, to determine the concentrations of routinely utilized radioactive and hazardous chemicals.

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6.3 Emergency Utilities

6.3.1 Emergency Electrical Power Supply

Turbine generator sets are installed to provide emergency electrical power to operate the Criticality Accident Alarm System, selected exhaust fans, telephones, radiation detection instrumentation, critical process equipment, and emergency lighting. These generators shall be tested at least monthly for proper startup and operation. Functional tests consisting of tying the generator to a normal emergency load shall be performed at least annually.

6.3.2 Emergency Backup Water Supply

The water supply to the SPC's Engineering and Manufacturing Facility is furnished by the City of Richland through separate 10- and 12-inch mainlines connected into a loop feeding the plant fire loop. The City of Richland estimates the flow at the fire loop to be 1,600 gpm at 40 psi through each line, resulting in 3,200 gpm at 40 psi from the two lines. A more conservative estimate of reliable, available flow of 2,500 gpm at 40 psi provides ample supply for hose lines and exhaust ventilation filter deluge protection. Normal UO_2 Building water needs are about 200 gpm.

The source of water for Richland is the Columbia River. Primary backup is furnished by a 15 million gallon equalizing reservoir on a bluff south of the City at an elevation of 545 feet. Wells, which were the earlier source of water for the City before the construction of the present water filtration plant on the river, have been kept in operable condition as a secondary backup source.

6.4 Radioactive Waste Management

6.4.1 Liquid Wastes

Radioactive and nonhazardous chemical wastes from the process and laboratories (except from the spectroscopy laboratory in the SF Building which is routed to the retention tanks) are routed to the Process Chemical Waste Storage Lagoon System. Based on the chemical and radioactive (uranium) content, the lagoon waste may be processed through the Lagoon Uranium Recovery (LUR) Facility and/or the Ammonia Recovery Facility prior to being processed through the Lagoon 5A ion exchange (IX) system, sampled and released to the sewer system. Lagoon liquid goes to retention tanks which shall be sampled for chemicals and uranium and then sent directly to sewer.