INTERSTATE NUCLEAR SERVICES
2903 Millwood Ave., P.O. Box 50164
Columbia, SC 29250-0164
(803) 771-4600

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Date Check Received 10/13/87
Date Entered 10/13/87
By: J. Kimberly

October 1, 1987

U.S. NRC, Region 1
ATTN: Mr. J. Kinneman
631 Park Avenue
King of Prussia, PA 19406

Dear Mr. Kinneman:

SUBJECT: Amendment in Entirety of License No. 20/03529/01

Please find enclosed three copies of a document designed to replace all previous versions and correspondence referenced by existing License No. 20/03529/01. This amendment in entirety brings our Springfield plant license into conformance with the style and content of all recent versions of our other nuclear laundry licenses and updates personnel and facility descriptions. All substantive commitments identified from previous correspondence is incorporated into the body of the text, so that no reference to previous transmittals is necessary or appropriate.

Enclosed is a check for $170.00 for amendment fee pursuant to 10 CFR 170.31 under the Nuclear Laundry category. If you have any questions regarding this submittal, feel free to call.

Sincerely,

Guy Wilson

Guy Wilson
Manager, Corp.
Health Physics

107888

Recd 10/5/87 2:42 pm

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INS Corporation

Application for Amendment

to License No. 20/03529/01

submitted 10/1/87

REPLACEMENT IN ENTIRETY

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2903 Millwood Ave., P.O. Box 50164
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Date: 10/1/87 License: 20/03529/01

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Date: 10/1/87 License: 20/03529/01

ITEM 5
a, b, and c

a. Radioactive Material		b. Physical Form	c. Possession Limit
5.1	Any radioactive material other than that listed in 5.2, 5.3, 5.4, and 5.5	Contaminated garments and other launderable items, equipment, machinery protective devices, and associated decontamination wastes.	2.5 Ci
5.2	Source material	" "	5 kilograms
5.3	Uranium 235	" "	350 grams
5.4	Transuranics	" "	Less than 10 nano-Curies per gram for all material present.
5.5	Uranium 238	" "	1 kilogram
5.6	Any radioactive material	Miscellaneous Radiation Standards (SRMs) from the National Bureau of Standards or other suppliers	Total activity of all SRMs not to exceed 1 millicurie.

ITEM 6

Purpose for which
licensed materials shall be used

a. The radioactive materials listed in 5.1, 5.2, 5.3, 5.4 and 5.5 are in the form of contaminated garments, plastics, PVC and other launderable items, equipment, machinery, protective devices, and resulting decontamination wastes. Operations include the transportation of contaminated articles, decontamination by laundry, dry cleaning, or other industrial cleaning processes, and testing and monitoring of items.

b. Radioactive materials listed in 5.6 are to be used for instrument calibration.

Date: 10/1/87 License: 20/03529/01

Individuals Responsible for Radiation Safety Program

See Appendix E for Training and Responsibilities of the individuals listed.

Tom Nally, Plant Manager, RSO
Phillip A. Rumian, Alternate RSO
George J. Bakevich, General Manager
Guy R. Wilson, Manager, Corporate Health Physics
Gregg A. Johnstone, Mgr., Tech. Sales & Marketing
William R. Roschewski, Operations Manager/Alt. RSO
Leslie B. Case, Corp. Engineer/Alt. RSO
Susan L. Fanelli, Health Physicist
Victor M. Crusselle, Radiation Specialist
Richard Kula, Asst. Plant Manager/Alt. RSO

Individuals designated as RSO or Alt. RSO will be users of radioactive material at times when present at the facility.

Date: 10/1/87 License: 20/03529/01

APPENDIX A

INTERSTATE NUCLEAR SERVICES

INSTRUMENT CALIBRATION REQUIREMENTS

The purpose of this appendix is to provide guidelines which are to be followed when calibrations are performed by INS personnel or its consultants using INS calibration equipment and sources. These guidelines do not apply to instruments which are contracted to outside agencies for calibration. Only qualified vendors will be used for contract calibrations.

I. CALIBRATION REQUIREMENTS

A. Equipment Required for Calibrations

1. Pulser

The pulser shall be:

a. of suitable capacity to be able to check all ranges of instruments.

b. calibrated on a frequency not to exceed 6 months (and traceable to National Bureau of Standards.

c. able to provide an adequate range of pulse amplitudes for all instruments to be checked.

2. Sources

The sources shall:

a. be traceable to the National Bureau of Standards (certificates of traceability shall be maintained on file).

b. provide appropriate types of radiation which instruments may encounter during use.

c. be of appropriate activity to determine efficiencies of instruments.

3. Voltage Meter

a. The voltage meter shall be suitable to measure voltages from 0 to 2500 volts and of sufficient internal resistance to preclude unnecessary loading of circuit being measured.

4. Technical Manuals

a. The technical manuals shall be used for calibration procedures for each particular instrument type. In lieu of technical manuals, calibrations shall be performed only in accordance with procedures approved by the Corporate Engineer.

5. Miscellaneous Equipment

a. necessary cables and connectors for proper hookups of instruments.

b. lead shielding, if necessary

c. source holders to provide a repeatable geometry

d. graph paper

e. certificate of calibration

f. individual calibration labels

B. Methods for Calibration

1. Follow steps for calibration as listed in the appropriate technical manual for the instrument to be calibrated, or as specified by the Corporate Engineer.

2. Certificate of calibration shall be completed recording all pertinent information.

3. Attach a label to the instrument certifying calibration of instrument, date performed and date next calibration due.

C. Special Calibration -For instruments that are used for more than one type detector.

1. Calibrate the instrument as outlined above.

2. Calculate the operating voltage for each detector used by plotting a voltage plateau (cpm vs voltage).

3. It may be necessary to shield detector probe using lead.

4. Set the gain at appropriate voltage for detection.

5. When completing certificate of calibration, insure distinctions are made for all detectors which the instrument may use.

D. Required Calibration Frequency
As a minimum, instruments shall be calibrated on a semi-annual basis, following all repairs, and whenever faulty operation is suspected.

Date: 10/1/87 License: 20/03529/01

APPENDIX B

1. Description of Facilities

Figure B-1 is a site drawing of the Springfield Plant. The facility is located in a residential area on approximately two acres of land owned by Unifirst Corporation. INS' nuclear laundry is contained on the same premises as Unifirst's non-radioactive industrial laundry. The industrial laundry is physically separated form the nuclear laundry by a concrete block wall. Each facility is completely independent of the other. No contaminated or potentially contaminated garments are processed by the non-nuclear laundry. Figure B-2 illustrates the INS nuclear laundry within the facility, and the location of the principal equipment, including washers, dryers, air and water filters and holding tanks. Table B-1 lists the radiation detection equipment available.

A. Work-flow of Radioactive Materials

Figure B-2 shows the general areas where radioactive material is handled. Incoming contaminated laundry/-equipment is off-loaded from the truck directly into the plant where articles may be stored prior to washing. Containers are surveyed and segregated according to levels of radiation. Any container reading over 50 mr/hr on contact shall be returned to the customer unopened. The containers are moved into the washer-dryer area where they are opened and loaded into washers. Persons handling items having loose contamination are required to wear protective clothing as outlined in a Protective Clothing Chart. Figure D-1 provides an example of the chart's content. Launderable items are then washed, removed from the washers, and placed in the dryers. Following drying, articles are transferred to the monitoring/folding area to be monitored, folded, sorted and packaged as required by the customer. Containers are surveyed for fixed and loose contamination prior to being loaded on the truck for shipment back to a customer.

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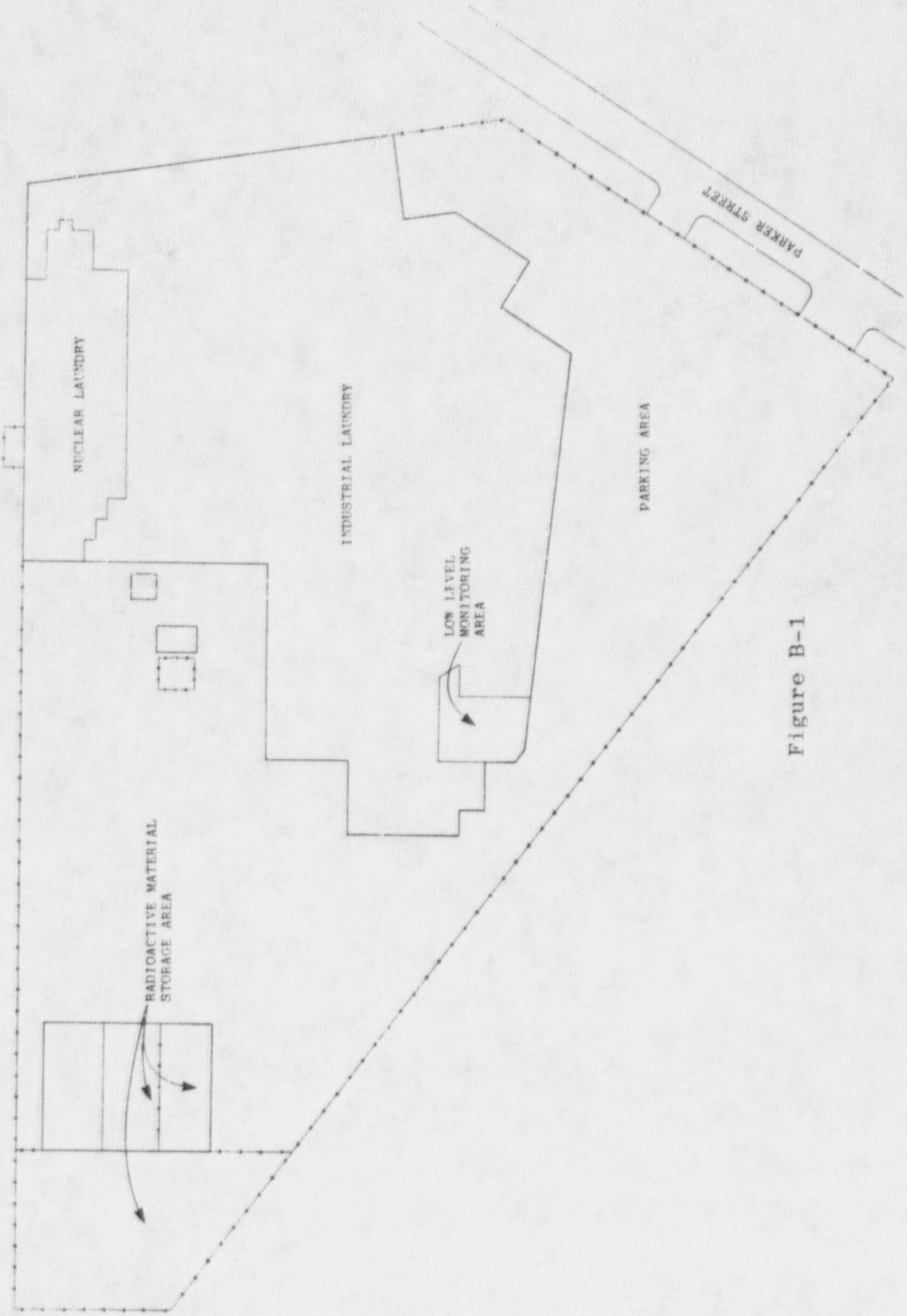

Figure B-1

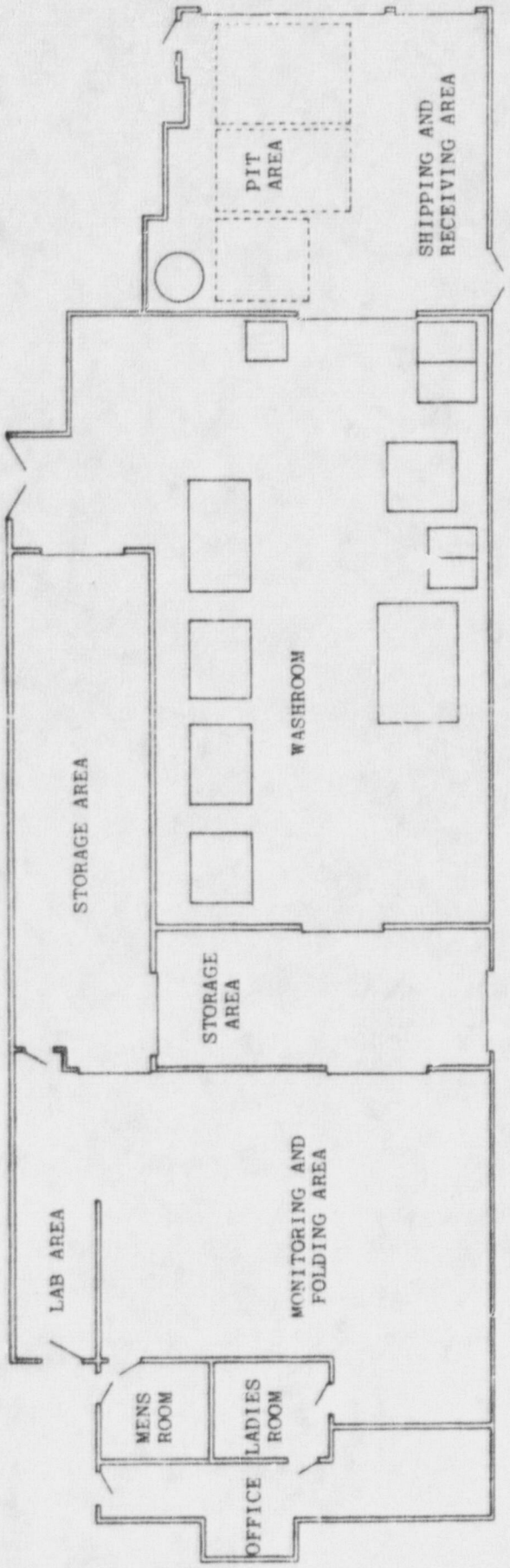
PIT AREA
SHIPPING AND RECEIVING AREA
STORAGE AREA
WASHROOM
STORAGE AREA
LAB AREA
MONITORING AND FOLDING AREA
MENS ROOM
LADIES ROOM
OFFICE

Figure B-2

Date: 10/1/87 License: 20/03529/01

B. Controlled Areas

The area within the nuclear laundry facility, low level monitoring area and radioactive material storage areas are considered the Restricted Areas. These areas are subdivided as follows:

1. Non-contaminated areas - areas in the plant where loose contamination is not present and areas outside the plant but within the fence. This includes the office area, locker room and break room.

2. Potentially contaminated areas - areas where laundered items are handled. This includes the low level monitoring area, loading dock and the folding/monitoring area.

3. Contaminated areas - areas where unlaundered items are handled. This is the washer/dryer area and the pit area.

These areas shall be posted as appropriate in accordance with 10 CFR 20.203. Figures B-3 and B-4 illustrate typical area designations.

C. Radiation Detection

The following list specifies the minimum instruments and equipment available when the facility is in operation. Similar instruments by other manufacturers may be substituted for those listed below. Whenever similar instruments of different manufacturer are substituted, the correct technical manual will be used for calibration, or the Corporate Engineer will be consulted for instruction in the appropriate calibration method.

Date: 10/1/87 License: 20/03529/01

Dotted areas are contaminated; Lined areas are potentially contaminated

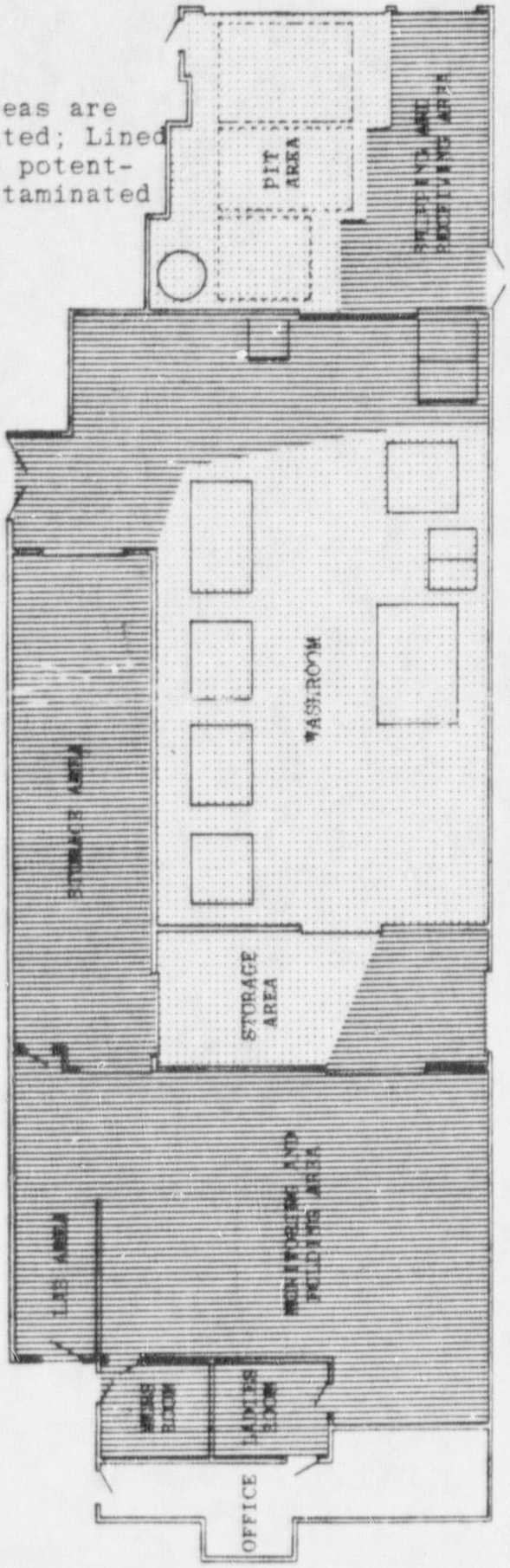

Figure 3-3

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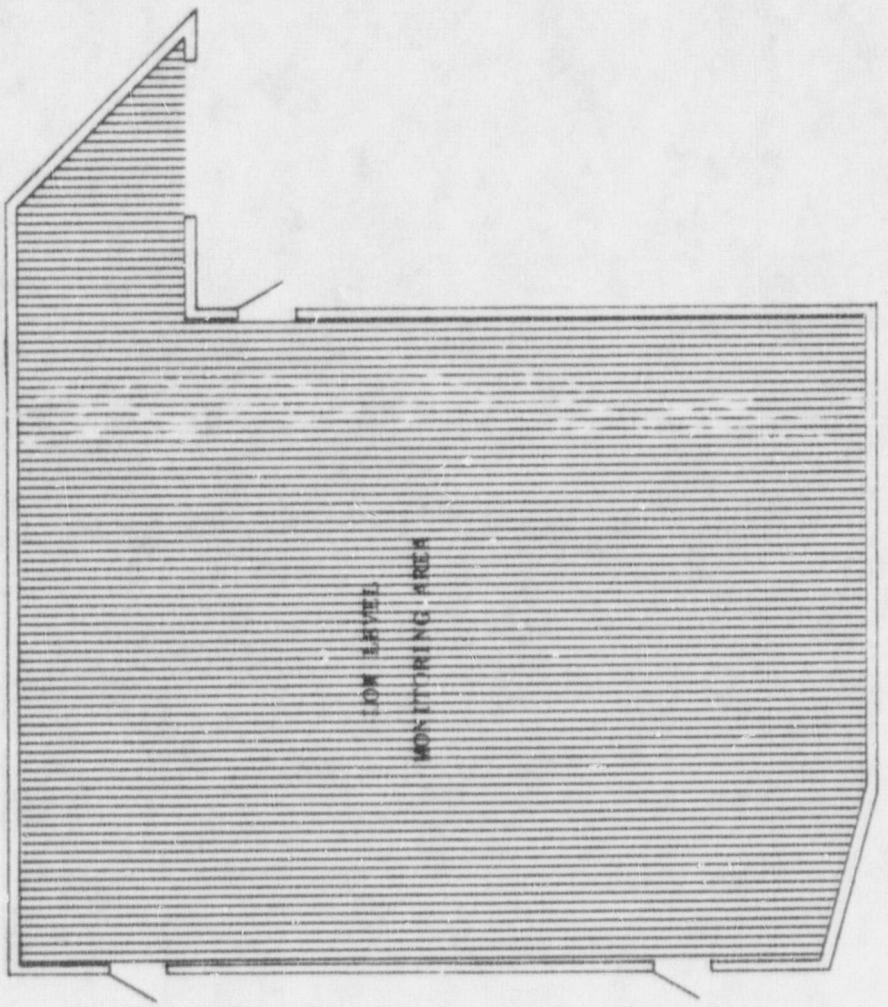

Figure B-4

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TABLE B - 1

RADIATION DETECTION
INSTRUMENTS AND LABORATORY EQUIPMENT

QTY.	INSTRUMENT TYPE	RADIATION DETECTED	SENSITIVITY RANGE	PRIMARY USES
(1)	Eberline E-520 w/HP-177	Beta, Gamma	0-500 mr/hr in 4 ranges	Garment monitoring and area surveying
(1)	Eberline RM-14 w/HP-210	Beta Gamma	0-50k cpm in 3 ranges	Frisking and garment monitoring
(1)	Eberline SAC-4	Beta/Gamma	Scaler 0 - 1E6cpm	Laboratory measuring
(1)	Eberline BC-4	Beta/Gamma	Scaler 0 - 1E6 cpm	Laboratory measuring

ADDITIONAL EQUIPMENT

EQUIPMENT	DESCRIPTION	PRIMARY USE
(1) Air pump, with flowmeters and filterheads at various locations	Air sampling system	Continuous in-plant and environmental air sample collection during operation.
(1) Hot Plate	Adjustable evaporation	Water sample

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APPENDIX C

I. WASTE DISPOSAL AND EFFLUENT TREATMENT

A. Solid Waste

All solid waste such as lint, cloth, filters, and other laundry solids will be placed in DOT approved shipping containers, monitored, labeled, and disposed of at the pertinent licensed low level radioactive waste disposal facility. Waste items may also be returned to the customer, depending on contractual arrangements.

B. Liquid Waste

The wastewater system is designed to assure that releases are properly treated, sampled, and analyzed prior to discharge. Figure C-1 is a schematic diagram of the wastewater processing system (See page C-2).

The liquid waste system is designed to operate on the batch system to assure that liquids are not released to the sanitary sewer until sampling and analysis have been conducted to determine that effluents meet applicable discharge limits. Treatment facilities are provided so that the radioactive content of effluents shall be as low as reasonably achievable (ALARA).

All water discharged from washers and equipment drains flows by gravity into an initial wastewater holding pit. The wastewater is then pumped through a screen type filter. The filtered water drains into pit #2 or #3. The pits are equipped with a level alarm. Wastewater is held in the final holding pit pending analysis. If the concentration is below the applicable release level (see Section B (2) of appendix D) the wastewater is discharged to the sanitary sewer.

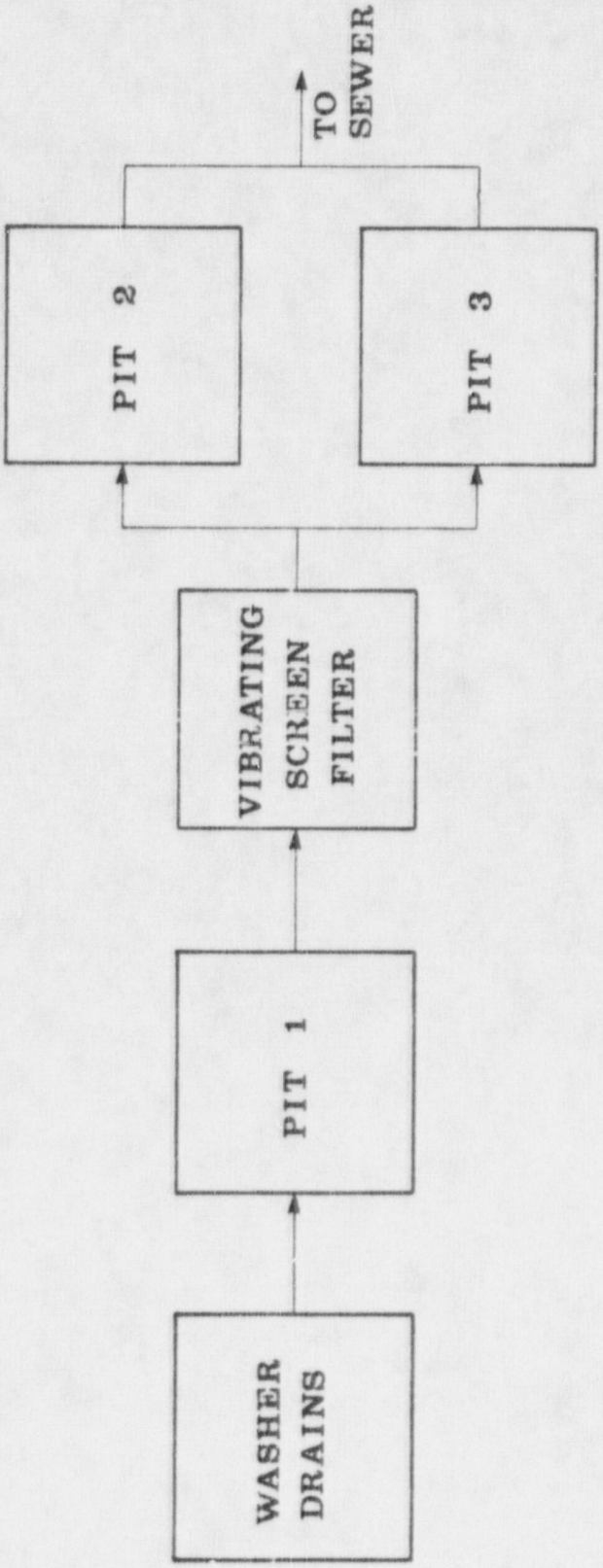
WASHER DRAINS
PIT 1
VIBRATING SCREEN FILTER
PIT 2
PIT 3
TO SEWER

Figure C-1

Date: 10/1/87 License: 20/03529/01

C. Air Effluent

To reduce exposure to airborne contamination, a ventilation system is provided which encourages a pattern of air flow in a clean-to-contaminated direction and provides adequate filtration prior to discharge.

Laundry room air is monitored in the principal work areas in the plant, (i.e.: the wash and sorting areas and the folding and monitoring areas). The air sample system is operated whenever contaminated garments are being processed.

Effluent air is filtered utilizing a two stage multi-impact water mist (scrubber type) lint collector system. Representative effluent sampling is performed in the discharge stack at a point prior to exhaust. The particulate sampler head is oriented with respect to the air stream such that near isokinetic conditions are achieved. Air velocity inside the sampling inlet nozzle approximates the surrounding air velocity to achieve isokinetic air sampling conditions. This effluent air is sampled continuously during operations.

Figure C-2 schematically depicts the air system. Air samples are counted for beta-gamma and alpha activity. Permanent records of air sampling results are maintained.

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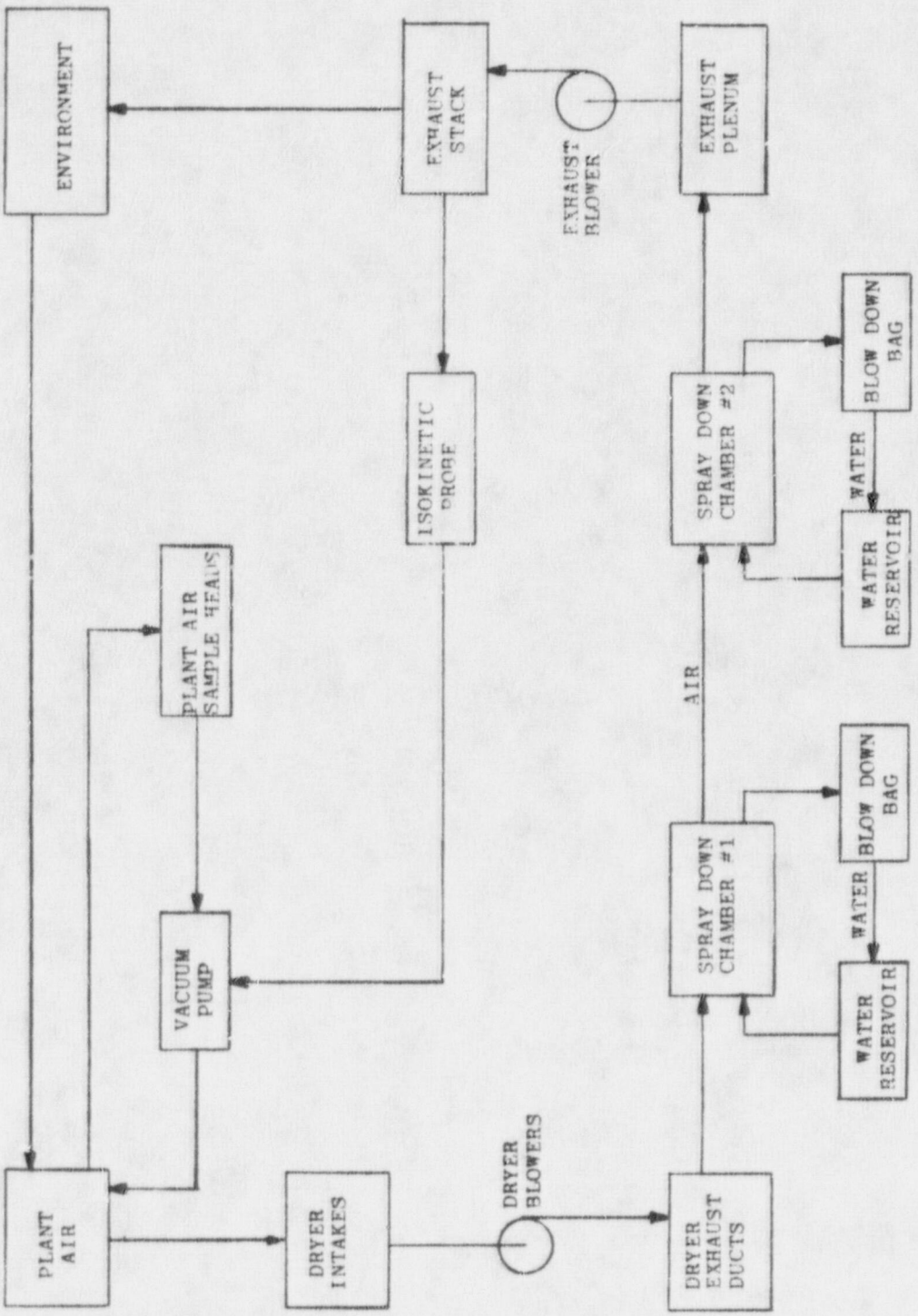

Figure C-2

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APPENDIX D

Radiation Safety Program

A. General

The radiation safety program has been developed primarily to minimize ingestion, inhalation, or other modes of entry of radioactive material into the body, since exposure from external sources is typically low. Good housekeeping shall be strictly enforced.

The decontamination facility is restricted to everyone other than trained operating personnel and escorted visitors. Details of Plant Security are specified in Section I of this appendix.

B. Maximum Permissible Exposures and Concentrations

1. Occupational Dose Limits from External Exposure

	Allowable Exposure *Rem per Calendar Qtr.	INS Action Level Rem per Calendar Qtr.
Whole Body	1.25	1.00
Hands, Forearms, Feet and Ankles	18.75	14.00
Skin of the Whole Body	7.50	5.50

* These limits are derived from 10 CFR 20.101.

2. Maximum Permissible Concentrations for Air, Water, and Soil

a. Soil

(i) Soil samples will be taken whenever an unplanned release or spill of liquid on to the outside ground occurs. Soil activity is calculated in pCi/g. This may be converted to uCi/ml by assuming one gram of soil is equivalent to one ml of soil. Soil samples are counted for gross beta-gamma activity. A background is established by performing an analogous gross beta-gamma count of a sample

taken nearby offsite. Any sample with a net beta-gamma count exceeding 5 CPM per 100 grams will be sent for a gamma spectral analysis.

(ii) Based on the gamma spectral results, the measured concentration will be compared to the isotopic MPC's for water in 10 CFR 20, Appendix B, Table I, Column 2 as an action level. If any isotope is present in the soil in concentrations greater than 10% of its corresponding water MPC, a detailed investigation into the source of contamination will be made. If any isotope is present in the soil in concentrations at or exceeding 100% of its corresponding water MPC, the soil will be removed from the affected area and placed in drums for disposal as solid radioactive waste.

b. Wastewater

(i) Discharges of wastewater into a sanitary sewer system shall be made in accordance with, or more conservative than, requirements set forth in 10 CFR 20.303. The sum of the ratios of each radionuclide present to its MPC shall conform to the following relationship:

$$\frac{Ca}{MPCa} + \frac{Cb}{MPCb} + \frac{Cc}{MPCc} + \ldots \leq 1$$

(ii) For discharges where the identity of each radionuclide is known* but the concentration of one or more of the radionuclides is not known, the gross concentration limit is the limit specified in 10 CFR 20, Appendix B, Table I, Column 2 for the radionuclide having the lowest concentration limit.

(iii) If concentrations are not known but radionuclide identities are such that it is known that Sr-90, I-125, I-126, I-129, Pb-210, Po-210, Ra-223, Ra-226, Ra-228, Pa-231, Th-nat, Cm-248, Cf-254, and Fm-256 are not present, the limit shall be 6E-5 uCi/ml.

(iv) For purposes of this license, a radionuclide may be considered as not present in a mixture if:

(a) The ratio of the concentration of that radionuclide in the mixture (Ca) to the concentration limit for that radionuclide specified in 10 CFR 20, Appendix B, Table I, Column 2 (MPCa) does not exceed .1 (i.e., Ca/MPCa is lesser than or equal to 1/10); and

(b) The sum of such ratios for all radionuclides considered as not present in the mixture does not exceed 1/4, (i.e., Ca/MPCa +Cb/MPCb +.....is lesser than or equal to 1/4).

*Identity of radionuclides are known by utilizing the DOT certified shipping papers received from the customers. Radionuclides are assumed present unless confirmed to be absent by composite air and water samples performed by INS.

c. Air

(i) INS will take immediate action if air sampling results indicate concentrations greater than those specified for restricted areas for discharges in 10 CFR 20, Appendix B, Table I, Column 1 or 2 as appropriate, for the most restrictive isotope identified on the DOT certified shipping papers or as indicated by composite sampling results. This will insure compliance with airborne activity requirements stipulated in 10 CFR 20.

3. Loose Surface Contamination Action Level

a. Noncontaminated areas

Action Level: The removable levels listed in Table F-1, Appendix F of this application.

b. Potentially contaminated areas

Action Level: Five times the levels listed in Table F-1, Appendix F of this license.

c. Contaminated areas

Action Level: Ten times the removable levels listed in Table F-1, Appendix F of this license.

In keeping with the ALARA philosophy, the RSO shall review records for potential problems and take appropriate corrective action if necessary.

C. Radiation Signs and Symbols

1. The standard radiation symbol is a magenta three bladed design on yellow background. It shall appear on all radiation or radioactive material warning signs. Special instructions and precautionary procedures that are to be followed within the area shall be included. The particular circumstances shall determine the conditions for posting signs in accordance with 10 CFR 20.203.

2. Area Classification

a. Restricted area - Definition

"Restricted area" means any area to which access is controlled by the licensee for the purpose of security and protection of individuals from exposure to radiation and radioactive material.

b. Restricted area - Designation

For contamination control purposes, the restricted area shall be divided into three areas; a noncontaminated area, a potentially contaminated area

and a contaminated area: These areas are defined as follows:

(i) Noncontaminated areas are areas of the facility in which radioactive items are not processed, such as the offices and lounge. No protective clothing is worn.

(ii) Potentially contaminated areas are areas where cleaned items are handled. A potential for contamination exists in these areas, and some protective clothing may be required.

(iii) Contaminated areas are the portions of the facility where the laundry is washed and dried. Protective clothing is required in this area. (See Figure D-1). Figures B-3 and B-4 show the layout of facility and area designations, which may be modified only with RSO approval, including written update of facility maps.

3. Contamination Control

To prevent the spread of loose contamination, and to protect individuals from being contaminated, there are parts of the plant where protective clothing must be worn. For example, in the washing area, coveralls and protective shoe covers must be worn by workers. Gloves must be worn while loading the washing machines or sorting contaminated laundry. These garments must be worn only in the designated areas, and must be removed immediately upon exiting that area. A line or other physical boundary is present outside of which this protective clothing must not be worn. A Protective Clothing Chart (Figure D-1) describes the protective clothing that is to be worn in normal production and maintenance jobs. For activities not listed on the chart, the employee shall report the nature and location of the activity to health physics personnel or to the RSO, who will determine the appropriate protective clothing to be worn. The chart may be modified only with RSO approval, including written update of facility maps.

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D. Personnel Monitoring

1. Radiation Dosimeters

All employees and visitors who enter the radiation control area under such circumstances that they are likely to receive a dose in any calendar quarter at or in excess of 25% of the allowable exposure limits specified in Appendix D (B) (1) herein are issued a film or TLD badge. Badges are kept with a control badge in a low-background area. Badge services are provided by a NVLAP certified dosimetry lab. Records are maintained at the Springfield facility.

Self reading pocket dosimeters will be issued to visitors who enter the portions of the restricted area which are posted radiation areas. Film or TLD badges may be used in lieu of pocket dosimeters.

2. Bioassay Program

a. New Employees

All new employees who work in a contaminated area will receive a baseline gross gamma chest count.

b. During Operations

Personnel who have worked in the contaminated areas of the facility shall be given a gross gamma chest count quarterly. Such counting shall be performed in a low background area of the facility using a 2 by 2 inch sodium iodide detector and appropriately calibrated ratemeter. Quantitative limits have been established with reference to the transfer models and parameters described in ICRP 30, with the conservative assumptions that the probable intake of radioactive isotope is inhalation, and that the intake would have occurred as an acute intake on the first day of the quarter. Should a gross gamma chest count yield an activity equal or exceeding 2 E + 6 dpm, an isotopic whole body count of the employee will be performed.

c. Terminating Employees

All employees who have worked in the contaminated area shall receive a termination gross gamma chest count. Refusal to participate will be documented.

d. Procedures

All gross gamma chest counting will be performed in compliance with procedures specified and approved by INS corporate management.

e. Action Levels

The purpose of the bioassay program is to periodically confirm the effectiveness of the facility practices in controlling the internal uptake of radioactive material. As inhalation is the predominant mode of entry of radioactive material into the body, bioassay results are a reflection of the air handling and sampling system. That system is primarily relied on for personnel protection, with the bioassay program and internal action levels serving as a check on the air handling processes. Action levels for mixed fission products are derived from the models and retention functions established in Report 30 of the International Commission on Radiation Protection (ICRP). Should any isotopic whole body count results exceed the applicable action level, the employee will not be permitted to work in areas where loose contamination is present until the matter is investigated and an acceptable resolution is developed.

3. Records

Records of dosimetry and bioassay results shall be kept at the facility. Such records shall be available to the employee upon request. All records are available for inspection. Records shall be reviewed periodically by Corporate Health Physics personnel.

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E. Radiation Monitoring

1. Clothing

All processed clothing shall be monitored in compliance with customer contractual limits.

2. Air Sampling

Within the facility, sufficient representative air samples are taken to determine that air in the work areas, and that discharged to the environment, does not exceed the limits set forth in applicable columns of 10 CFR 20, Appendix B.

Air is continuously sampled in the work area and analysis is performed on a weekly basis. Air sample holders are located in areas of the breathing zone which are likely to contain airborne contamination. See Figures D-2 and D-3 for typical air sample locations. Locations may be changed as equipment configurations change, and air sample heads may likewise be relocated in a manner to conservatively represent breathing air. Location changes will be documented in detail, and all records maintained.

Effluent air is sampled continuously whenever air is being exhausted. Air samples are analyzed following a minimum 24 hour storage to permit decay of short lived radon progeny.

Composite gamma spectroscopy shall be performed on a semi-annual basis by INS Corp. or a qualified vendor.

3. Water Sampling

A representative 100ml sample is drawn from the final holding pit. 50ml goes into the composite water sample container and 50ml is evaporated under a heat lamp or on a hot plate. Care is taken to assure all the contents of the beaker are transferred to the planchet. The sample is counted in the BC-4 and SAC-4 for gross beta-gamma and gross alpha activity, respectively. The activity is then compared the MPC's as determined in section B (2) (b) of this appendix. Only tanks with radioactivity levels less than those listed in this section shall be discharged to the sanitary sewer.

The annual composite water sample shall be analyzed for gross alpha and gross beta activity. Gamma spectroscopy shall also be performed on this sample to determine the identity of radionuclides.

4. Standard Survey Program

When the Plant is in operation, a radiation and contamination survey is conducted weekly. The purpose of the survey is to detect any anomalous occurrence or increase in levels of surface contamination, to monitor the effectiveness of radiation safety and control practices, and to implement appropriate corrective actions that reduce radiation exposure to workers in a timely manner.

a. Radiation Survey

(i) Using an appropriate, calibrated, beta-gamma survey instrument, the general radiation levels in areas normally occupied by workers are determined weekly. A survey for "hot spots" on machinery, filters, pipes, storage facilities, and waste or laundry containers is made. Survey results are recorded on the appropriate form.

(ii) If significant hot spots or materials are discovered, they are reported to Plant Management for removal from occupied areas, decontamination, shielding, or posting as appropriate.

(iii) A survey of all restricted area boundaries shall be performed weekly.

b. Loose surface contamination survey

(i) At least five smears are taken each day of operation. Floors, walls or machinery in contaminated areas shall be smeared. Special attention is given to the washroom and sorting area floors and step-off areas.

(ii) Smear results are recorded on the appropriate plant survey form. Should any smear exceed action levels, results are reported to Plant Management for decontamination. Should smear results reflect the spread of contamination to low or noncontaminated areas, an investigation of the cause of such contamination shall be made.

(iii) Action Levels - Areas shall be cleaned if the removable contamination limits specified in Appendix F, Table F-1 of this application are exceeded in the noncontaminated areas, 5 times these values for the potentially contaminated areas, and 10 times these values for the contaminated areas.

c. Vehicle Surveys

Trucks shall be surveyed for both radiation levels and loose surface contamination prior to leaving with a load of laundered items to assure compliance with DOT regulations.

F. Access Procedure

All personnel entering the decontamination laundry must be trained employees of the INS Corporation or have permission from the Plant Manager or Radiation Safety Officer.

1. Employees

Employees shall only enter through the employee entrance door. Employees shall don protective clothing as necessary prior to entering the contaminated area. Shoe covers as a minimum shall be worn in the contaminated area. Personnel shall monitor themselves and/or their clothing prior to leaving the restricted area.

All personnel leaving the contaminated areas shall:

a. Remove shoe covers before going to noncontaminated areas.

b. Remove any additional protective clothing before leaving the contaminated area.

c. Monitor their person and clothing before entering a clean area.

2. Visitors

All visitors must be accompanied by the RSO or an INS trained radiation worker. At a minimum, self-reading pocket dosimeters will be issued to visitors who may enter posted radiation areas.

3. Contractors

Contractors performing work in the restricted area shall receive radiation worker training commensurate with the tasks they are to perform.

G. Procedures for Handling Contaminated Garments

1. All incoming and outgoing shipments of radioactive materials are packaged in containers meeting Department of Transportation requirements.

2. Prior to unloading a shipment of radioactive materials, an examination of the incoming Radioactive Shipment Record (RSR) is made to determine the listed radiation levels of the shipment. Unless all packages in a shipment possess very low contact readings, as for example, shipments made as Radioactive Materials, Limited Quantity, packages are to be surveyed as they are removed from the vehicle. Any package exceeding 50 mr/hr on contact is to be segregated, placed away from the immediate working area, and returned to the shipper unopened. Additional segregation of packages by radiation level may be necessary to permit the more contaminated items to be processed separately.

3. Any equipment, tools, drums, clothing or other articles to be moved from a contaminated area to a noncontaminated area must either be decontaminated or placed in plastic bags or other suitable enclosures. All outgoing containers of decontaminated laundry are to be wiped down prior to being moved into the loading area.

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H. Training

1. Radiation Protection Outline

The following topics are to be covered in a new employee's initial training session:

Types and characteristics of radiation: Instruction in the differences between alpha, beta, and gamma radiation.

Sources of radiation: Instruction in manmade and natural sources of radiation.

Activity and Dose: Instruction on the differences between activity and dose and dose rate.

Biological Effects: Instruction in the biological effects of radiation, and the reasons for keeping exposures ALARA.

Dosimetry: Instruction in the proper use of a film badge or TLD, and the use of bioassays in determining internal exposure.

Dose Limits: Instruction concerning annual NRC and company dose limits. Instruction on dose limits to pregnant employees.

Contamination and Control: Instruction in the difference between loose and fixed contamination. Use of protective clothing and the ALARA concept.

Eating, Drinking and Smoking: Instruction on the acceptable and unacceptable areas for eating, drinking and smoking.

Personnel Frisking: Instruction in the use of the frisker and reasons for its use.

Handling contaminated articles: Instruction in the handling of incoming contaminated articles, RSR's, etc.

Documents: Presence of the RAM license, NRC Regulation 10 CFR 20, NRC Regulation 10 CFR 19, Reg Guide 8.13, Reg Guide 8.29, and other documents available for inspection upon employee's request. Reg Guide 8.13 is provided to all females.

Emergency Procedures: Instruction in the procedures to follow in case of an emergency.

Area posting: Instruction in the control of access to the plant area for reasons of radiation protection and security and in visitor policies.

2. The above topics shall be covered with all new employees prior to allowing them to work in the restricted area unescorted. All employees who work in the restricted area shall attend retraining on selected topics. Training is to be conducted by a qualified employee or consultant. Retraining shall be held as a minimum annually for all employees continuously employed.

3. New employees shall be required to answer questions asked by the instructor on the subject matter. Wrong answers shall initiate retraining and further questioning until the employee understands the material.

I. Plant Security

The area within the nuclear laundry facility, low level monitoring area, and radioactive material storage areas are restricted areas. As such, access is controlled for security and radiation protection purposes. Gates are to remain locked at all times other than when in actual use. Any employee opening an entrance must either lock it immediately upon exit or if unlocked, maintain direct surveillance. Visitors are permitted into the restricted area only for official business. All visitors must be escorted until they have demonstrated an understanding of company procedures. If a visitor is to enter a radiation or contamination control area, the health physics technician or RSO must assign a dosimeter and assure that the visitor is properly logged in and out. To prevent the unauthorized use of radioactive material, radioactive sources used for instrument calibration are maintained by the RSO and are kept in a specific area of the laboratory when not in use.

J. Transportation of Radioactive Materials

The transportation of radioactive materials shall be in compliance with U.S. Department of Transportation Regulations 49 CFR 390-399 with respect to drivers' qualifica-

tions, hours of operations and carriers' requirements, and 49 CFR 170-189 with respect to shippers' requirements and the proper packaging and shipping of radioactive materials. Additional requirements may be imposed by affected states, particularly in the shipment of radioactive wastes to licensed burial facilities. All employees associated with the transportation of radioactive materials are given classroom instruction in the regulatory requirements of their duties. In addition to training and experience in handling radioactive materials on site, all drivers who transport hazardous materials shipments are required to complete DOT certification requirements.

K. Corporate Radiation Protection Program

1. Management Organization

The INS Corporate Health Physics staff provides guidance to all INS facilities in the radiation protection area. The Manager of Corporate Health Physics is independent of Operation and Sales and reports directly to the General Manager, the highest official in INS Corporation. The Manager of Corporate Health Physics is responsible for reporting and providing direction to the General Manager on all health and safety issues. Figure D-4 schematically depicts the upper management organization of INS Corporation. Resumes of the individuals referenced in this section are all provided in Appendix E of this license.

2.Corporate Audits

Corporate audits of INS facilities are performed by the Manager of Corporate Health Physics, Health Physicist, Radiation Specialist or an independent health physics consultant. These audits include an evaluation of the radiation protection program for compliance with regulatory, license, and insurer commitments, as well as overall safety conditions at the plant. Any radiation worker is free to communicate directly with Corporate Health Physics personnel at any time and direct interviews are sometimes held during unannounced audits. When audits are provided by health physics consultants, a capable individual is selected to perform the radiation safety program evaluation without regard to format or precedence of INS Corporate auditors. In this manner total independence is insured.

Typical Protective Garment Chart

AREA/TASK	R. SHOES	LABCOAT	COVERALL	GLOVES	CAP	TAPE
DRYING/WASHING AREA CLEANING EXHAUST DUCTS	XX		XX	XX	XX	
SORTING AREA CLEANING AIR FILTERS	XX		XX	XX		
WASHING AREA CHANGING WATER FILTERS	XX		XX	XX		
WASHING/DRYING AREA UNLOADING W./LOADING D.	XX	XX				
WASHING/SORTING AREA HANDLING CONTAM. GARMENTS	XX		XX	XX		
WASHING AREA LOADING WASHERS	XX		XX	XX		
MONITORING AREA FOLDING, MONITORING		XX				
SORTING AREA CLEANING LINT TRAPS	XX		XX	XX		
SORTING AREA CLEANING PIT	XX		XX	XX		XX
WASHING AREA COLLECTING WATER SAMPLE	XX	XX		XX		

Figure D-1

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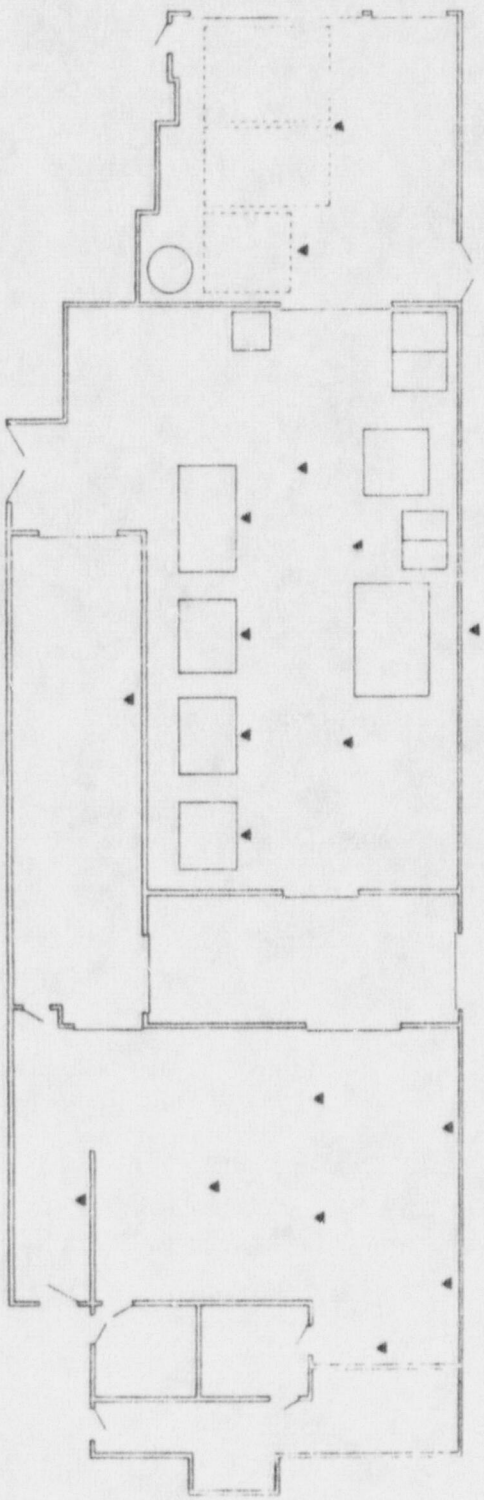

Figure D-2

Date: 10/1/87 License: 20/03529/01

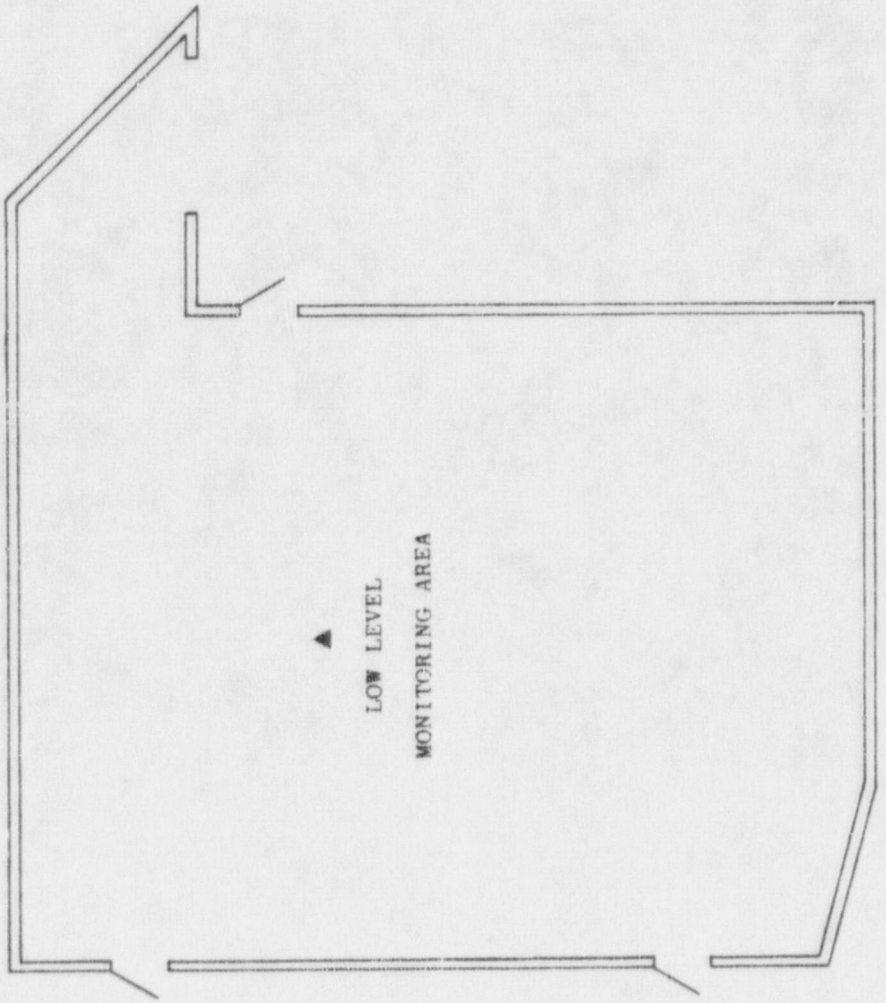

Figure D-3

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Interstate Nuclear Services Corporation
Management Organization

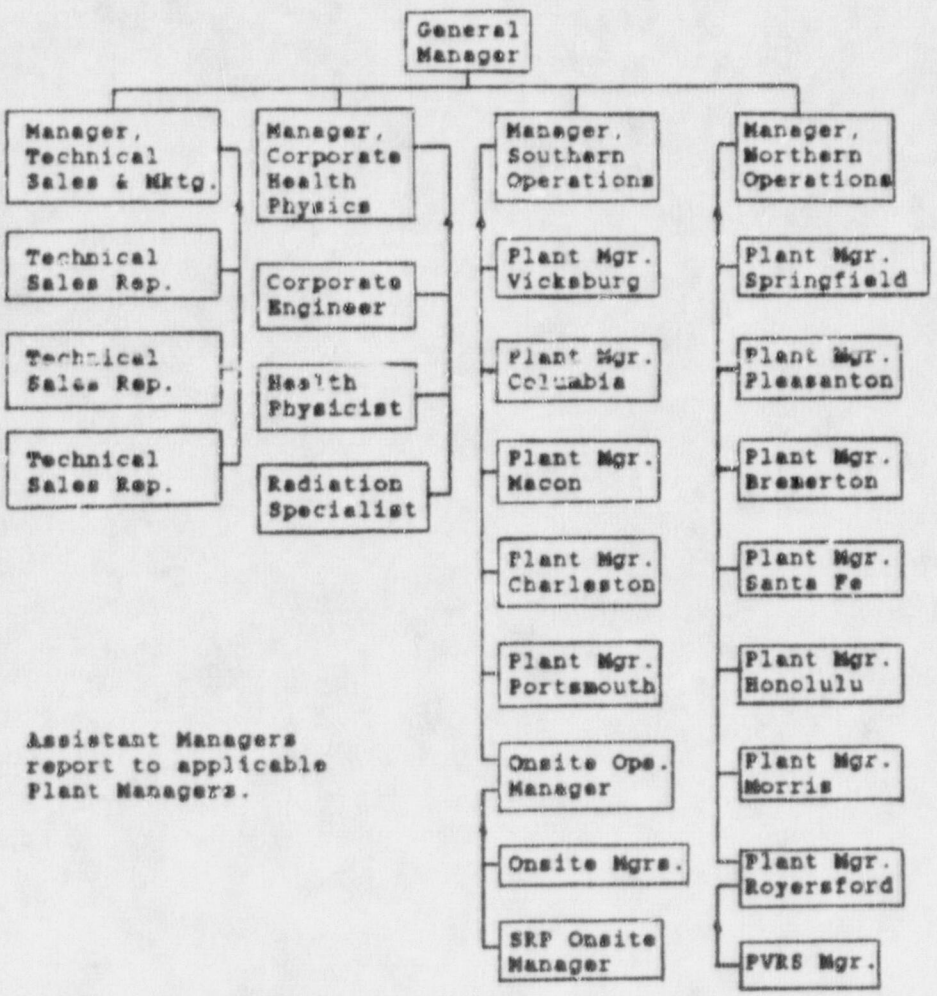

Figure D-4

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APPENDIX E

I. Training and Experience for Authorized Users

A. Responsibilities

Radiation safety responsibility is shared by the Manager of Corporate Health Physics, the Plant Manager, the Radiation Safety Officer (may be the same as Plant Manager), and the operating crew. Each individual must strive to keep his own exposure, as well as the exposure of others, as low as possible. Individual responsibilities are outlined as follows:

1. Radiation Safety Officer

   a. Implement and enforce a radiation safety program for the laundry facility.

   b. Advise and review health physics procedures and survey results with the Plant Manager.

   c. Instruct employees in proper and safe techniques and approved health physics and safety practices.

   d. Set up a schedule of necessary physical examinations, bioassays, etc. for all employees.

   e. Make certain that proper records are kept on air, water, swipe and radiation surveys, personnel exposures and bioassays.

   f. Assure that the radiation detection equipment is periodically calibrated to insure accurate performance.

   g. Assure that the radioactive solid waste is packed in an approved manner for disposal by a licensed commercial waste disposal company.

2. Plant Manager (may be RSO also)

   a. Consult with the Radiation Safety Officer on all matters pertaining to radiation and contamination control.

   b. Inform the Manager of Corporate Health Physics of any contemplated changes in equipment or procedures.

   c. Make certain proper radiological surveys and records of air, water and the environs are performed and filed.

   d. Arrange for the instruction of employees in the proper and safe methods of performing their job.

   e. Schedule necessary physical examinations, bioassays, etc. for all employees.

3. Health Physics Technician (may be RSO also)

   a. Perform radiation and contamination surveys in accordance with the license.

   b. Perform air and water surveys to assure compliance with applicable Federal and state requirements.

   c. Record the surveys performed in Items 1 and 2 above on the appropriate forms.

   d. Assure monitoring equipment is calibrated and operating correctly.

4. Manager of Corporate Health Physics

   a. Furnish direction and policy on all aspects of radiation protection and decontamination.

   b. Suggest methods of decontamination.

   c. See that a technically sound program of air sampling, smear sampling and radiation monitoring is maintained.

d. Evaluate potential radiation and contamination problems and assure follow-up.

e. Evaluate the Health Physics Training Program for all employees as required.

f. Keep the Plant Manager/RSO advised on all aspects of the decontamination laundry requiring health physics procedures or conformance with regulations.

g. Evaluate the radiation protection program at least annually. As an option, INS Corp. may elect to use an outside radiation protection consultant or INS personnel designated by the Manager of Corporate Health Physics for health physics audits.

5. Operations Crew

a. Observe all rules regarding the control of radiation and contamination.

b. Maintain a clean working area, observing contamination control limits.

c. Report all suspected radiation or contamination incidents.

d. Observe the rules prohibiting eating and smoking in restricted areas.

e. Carry out recommendations of the Plant Manager or the Manager of Corporate Health Physics for decontamination as well as other control measures.

f. Properly package solid contaminated waste in DOT-approved shipping containers, seal, store, and label as prescribed by the Plant Manager.

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B. Training and Experience of Authorized Users/RSO's

Following are brief resumes of individuals responsible for various aspects of the INS Radiation Safety Program for Springfield and off-site support. Individuals described as alternate RSO included may serve in the Plant Manager or primary RSO capacity during operations at Springfield in the event that the Plant Manager is on vacation, sick, away on business or otherwise unable to be present in the facility.

Plant Manager/RSO: Thomas B. Nally

EDUCATION: B.S. Industrial Management major, Worcester Polytechnical Institute.

Short Courses: Industrial Engineering & Supervisory* Training; Norton Co., Worcester,Mass. Radiation Protection Technology; Rockwell Int'l. Environmental & Occupational Radiation Protection (1 week HP course), Harvard School of Public Health. Packaging,transportation & disposal workshop, Chem-Nuclear Systems, Inc. (27hrs.), Waste Management at Nuclear Facilities Center for Nuclear Studies.

EXPERIENCE: INS Corp.(82-present), Springfield, MA plant. Plant manager/Radiation Safety Officer. Supervised personnel & daily operations. Performed daily health physics measurements & responsible for personnel safety during operations, including radiation safety. Responsible for HP record generation and maintenance.

INS Corp.(81-82), Springfield, MA plant. Radiation Safety Officer. Responsible for health physics compliance program for protective clothing decontamination facility, including: air, water & smear sampling, new employee training, packaging & transportation of radioactive material(including rad waste shipments), personnel monitoring & bioassay, selection & calibration of monitoring instruments, maintenance of all health physics records.

Norton Co.(2/80-5/81),Worcester Mass. Standards Administrator - Responsible for production control in Refractories Division through various incentive systems. (10/79-2/80)-Production Supervisor. Responsible for production in Industrial Ceramics Division. (7/73-10/79)-Production Planner. Responsible for production & inventory control planning for various groups within the Refractories Division.

U.S. Army (9/68-7/71)-Attained rank of E-4, Vietnam Veteran, Food Inspection Specialist, honorably discharged.

Alternate RSO: Phillip A. Rumian

EDUCATION: Navy Nuclear Power School. Specialized training in radiological controls and radiochemistry.

Short Courses: RSO Training Program (15 hrs. under G.A. Johnstone).

EXPERIENCE: INS Corp.(85-present)-Assistant Plant Manager & Assistant Radiation Safety Officer. Daily operation supervisor. Manages personnel, performs daily health physics measurements & responsible for personnel safety.

INS Corp.(83-85)-Plant Manager/RSO. Supervised personnel & daily operations. Performed daily health physics measurements & responsible for personnel safety during operations, including radiation safety. Responsible for HP record generation and maintenance.

US Navy (81-83). Engineering Lab Technician, USS Los Angeles. Responsible for radiological controls associated with propulsion plant.

US Navy (79-81) Engineering Lab Technician, USS Sargo. Responsible for radiological controls. Dealt with governing bodies such as NAVSEA.

General Mgr: George J. Bakevich

EDUCATION: B.S.Mathematics major, Nuclear Engineering minor.
Worcester Polytechnic Institute
M.S.Nuclear Engineering major, Univ. of Utah

Thesis-"Neutron Radiography with Californium-252 & a Subcritical Neutron Multiplier" at National Reactor Testing Station in Idaho under AEC Fellowship.

EMPLOYMENT: INS Corp. (80-present)-General Manager for 11 nuclear decontamination facilities including profit & loss responsibility, growth of business, construction & planning of new facilities. Directly supervises managers of Op. & Corp. HP. Enforces reg. & HP requirements suggested by the Manager of Corp. Health Physics.

Combustion Engineering,Inc.,(11/79-5/80)-Manager, Nuclear Licensing, Safety & Accountability, total resp for compliance with NRC, DOT, & OSHA reg. at CE's uranium fuel fab. facility . Responsible for all licensing submittals & management of: Nuclear criticality safety, HP, industrial safety, RAM trans. & accountability, emergency preparedness. Responsible for audits of CE's oxide conversion facility in Hematite, Missouri & R & D Labs in Windsor, CT. Member of Nuclear Speakers Service.

Nuclear Licensing & Safety Supervisor(2/77-11/79)-Resp. for all aspects of licensing at fuel fab. facility, including criticality safety analysis. Responsible for HP monitoring prog. & Industrial Safety prog. to assure compliance with reg; audit of manufacturing ops. & supervision of HP personnel.

Idaho National Engineering Lab., Idaho Falls, Idaho, (74-77)-Criticality Safety Engineer/HP. Responsible for criticality safety evaluations (including computer analysis with KENO-IV, DOT, etc.) for unirradiated & spent fuel storage, fuel transport casks, & nuclear waste burial.

Health Physics experience at several large test reactors, including monitoring of high radiation fields & fission product contamination control.
Member of Qualifications Review Committee; Completed ERDA System Safety Training (Management oversight & Risk Tree).

AEC,(73-74)-Assistant Project Engineer. Responsible for appraisal & direction of contractor activities in areas of HP, Critical Facilities & dev. stages of the Light Water Breeder Reactor; procedure approval.

Mgr.Corp HP: Guy R. Wilson

EDUCATION: B.S. Mathematics major, Louisiana State University
M.S. Environmental Engineering major, Mississippi State University

Thesis: A Gamma Radiation Dose Model for Comparison of Normal Risk Between Alternative Routes for Highway Transportation of Radioactive Materials & Waste. Includes development of mathematical dosimetry model.

Graduate studies include coursework in environmental radioactivity, radwaste treatment & disposal, 9 hrs. surface & groundwater transport, 6 hrs. chemical, physical & biotreatment design, & 3 hrs. geophysics.

Short Courses: BWR Systems for Engineers (5 weeks), BWR Systems (4 wks), Nuclear Power Plant Accident Assessment (1 wk), Rad Emergency Response Ops (2 wks Nevada Test Site), Rad materials transportation workshops & several minor seminars in HP.

EXPERIENCE: INS Corp.(11/86-present)-Manager, Corporate Health Physics-responsible for overall administration of radiation safety program for over 400 radiation workers. HP audits, procedure & design generation, review & approval: licensing of facilities; regulatory interface & direct supervision of corporate HP staff.

INS Corp.(2/86-11/86)-Senior Radiological Engineer. Resp. for ALARA design, const. management & operating procedure development for nuclear waste water processing systems for nation's largest fixed facility decon business. Resp. for reg compliance & HP audits at a fraction of INS facilities.

MS. Dept. of Health, Rad Health (rad control/-agreement state agency 7/83-2/86). Environmental Engineer/Branch Dir.,Rad Waste & Trans. Reviewed proposed mods of tech specs governing operation of GGNS (BWR-6 design). Developed & instructed an HP course for dept. Technical advisor to SE LLW Compact Commission. Developed new state regs trans. of RAM.

MP&L Co.(3/82-4/83). Nuclear Licensing review of proposed mods to nuclear waste water processing sys. for GGNS. Software design & mods. for Nuclear Lic. mod. computer based tracking sys. for reg. compliance, tech specs, & licensee event reports. Dev. rad assess software used in emergency exercises for GGNS by MP&L.

(73-82) Design calc & survey management as consultant with several large design groups, spec in industrial & municipal wastewater treatment.

Mgr.,Tech. Sales & Mkt. Gregg A.Johnstone

EDUCATION: B.S.-Physics, Muhlenberg College
M.S.-Radiation Science, Rutgers

Critical Essay-"Low Level Radioactive Waste Disposal" with emphasis on shallow-land burial & waste management criteria" at Brookhaven National Lab. under DOE fellowship.

Short Courses: Health Physics Training Program,(6/78-8/78)-Brookhaven National Laboratory.
Critically Safety Short Course,(5/81)-Univ. of New Mexico, Albuquerque,NM. Certified member of the National Registry of Radiation Protection Technologists.

EXPERIENCE: INS Corp.(11-86-present). Manager Technical Sales & Marketing. Technical sales presentations on state of the art decon technology and monitoring. Administrates sales department in excess of $11 million in business annually. Interfaces with HP & Corp. engineer on current decon/monitoring methodology & procedures.

INS Corp.(83-86)-Corp. Health Physicist. Responsible for licensing & regulatory compliance for all of INS facilities. Conduct annual Health Physics audits of all facilities to assure adequate radiation protection programs.

General Electric Co.Inc.(81-83),Knolls Atomic Power Laboratory, Windsor, CT. Radiological Controls Engineer. Responsible for REM Management Program for refueling/overhaul at SIC prototype reactor assuring ALARA compliance. Directed the incorporation of radiological controls in operating procedures.

Combustion Engineering,Inc.(79-81),Low Enriched Fuel Fabrication Facility, Windsor,CT.-Supervisor, Health Physics & Safety. Responsible for compliance with NRC, DOT, and OSHA regulations. Licensing submittals & management of Health Physics, radiation & industrial safety programs. Performed audits of CE's oxide conversion facility & Research & Development Labs.

Radiac Research Corp.(74-77),Brooklyn, NY.-Health Physics Technician. Established a radioactive disposal service program for customers in accordance with DOT Regulations.

Ops Mgr/Alt RSO: William R. Roschewski

EDUCATION: Navy Nuclear Power School.

Short Courses: RSO training program at INS, (40 hrs. under GJ Bakevich).

EXPERIENCE: INS Corp.(85-present)-Operations Manager for Northern division. Generates & approves procedures for operations. Directly supervises all plant managers of region.

INS Corp.(82-84)-Pleasanton California Plant Manager/RSO. Responsible for management of employees, daily operations, & personnel safety including radiation safety for plant. Performed health physics measurements & activities essential to operation of nuclear laundry. Instrument calibrations. Radwaste reduction.

INS Corp.(80-82)-Bremerton, WA Plant Manager/RSO. Responsible for management of employees, daily health physics measurements, & radiation safety at plant.

US Navy (74-80), NPTU Idaho. Participated in S1W prototype maintenance, including resin discharge, main coolant pump replacement, radiography, flux wire irradiation, controlled pure water system installation. Instructor reactor physics & safety, chemistry/metallurgy.

US Navy (74-76)-Mechanical Operator. Qualified as Engine room supervisor. 15 Mo. refueling overhaul at Mare Island shipyard, watch operations & HP duties.

Corp.Engineer/Alt.RSO **Leslie B. Case**

EDUCATION: B.S. Physics, Loyola University
M.S. Physics, University of South Carolina

Thesis: Nuclear Physics

Short Courses: Oak Ridge Associated Universities Radioisotope Laboratory, 1974; Summer session, Health Physics, Imperial College, London, England; Georgia Institute of Technology HP Certification Training course, 1971; Radiation Worker Training courses at several power companies.

EXPERIENCE: INS Corp (9/85-pres.) Corporate Engineer. Responsible for the design of all plant modifications and new systems corporate-wide, including ALARA design modifications. Designed and supervised construction of Plastic Volume Reduction System and Automated Laundry Monitoring systems. Specifies and/or approves all radiation detection instrumentation corporate-wide. Supervises and instructs technicians performing radiation detection instrumentation calibration. INS procedure writing.

Southern Space, Inc. (1971 -9/85) Radiation Safety Officer. Responsible for the administration of radiation safety program for approximately 120 radiation workers. Designed and built Automated Monitoring Systems to assure better product quality. Experience in all areas of Nuclear Laundry operation, including licensing of facilities, operation and calibration of instrumentation, and handling of contaminated materials and waste.

Health Physicist: Susan V. Fanelli

EDUCATION: B.S. Chemistry major, Clarkson University.

Short Courses: Internal Radiation Dosimetry, Dr. K.W, Skrable, June,1984, Respiratory Protection, Central Connecticut State University, October, 1985.

EXPERIENCE: INS Corp. (10/85-present) Health Physicist. Responsible for maintaining radiation dosimetry programs, computer data bases, and corporate-wide training program. Supervise HP technicians. Generates training material. Procedure writing. Researches and advises Manager of Corp. HP on internal dosimetry and bioassay.

Southern Space, Inc. (5/82-10/85) Health Physics/QA Manager. Managed HP technicians corporate wide. Maintained compliance with government regulations for handling radioactive material. Designed and implemented new QA programs for all employees. Developed procedures for instrumental analysis of effluent, environmental, and biological samples. Performed internal audits, worked with regulatory agencies and insurance auditors.

Southern Space/INS Corp. (5/84-12/86) Product Manager. Manage technicians in a respirator filter recertification program in compliance with government regulations. Scheduled, maintained production and assured the output of a quality product. Handle technical services and QA audits.

Masonic Medical Research Laboratory (9/81-4/82) Research Assistant. Developed and carried out experiments aimed at determining the causes of aging. Prepared graphic material for publication, performed statistical interpolation, and computer programming.

Indium Corporation of America (2/81-9/81) Analytical Chemist. Analyzed metallic alloys, for use in the electronic industry using an Atomic Absorption Spectrophotometer.

Avon Products, Inc. (9/79-6/80) Quality Control Chemist. Responsible for testing raw ingredients for use in the cosmetic industry using instrumental and wet analyses.

Radiation Specialist: Victor M. Crusselle

EDUCATION: Coursework Mechanical Engineering, University of South Carolina.

Naval Nuclear Power School

Short Course: Radioactive Material Transportation, Department of Energy.

EXPERIENCE: INS Corp. (4/87-pres.) - Radiation Specialist. Responsible for regulatory compliance on all radioactive materials transportation issues. Perform periodic Health Physics Corporate audits. Procedure writing and editing. Assist Manager Corporate Health Physics in prescription and execution of radiation safety program corporate wide.

INS Corp. (3/86-4/87) - Plant Manager, Pleasanton CA. Supervised personnel and daily operations. Performed daily health physics measurements and responsible for personnel safety during operations, including radiation safety. Responsible for HP record generation and maintenance.

INS Corp. (12/85-3/86) - Plant Manager trainee, Vicksburg MS. Supervised daily operations. Trained in all aspects of plant operation.

Naval Nuclear Power Training Unit (8/82-12/85)- Radiological Controls Shift Supervisor/Instructor. Responsible for radiological controls during major refueling overhaul. Taught chemistry and radiological controls theory and practical applications for student training on nuclear power plants.

Naval Submarine Tender (8/80-8/82) - Radiological Controls Shift Supervisor. Responsible for radioactive waste processing and transportation, laundering of protective clothing, and decontamination of highly contaminated articles.

Naval Nuclear Submarine (8/78-8/80) - Leading Engineering Laboratory Technician. Responsible for performing all radiological and chemistry controls associated with operating a nuclear power submarine.

Asst.Plt.Mgr./Alt.RSO Richard S. Kula

EDUCATION: BS Animal Sciences, Univ. of Connecticut

Postgraduate Study, Animal Science, Auburn University

EXPERIENCE: INS Corporation (Sept. 1987 - present) Assistant Plant Manager. Supervises daily Health Physics and measurements as necessary. Completes and maintains HP records. Conducts training classes in radiation safety for employees. Direct maintenance of plant machinery and equipment. Responsible for personnel safety during operations. Also responsible for maintaining radworker training program.

Combustion Engineering (1981-1987). Health Physics Technician. Perform air sampling and radiation monitoring to assess and control contamination. Evaluated and reported radiation exposures. Audited manufacturing facilities to assure compliance with license and government regulations.

Auburn University (1978-1980). Assistant Meat Lab Manager. Coordination of procurement and scheduling of livestock for teaching and research. Supervised laboratory maintenance, data management, and grant records. Assisted in teaching laboratory sessions for animal science courses.

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APPENDIX F

I. Decommissioning Guidelines

A. Guidelines for Decontamination of Facilities and Equipment Prior to Release of Unrestricted Use or Termination of Licenses for By-product, Source, or Special Nuclear Materials*

The instructions in this appendix, in conjunction with Table F-1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table F-1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. INS shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or duct work shall be determined by making measurements at all traps, or other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or duct work. Surfaces of premises, equipment, or scrap which are likely to

*These guidelines were taken from a document of the same title written by the U. S. Nuclear Regulatory Commission Division of Fuel Safety, Washington, D.C. dated July 1982.

be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, NRC may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests shall:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, INS shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table F-1. A copy of the survey report shall be filed with the NRC. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

c. Describe the scope of the survey and general procedures followed.

d. State the findings of the survey in units specified in the instruction.

Following submittal of the report, the facilities shall be made available for the NRC to perform an inspection and surveys to confirm the surveys performed by INS.

B. Decommissioning Plan

The Springfield facility began operation at its current location in 1957 and occupies approximately 10,000 square feet. The outline shown below is written to give general guidance to the facility RSO in decommissioning this facility so that it can be free-released.

1. Removal of extraneous items and/or minor equipment. Such items as carts, laundry supplies, tables should all be wiped down completely and the following surveys performed:

- smear survey to be counted for both alpha, beta and gamma contamination

- a direct frisk for fixed contamination

- the NRC guidelines for decommissioning of facilities shall be used (See Table 1)

2. Removal of major equipment

All major equipment such as washers and dryers and filter systems shall be totally wiped down and cleaned. Following wipe down and cleaning of the exterior, smear and fixed contamination surveys of the exterior and accessible interior parts portions of the machinery shall be performed. This equipment may either remain as contaminated equipment for contaminated use at another INS facility or disassembled. Disassembled items which do not meet free-release criteria will be decontaminated. If they do not meet the requirements of Part A of this section, they will be disposed of as radioactive waste at a licensed burial facility or reused at another INS facility.

3. Clean Up of Ceiling and Walls

Ceilings and walls shall be cleaned using a pressurized water spray. This water will be collected in the normal waste water processing trench and pits and will be sampled and analyzed prior to discharge.

Once the walls and ceiling have been cleaned, swipe and fixed representative surveys should be initiated and documented to confirm compliance with Table F-1. Following this, any piping which carried radioactive or potentially radioactive water shall be removed, cleaned as much as practicable, cut up and shipped for disposal.

4. Floor Areas

All floor areas shall be cleaned, starting from the restricted clean areas and working towards the washroom (contaminated area). Any waste water generated shall be processed through the normal waste water processing procedure.

5. Waste water trench, dumps and holding pit

These areas shall be initially pumped dry following the requirements listed below:

a. Pit to be adequately ventilated for 15 minutes prior to entry.

b. Minimum initial entry protective clothing will be full body protective clothing, boots, and rubber gloves, taped.

c. An initial entry air sample will be taken for 10 minutes and analyzed prior to entry.

d. An initial radiation survey will be performed to assess potential exposure or the need for stay time calculations.

The pit shall be cleaned with a high pressure water lance. Any particulate which settles out

in the holding pit will be removed, dried and packaged for disposal in accordance with applicable regulations and burial site criteria. The pit shall then be surveyed and further decontaminated using a pneumatic scaler unit. The areas to be scaled shall be continuously wet down and all chipping should be done from the noncontaminated initial chipped area from behind). Final surveys will be performed using both an alpha scintillation probe and portable GM frisking instrument. Mr/hr readings will be derived using a calibrated GM survey meter.

6. Survey of Sewer Lines

The following surveys shall be performed and documented:

a. Mr/hr with GM survey meter at exit point from the facility and in accessible man holes.

b. Sludge samples from any identified sedimentation or likely reconcentration point shall be taken and gamma spectral analyses performed. Gamma spectroscopy will be performed by INS or a qualified vendor.

c. Portable alpha surveys shall be performed and documented in these areas.

7. Survey of Roof

A detailed survey of the roof shall be performed and documented. A GM frisker calibrated in CPM should be used to perform the survey.

8. Environmental Surveys

Soil samples shall be obtained from the surrounding grounds and gamma spectral analyzed. Gamma spectroscopy will be performed by INS or a qualified vendor.

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9. Radiological Precautions to be taken throughout the decommissioning.

   a. Air samplers located throughout the facility shall be running continuously during all operations and analyzed weekly. They should be analyzed immediately if any suspected airborne contamination has occurred.

   b. Entrances and exits to the restricted areas shall be smear surveyed daily. A complete facility smear survey shall be performed weekly.

   c. An air sample is to be run continuously during work in the pit.

   d. All records shall be kept and maintained and shall include instrument model number, type and serial number, date and initials of person performing the survey.

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TABLE F-1

ACCEPTABLE SURFACE CONTAMINATION

Nuclides[a]	Average[bcf] dpm/100 cm2	Maximum[bdf] dpm/100 cm2	Removable[bef] dpm/100 cm2
U-nat, U-235, U-230, and Associated decay products	5000	15000	1000
Transuranics, Ra-226, Ra-220, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100	300	20
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000	3000	200
Beta-gamma emitters (nuclides with decay modes other than Alpha emissions or spontaneous fission) except Sr-90 and others noted above.	5000	15000	1000

(a) Where surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides should apply independently.

(b) As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency and geometric factors associated with the instrumentation.

(c) Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

(d) The maximum contamination level applies to an area of not more than 100 square centimeters.

(e) The amount of removable radioactive material per cm2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the swipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

(f) The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

Date: 10/1/87 License: 20/03529/01

APPENDIX G

I. Emergency Plan

A. General Guidance

A primary concern in most emergencies is to protect the health and safety of persons on or off the premises. If personal injury is not a consideration, take any action which will reduce property damage. Remain calm, administer any assistance you are capable of, and obtain appropriate support or assistance. Quickly follow the instructions of your supervisor. If the presence of radioactive material is suspected, special care should be taken to limit the spread of contamination. Potentially contaminated persons may be required to report to and remain in a designated area at a safe distance until they can be monitored and cleared.

B. Personal Injuries

1. Take appropriate steps to aid injured persons. Notify Plant Management and call for outside medical assistance if necessary.

2. If the presence of radioactive material is suspected, survey the injured person. If radioactivity is detected, and the injury will not be aggravated, rinse the contaminated area or remove the contaminated clothing. An employee receiving a cut or open wound may not return to a contaminated area until properly bandaged.

3. Notify Plant Management so that proper identification may be given to local, state, federal or insurance authorities, as appropriate.

C. Unplanned Releases

1. Locate the source of the release and if possible terminate the release. If the release has already occurred but is not continuing, assess the extent and probable radiation hazard.

2. Notify Plant Management so that proper notification may be given to local, state, federal or insurance authorities, as appropriate.

D. Loss of Radioactive Material

1. If radioactive materials are lost, determine the nature or activity of such materials and probable locations of the loss.

2. Notify Plant Management so that proper notification may be given to local, state, federal or insurance authorities, as appropriate.

E. Fires

1. Take appropriate action to avoid personal injury to employees or members of the public.

2. To the extent possible, extinguish a small fire immediately, using water or chemical extinguishers, as appropriate. If the fire cannot be brought under complete control quickly, call the local fire department. The emergency phone number is posted at all telephones in the plant. Notify Plant Management immediately. If the fire is in a contaminated area, assume that the smoke is also contaminated. In the event of a significant fire, inform the fire officials to use their self-contained breathing equipment. Avoid, to the extent possible, contact with smoke. Take all precautions necessary to limit the potential spread of contamination. If the fire is large and not likely to be contained quickly, advise the Fire Department to evacuate affected residents if atmospheric conditions indicate that off site exposure may be possible (e.g.,smoke plume is not experiencing significant rise). If possible, air samples should be taken during and after a fire. Persons and equipment contaminated in a fire should remain in a defined area after the fire is extinguished and released only after proper decontamination of such persons or equipment is accomplished.

Date: 10/1/87 License: 20/03529/01

3. Following any fire located in a dryer, make a thorough inspection of the entire exhaust duct system, searching for any smoldering lint which may be present.

4. Plant Management shall notify local, state, federal, and insurance authorities, as appropriate.

030-04632
AMENDMENT

03218
3/88

BETWEEN: C. James Holloway, Chief
License Fee Management Branch
Office of Resource Management

John E. Glenn, Chief
Nuclear Materials Safety & Safeguards Section B
Division of Radiation Safety and Safeguards

LICENSE FEE TRANSMITTAL

A. REGION 1

1. APPLICATION ATTACHED

Applicant/Licensee: Interstate Nuclear Service

Application Dated: October 1, 1987

Control No.: 107888

License No.: 20-03529-01

2. FEE ATTACHED

Amount: 170

Check No.: 17475

3. COMMENTS

Signed bp

Date 10/6/87

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: 6A $170

2. Correct Fee Paid. Application may be processed for:

Amendment ✓

Renewal

License

Signed S Kimberly

Date 10/13/87

REGION I FORM 213
(MARCH 1987)

TRC FORM 41-3
(10-78)

TEXAS DEPARTMENT OF HEALTH
RADIOACTIVE MATERIAL LICENSE

Pursuant to the Texas Radiation Control Act and Texas Department of Health regulations on radiation, and in reliance on statements an representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess and transf radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This licen is subject to all applicable rules, regulations and orders of the Texas Department of Health now or hereafter in effect and to any conditi specified below.

LICENSEE

1. Name: Huntsville Memorial Hospital
ATTN: Warren E. Hinton, M.D.

2. Address: 3000 I-45
Huntsville, Texas 77340

This license issued pursuant to and in accordance wi

☒ APPLICATION ☐ LETTER ☐

Dated: January 26, 1983

Signed By: James Braley

3. License Number	Amendment Number
11-2822	2

PREVIOUS AMENDMENTS ARE VOID

4. Expiration Date: April 30, 1988

RADIOACTIVE MATERIAL AUTHORIZED

5. Radioisotope	6. Form of Material	7. Maximum Activity*	8. Authorized Use
A. Any radioactive material listed in Groups I and II of Schedule 41-C, Texas Regulations for Control of Radiation (TRCR).	A. Any radiopharmaceutical listed in Groups I and II of Schedule 41-C, TRCR, except in the form of gases, gas solutions, and aerosols.	A. As needed for diagnostic purposes.	A. For any diagnostic use as specified in Groups I and II, Schedule 41-C, TRCR.

☒ CONTINUED ON PAGE 2, IF CHECKED

CONDITIONS

9. Radioactive material shall be used only at the licensed address as shown in Item 2 above.

10. The licensee shall comply with the provisions of Parts 11, 21, 22, and 41 of the Texas Regulations for Control of Radiation.

11. Radioactive material shall be used only by Warren E. Hinton, M.D. or Nathan W. Colwell, M.D.

12. The individual designated to perform the functions of Radiation Safety Officer for activities covered by this license is Warren E. Hinton, M.D.

*Ci-Curies mCi-Millicuries μCi-Microcuries

CONDITIONS CONTINUED ON PAGE 2

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