NRC Form 313 I (12-81) 10 CFR 30

U.S. NUCLEAR REGULATORY COMMISSION

APPLICATION FOR BYPRODUCT MATERIAL LICENSE
INDUSTRIAL

See attached instructions for details.

Completed applications are filed in duplicate with the Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety, and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555 or applications may be filed in person at the Commission's office at 1717 H Street, NW, Washington, D. C. or 7915 Eastern Avenue, Silver Spring, Maryland.

1. APPLICATION FOR: *(Check and/or complete as appropriate)*

	a. NEW LICENSE
	b. AMENDMENT TO: LICENSE NUMBER
X	c. RENEWAL OF: LICENSE NUMBER 12-00013-06

2. APPLICANT'S NAME *(Institution, firm, person, etc.)*

Caterpillar Tractor Co.

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION

3. NAME AND TITLE OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION

C.S. Sullivan, Sr. Research Engineer

TELEPHONE NUMBER: AREA CODE – NUMBER EXTENSION
309/578-6817

4. APPLICANT'S MAILING ADDRESS *(Include Zip Code)*
(Address to which NRC correspondence, notices, bulletins, etc., should be sent.)

Research Department
Technical Center, Bldg. E
Peoria, IL 61629
ATTN: C.S. Sullivan

5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED *(Include Zip Code)*

Same as Current License

(IF MORE SPACE IS NEEDED FOR ANY ITEM, USE ADDITIONAL PROPERLY KEYED PAGES.)

6. INDIVIDUAL(S) WHO WILL USE OR DIRECTLY SUPERVISE THE USE OF LICENSED MATERIAL
(See Items 16 and 17 for required training and experience of each individual named below)

	FULL NAME	TITLE
a.	Chester S. Sullivan	Sr. Research Engineer
b.	Charlene M. Hayden	Research Chemist
c.	John J. Groezinger	Project Engineer

7. RADIATION PROTECTION OFFICER

C.S. Sullivan

Attach a resume of person's training and experience as outlined in Items 16 and 17 and describe his responsibilities under Item 15.

8. LICENSED MATERIAL

LINE NO.	A ELEMENT AND MASS NUMBER	B CHEMICAL AND/OR PHYSICAL FORM	C NAME OF MANUFACTURER AND MODEL NUMBER *(If Sealed Source)*	D MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME
(1)	SAME AS CURRENT LICENSE			
(2)				
(3)				
(4)				

DESCRIBE USE OF LICENSED MATERIAL

RECEIVED BY LFMB
Date 4/10/84
Log
By
Orig. To
Action Compl

Applicant
Check No. 04319
Amount/Fee Category $150.00
Type of Fee Renew
Date Check Rec'd 4/10/84
Received By

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NRC F

9. STORAGE OF SEALED SOURCES

LINE NO.	CONTAINER AND/OR DEVICE IN WHICH EACH SEALED SOURCE WILL BE STORED OR USED. A.	NAME OF MANUFACTURER B.	MODEL NUMBER C.
(1)	SAME AS CURRENT LICENSE		
(2)			
(3)			
(4)			

10. RADIATION DETECTION INSTRUMENTS

LINE NO.	TYPE OF INSTRUMENT A	MANUFACTURER'S NAME B	MODEL NUMBER C	NUMBER AVAILABLE D	RADIATION DETECTED (alpha, beta, gamma, neutron) E	SENSITIVITY RANGE (milliroentgens/hour or counts/minute) F
(1)		SAME AS CURRENT LICENSE				
(2)						
(3)						
(4)						

11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10

☐ a. CALIBRATED BY SERVICE COMPANY

NAME, ADDRESS, AND FREQUENCY

☐ b. CALIBRATED BY APPLICANT

Attach a separate sheet describing method, frequency and standards used for calibrating instruments.

12. PERSONNEL MONITORING DEVICES

TYPE (Check and/or complete as appropriate.) A	SUPPLIER (Service Company) B	EXCHANGE FREQUENCY C
☐ (1) FILM BADGE ☐ (2) THERMOLUMINESCENCE DOSIMETER (TLD) ☐ (3) OTHER (Specify): _____	SAME AS CURRENT LICENSE	☐ MONTHLY ☐ QUARTERLY ☐ OTHER (Specify):

13. FACILITIES AND EQUIPMENT (Check were appropriate and attach annotated sketch(es) and description(s).

☐ a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC.
☐ b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC.
☐ c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC.
☐ d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. SAME AS CURRENT LICENSE

14. WASTE DISPOSAL

a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED

SAME AS CURRENT LICENSE

b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF RADIOACTIVE WASTES AND ESTIMATES OF THE TYPE AND AMOUNT OF ACTIVITY INVOLVED. IF THE APPLICATION IS FOR SEALED SOURCES AND DEVICES AND THEY WILL BE RETURNED TO THE MANUFACTURER, SO STATE.

INFORMATION REQUIRED FOR ITEMS 15, 16 AND 17

Describe in detail the information required for Items 15, 16 and 17. Begin each item on a separate page and key to the application as follows:

15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures *(if needed)*, day-to-day general safety instruction to be followed, etc. If the application is for sealed source's also submit leak testing procedures, or if leak testing will be performed using a leak test kit, specify manufacturer and model number of the leak test kit.

16. FORMAL TRAINING IN RADIATION SAFETY. Attach a resume for each individual named in Items 6 and 7. Describe individual's formal training in the following areas where applicable. Include the name of person or institution providing the training, duration of training, when training was received, etc.

    a. Principles and practices of radiation protection.

    b. Radioactivity measurement standardization and monitoring techniques and instruments.

    c. Mathematics and calculations basic to the use and measurement of radioactivity.

    d. Biological effects of radiation.

17. EXPERIENCE. Attach a resume for each individual named in Items 6 and 7. Describe individual's work experience with radiation, including where experience was obtained. Work experience or on-the-job training should be commensurate with the proposed use. Include list of radioisotopes and maximum activity of each used.

18. CERTIFICATE

(This item must be completed by applicant)

The applicant and any official executing this certificate on behalf of the applicant named in Item 2, certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, Part 30, and that all information contained herein, including any supplements attached hereto, is true and correct to the best of our knowledge and belief.

WARNING.–18 U.S.C., Section 1001; Act of June 25, 1948; 62 Stat. 749; makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

a. LICENSE FEE REQUIRED *(See Section 170.31, 10 CFR 170)* $150.00	b. CERTIFYING OFFICIAL *(Signature)* Chester S Sullivan
	c. NAME *(Type or print)* Chester S. Sullivan
(1) LICENSE FEE CATEGORY: 10CFR170.31.3.K	d. TITLE Senior Research Engineer
(2) LICENSE FEE ENCLOSED: $ 150.00	e. DATE 4/4/84

Item 15 Radiation Protection Program

I. Emergency procedure in radiation areas is as follows:

1. Clear area and call Plant Protection, Ext. 6555 at Technical Center.

2. Attempt to prevent spread of radioactive contamination.

3. Post guard.

4. Decontaminate personnel:

a) Try to avoid ingestion into body.
b) Remove contaminated clothing.
c) Take emergency shower.
d) Wash with detergent soap but do not abrade or chafe skin.
e) Monitor body for radiation.

5. In an accident notify one of the following individuals:

C.M. Hayden	- Ext. 4464 or 3519 Tech Center 815/437-2573 Putnam
C.S. Sullivan	- Ext. 6817 Tech Center 243-9077 Dunlap
J.J. Groezinger	- 675-5581 Pioneer Park 243-5334 Dunlap
R.E. Kinser	- Ext. 5315 Adm. Bldg. 347-7262 Pekin
A.N. Ward	- Ext. 5174 Adm. Bldg. 692-1783 Peoria

B. Control of Exposure to Personnel

1. All tests and uses of byproduct radioactive materials will be in accord with the "Standards for Protection Against Radiation" as described in 10 CFR 20 and specific procedures of use as described in item 7 of our Byproduct Materials License applications.

2. Radiation exposure to personnel subject to monitoring control will not exceed 1-1/4 rems per calendar quarter or as specified in 10 CFR 20.101 and 20.102.

3. Radiation exposure to personnel not subject to monitoring control will not exceed 2 millirems in any one hour or as specified in 10 CFR 20.105 and 20.106.

4. All techniques used in experiments and tests involving byproduct radioactive materials will be reviewed and cleared by the Radiation Safety Committee.

C. Personnel Monitoring

1. All personnel working with byproduct radioactive materials will be subject to monitoring control. Film badges and/or pocket dosimeters should usually be worn and supplemented by radiation survey meters of appropriate type. Personnel radiation monitoring records and reports will be maintained in accord with 10 CFR 20.401.

2. Personnel subject to monitoring control will be qualified individuals authorized by the Radiation Safety Committee for work with byproduct radioactive materials.

3. a) Periodic determination of radioactive iodine uptake in the thyroid gland shall be performed as necessary on involved personnel during periods when this isotope is being used. Tests shall be capable of detecting at least 0.14μc I^{131} or I^{125}. Bioassays for Iodine 125 will be followed as outlined in NRC Guide 8.20.

   b) Periodic bioassay determination of tritium (H^3) in urine shall be performed as necessary on involved personnel using this isotope. Tests shall be capable of detecting at least 20μc/liter. NRC Guidelines for Bioassay Requirements for Tritium will be followed when Tritium is used.

   c) Records of (a) and (b) will be maintained for Commission inspection.

4. Personnel subject to monitoring control must familiarize themselves with, and know how to use, the radiation monitoring equipment.

D. Radiation Surveys

1. Determine compliance with 10 CFR 20.105, 203, and

2. Conduct routine radiation surveys as necessary within the laboratories listed in Item 13; conduct wipe tests as needed within the above laboratories to assure compliance with 10 CFR 20.201. In addition, routine wipe tests will be conducted as necessary, depending upon our operations and usage, in restricted areas where radioactive material is used in the open (i.e., other than hood or glove box), e.g., bench tops used for isotope preparation and tests, floors near bench tests and test machines, etc., to ascertain possible contamination and to prevent spread thereof, during the periods when the preparations and tests are being carried out. If a wipe test of about 1 sq.ft. of area reveals the presence of 100 cpm or more of removable contamination as measured by a thin window Geiger counter of about 1.5 sq.in. window area, appropriate clean-up measures will be taken. Records of such wipe smears will be maintained in accordance with 10 CFR 20.401(b) for Commission inspection.

E. Radiation Warning Signs

All laboratories or areas where byproduct radioactive materials are stored or used shall be posted with the appropriate radiation caution signs in accord with 10 CFR 20.203.

F. Instruction of Personnel

It is the responsibility of the Radiation Safety Committee to inform all personnel authorized to use byproduct radioactive materials of safe and acceptable practices. From NRC3, "Notice of Employees", shall be conspicuously posted in a sufficient number of places.

II. Management Control of Radiography Program

A. All industrial use of radioisotopes are accountable to the Radiation Safety Committee.

B. Inspections of radiography program and other uses of radioisotopes are completed each quarter, with minutes kept of inspections.

C. Internal inspections by Radiation Safety Committee on quarterly and/or as needed basis.

D. Quarterly inspection of all radiography records to ensure that all are in order.

E. Records inspected include:

1. NRC license terms and conditions.

2. Operating and emergency procedures.

3. Receipt and disposal of all radioactive material.

4. Quarterly inventory records.

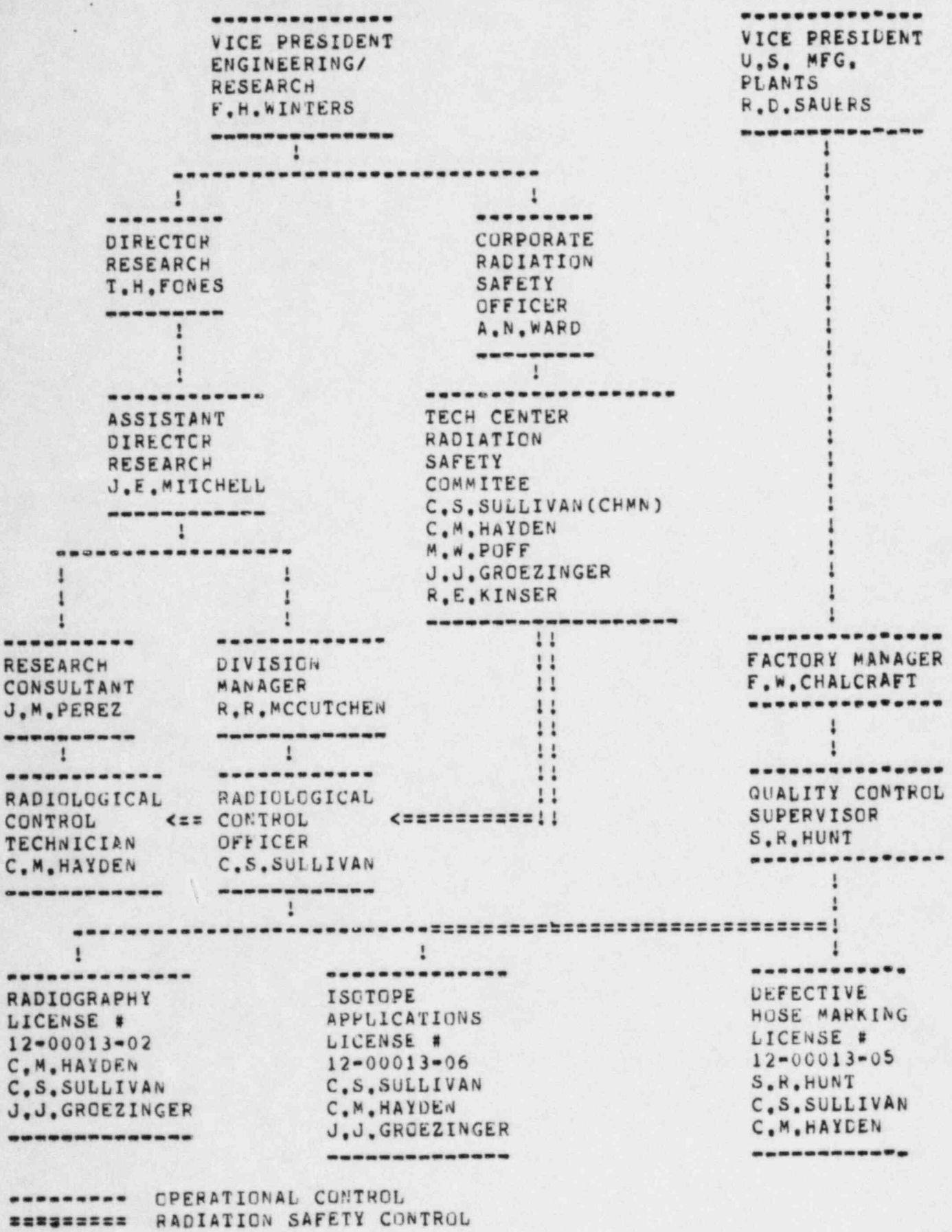
5. Personnel monitoring records.

6. Radiation survey meter calibration records.

7. Radiography utilization log.

8. Sealed source leak testing records.

ORGANIZATIONAL STRUCTURE TO ADMINISTER N.R.C. LICENSES



1. The Corporate Radiation Safety Officer is Dr. A.N. Ward. He is also the Assistant Director of the Medical Department at Caterpillar and attends meetings of the Technical Center Radiation Safety Committee.

   Training:

   1. M.D. (1951) University of Tennessee

   2. M. Pub. Health (1958) University of Pittsburgh

   Experience:

   1. Eleven years with Union Carbide Corp., Nuclear Division. For ten years in charge of Health Physics at Paducah Gaseous Diffusion Plant.

   2. Health physics and radiation exposure work at the Nevada Test Site for one year.

   3. Corporate Radiation Safety Officer at Honeywell for 3-1/2 years.

   4. Industrial Medicine at Caterpillar since 1972.

2. Person responsible for control of all radioactive material as Radiological Control Officer is C.S. Sullivan. He is also chairman of the Radiation Safety Committee. His qualifications are listed in Items 16 and 17. His duties include:

   A. Serve as liaison officer with the U.S. NRC on licensing.
   B. Control procurement and disposal of all radioactive license by-product material.
   C. Responsible for operating and emergency procedures.
   D. Audits performance of radiological control technician and radiological records quarterly.
   E. Maintains quarterly inventories.
   F. In emergency situations, will assume control and put into effect corrective procedures.
   G. Determine cause of an incident and will put into effect necessary preventative maintenance.
   H. Available for consultation on radiation related projects.
   I. Serves as chairman of the Radiation Safety Committee.

3. Person who is responsible for day-to-day inspection, minor maintenance and operation of radiographic equipment as the Radiological Control Technician is Charlene M. Hayden. Her qualifications are listed in Items 16 and 17. Her duties include:

   A. Maintain radiation survey and detection instruments.
   B. Maintain storage facilities.

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C. Maintain radiography exposure equipment, facilities and related equipment.
D. Maintains leak testing program.
E. Maintain internal inspection system on day-to-day basis.
F. Maintain radiography utilization log.
G. Maintain record keeping system.
H. In emergency situations, will assist Radiological Control Officer put into effect corrective procedures.
I. Assist the Radiological Control Officer determine the cause of an incident and put into effect necessary preventative maintenance.

4. Persons directly responsible for radiation protection as members of the Technical Center Radiation Safety Committee are:

C.S. Sullivan
C.M. Hayden
M.W. Poff
J.J. Groezinger
R.E. Kinser

Items 16 & 17 Formal Training and Experience

C.S. Sullivan

Training:

1. M.S. Physics (Feb. 1971) and M.S. Nuclear Engineering (Aug. 1975) from University of Illinois. Included one semester course NucE349 "Radiation Protection".

2. Nuclear Power School, Naval Reactors Facility, Idaho Falls, Idaho, Class 7705, Apr.-Sept. 1977 (6 months).

3. Qualified on S1W Nuclear Plant, Naval Reactors Facility as:

Engineering Officer of the Watch (EOOW)	2-2-78
Nuclear Plant Engineer (NPE)	6-22-78
Shift Supervisor - Acting (SS-A)	3-21-79

Included "in-rate" training and experience with Radiological Controls (RadCon) in context of nuclear plant operations and training of Engineering Laboratory Technicians (ELT's).

4. "Radioisotope Techniques in Research & Development", ORAU, Oak Ridge, TN, 9-15-83 - 9-26-83.

5. "Inspection and Maintenance of Tech/Ops Gamma Ray Equipment", Tech/Ops, Inc., Burlington, MA 10-24-83 - 10-25-83.

6. "Industrial Radiography", Tech/Ops, Inc., Burlington, MA 12-12-83 - 12-16-83.

Experience:

1. Engineer with Laser Isotope Separation Project, Gaseous Diffusion Plant, Oak Ridge, Tennessee, August 1975 - February 1977.

2. Operations and training experience on S1W Nuclear Plant, Naval Reactors Facility. NPE and SS-A on operating crews. Special Assignment to Operations Assistant on plant administrative staff for S1W Rad Con and liaison with NRF Rad Con Manager. April 1978 - July 1979.

3. Radiographer at Caterpillar since February 1984.

C.M. Hayden

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Training:

1. B.S. Chemistry (May 1978) from Illinois State University.

2. "Radioisotope Techniques in Research & Development", ORAU, Oak Ridge, TN, 9-15-83 - 9-26-83.

3. "Inspection and Maintenance of Tech/Ops Gamma Ray Equipment", Tech/Ops, Inc., Burlington, MA 10-20-83 - 10-25-83.

4. "Industrial Radiography", Tech/Ops, Inc., Burlington, MA 12-12-83 - 12-16-83.

Experience:

1. Research Chemist at Caterpillar since June 1978.

2. Radiographer at Caterpillar since February 1984.

J.J. Groezinger

Training:

1. B.S. Physics (1967) from Bradley University.

2. Radioisotope Conference, ORINS, Oak Ridge, TN, April, 1963.

Experience:

1. Industrial applications of radioisotope and gamma radiography since 1957.

2. Licensed Radiographer at Caterpillar since 1963.

CATERPILLAR TRACTOR CO.

TECHNICAL CENTER

Peoria, Illinois 61629

April 4, 1984

U.S. Nuclear Regulatory Commission
Material Licensing Branch
Division of Fuel Cycle and Material Safety
Washington, DC 20555

Dear Sirs:

Please renew our license 12-00013-06. In accordance with your latest instructions, we are submitting those portions of documents that reflect updates and/or changes to our current program since our last license renewal application of March 9, 1979 as amended January 11, 1984 (Amendment No. 04). Enclosed please find the renewal fee of $150 and copies of the renewal application in duplicate.

Sincerely,

C S Sullivan

Sr. Research Engineer

C.S. Sullivan
Research Dept., TC-E
Telephone (309)578-6817
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attach.