

| FORM NRC-313 I (1-79) 10 CFR 30 | | U.S. NUCLEAR REGULATORY COMMISSION | | 1. APPLICATION FOR: (Check and/or complete as appropriate) <div style="text-align: right; font-size: 1.2em; font-weight: bold;">03620</div> | |
|---|---|------------------------------------|---|---|--|
| APPLICATION FOR BYPRODUCT MATERIAL LICENSE INDUSTRIAL | | | | X a. NEW LICENSE | |
| 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. | | | | b. AMENDMENT TO LICENSE NUMBER <div style="text-align: right; font-size: 1.2em; font-weight: bold;">30-22298</div> | |
| | | | | c. RENEWAL OF LICENSE NUMBER <div style="text-align: right; font-size: 1.2em; font-weight: bold;">23516</div> | |
| 2. APPLICANT'S NAME (Institution, firm, person, etc.) Delaware Technical and Community College Stanton Campus TELEPHONE NUMBER AREA CODE - NUMBER EXTENSION (302) 571-5391 | | | 3. NAME OF PERSON TO BE CONTACTED REGARDING THIS APPLICATION Jerry N. Blancato, Biochem. Instructor TELEPHONE NUMBER AREA CODE - NUMBER EXTENSION (302) 571-5312 | | |
| 4. APPLICANT'S MAILING ADDRESS (Include Zip Code) Jerry N. Blancato Delaware Technical & Community College 333 Shipley Street Wilmington, DE 19801 | | | 5. STREET ADDRESS WHERE LICENSED MATERIAL WILL BE USED (Include Zip Code) Delaware Technical & Community College 400 Stanton-Christiana Road Newark, DE 19702 | | |
| (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. Jerry N. Blancato | | | Instructor, Course Leader | | |
| b. | | | | | |
| c. | | | | | |
| 7. RADIATION PROTECTION OFFICER Jerry N. Blancato | | | 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. | ELEMENT AND MASS NUMBER | CHEMICAL AND/OR PHYSICAL FORM | NAME OF MANUFACTURER AND MODEL NUMBER (If Sealed Source) | MAXIMUM NUMBER OF MILLICURIES AND/OR SEALED SOURCES AND MAXIMUM ACTIVITY PER SOURCE WHICH WILL BE POSSESSED AT ANY ONE TIME | |
| | A | B | C | D | |
| (1) | C ¹⁴ | Liquid Tracer | - | Up to 5mCi | |
| (2) | I ¹²⁵ | RIA Kits | - | 100 uCi 5046 | |
| (3) | H ³ | Liquid Tracer | - | Up to 10 mCi | |
| (4) | Please See Attached Sheet | | | | |
| DESCRIBE USE OF LICENSED MATERIAL | | | | | |
| (1) | Tracer studies within animals (whole organ and sub cellular levels) - to learn fate of drugs and safe handling. | | | | |
| (2) | To teach Radioimmune assay procedures. | | | | |
| (3) | Same as No. 1. | | | | |
| (4) | | | | | |

FORM NRC 313 I (1-79)

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 07-23516-01 PDR

 FEE EXEMPT 18710
 State

"OFFICIAL RECORD COPY"

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| 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) | | | | | | |
| (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) | Liq. Scint. Counter | LKB | #1211 | 1 | beta, gamma | <100 CPM |
| (2) | Geiger Count. | Accelerators, Inc. | N/A | 1 | | 0.5 mr/hr (300 CPM) |
| (3) | | | | | | |
| (4) | | | | | | |

| 11. CALIBRATION OF INSTRUMENTS LISTED IN ITEM 10 | |
|---|--|
| <input checked="" type="checkbox"/> a. CALIBRATED BY SERVICE COMPANY NAME, ADDRESS, AND FREQUENCY Stuart Kline, Radiation Prot. Officer University of Delaware Newark, DE 19711 2xYear | <input type="checkbox"/> b. CALIBRATED BY APPLICANT Attach a separate sheet describing method, frequency and standards used for calibrating instrument. |

| 12. PERSONNEL MONITORING DEVICES | | |
|--|---|--|
| TYPE (Check and/or complete as appropriate.) A. | SUPPLIER (Service Company) B. | EXCHANGE FREQUENCY C. |
| <input checked="" type="checkbox"/> (1) FILM BADGE <input type="checkbox"/> (2) THERMOLUMINESCENCE DOSEMETER (TLD) <input type="checkbox"/> (3) OTHER (Specify): _____ | Radiation Service Organization P. O. Box 419 Laurel, MD 20707 | <input checked="" type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER (Specify): _____ |

| 13. FACILITIES AND EQUIPMENT (Check where appropriate and attach annotated sketch(es) and description(s).) | |
|--|--------------|
| <input checked="" type="checkbox"/> a. LABORATORY FACILITIES, PLANT FACILITIES, FUME HOODS (Include filtration, if any), ETC. <input checked="" type="checkbox"/> b. STORAGE FACILITIES, CONTAINERS, SPECIAL SHIELDING (fixed and/or temporary), ETC. <input type="checkbox"/> c. REMOTE HANDLING TOOLS OR EQUIPMENT, ETC. <input type="checkbox"/> d. RESPIRATORY PROTECTIVE EQUIPMENT, ETC. | See Sketches |

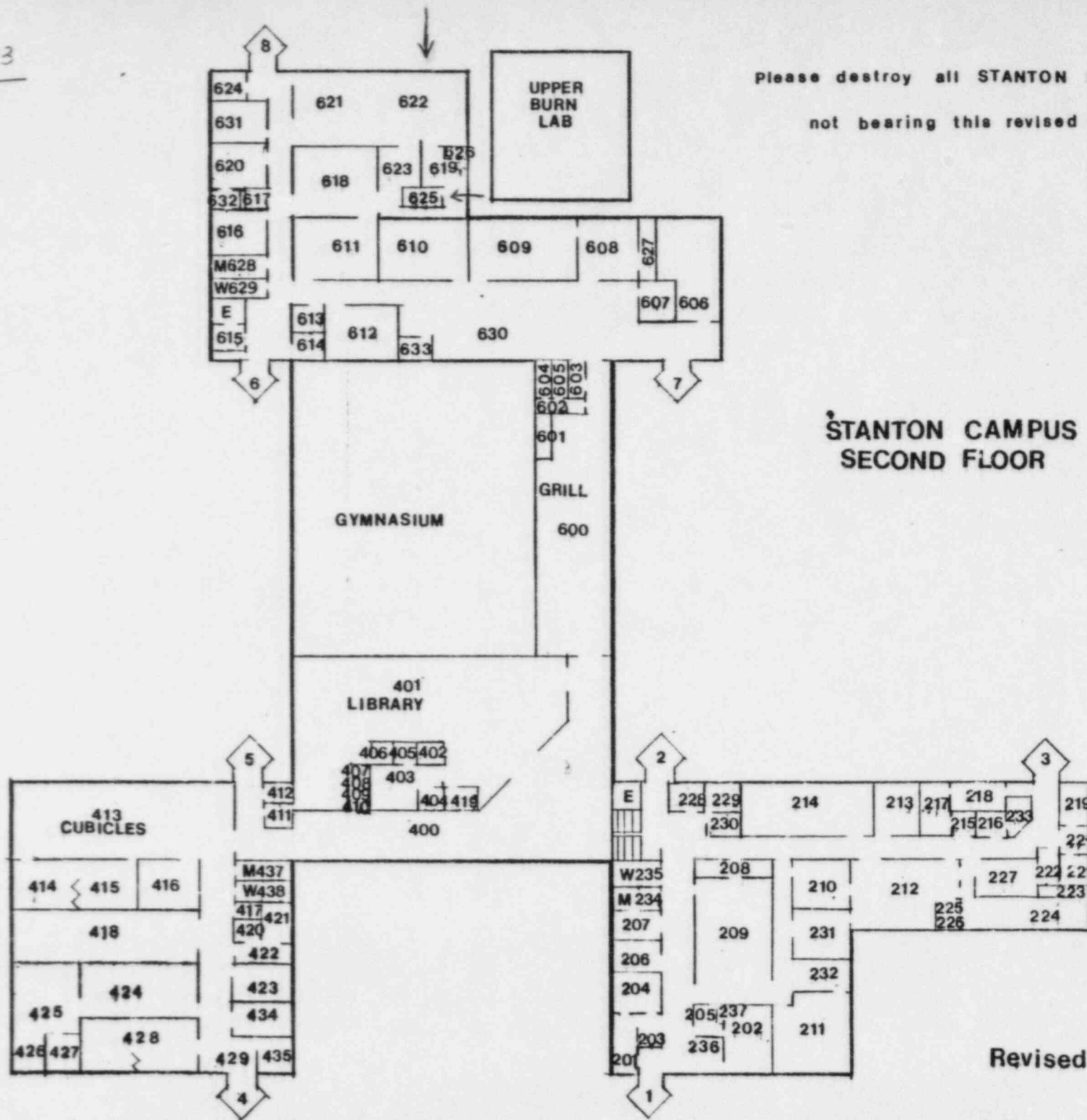
| 14. WASTE DISPOSAL | |
|--|--|
| a. NAME OF COMMERCIAL WASTE DISPOSAL SERVICE EMPLOYED Radiation Service Org., P. O. Box 419, Laurel, MD 20707 LIC.#MD-33-021-02 | |
| b. IF COMMERCIAL WASTE DISPOSAL SERVICE IS NOT EMPLOYED, SUBMIT A DETAILED DESCRIPTION OF METHODS WHICH WILL BE USED FOR DISPOSING OF 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 | |

ITEM NO. 8. LICENSED MATERIAL

LINE (4)

The isotopes which are now planned for use for limited tracer studies are C^{14} , H^3 , I^{125} (RIA Kits). The quantities stated here for possession are what has been deemed as practical regarding minimum purchase.

Item #13



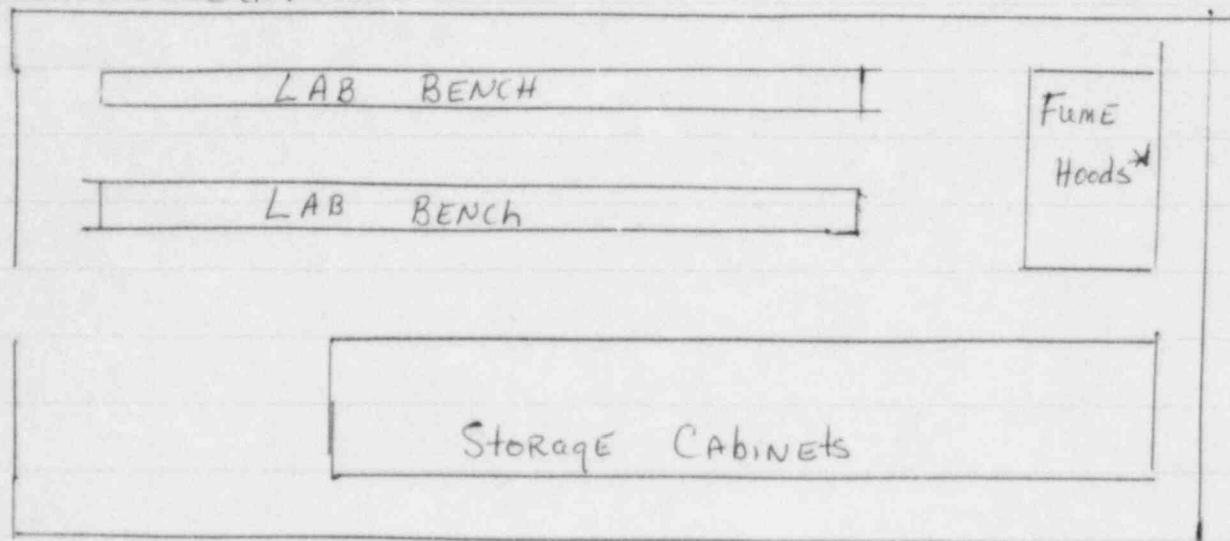
Please destroy all STANTON floorplans
not bearing this revised date

STANTON CAMPUS
SECOND FLOOR

Revised 9-13-83

Item #13

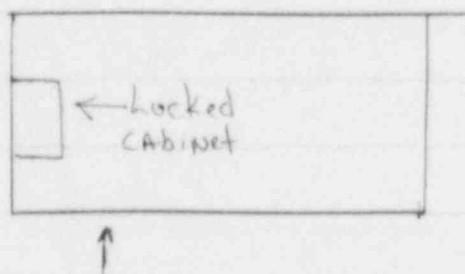
Room 622 - Student Lab:



* Fume Hoods, Indep. Vented

Scintillation Counter to be housed in this room (622)

Room 625 - Storage Room - where isotopes will be stored



Locked and Indep. Ventilated

Room will be equipped with a refrigerator for storage of isotopes which need to be kept cold

More locked cabinets may be added, if necessary.

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:

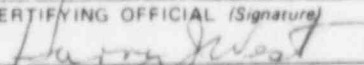
15. RADIATION PROTECTION PROGRAM. Describe the radiation protection program as appropriate for the material to be used including the duties and responsibilities of the Radiation Protection Officer, control measures, bioassay procedures (if needed), day-to-day general safety instruction to be followed, 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) | b. CERTIFYING OFFICIAL (Signature)  |
| EXEMPT (State College) | c. NAME (Type or print) Harry J. West |
| (1) LICENSE FEE CATEGORY: EXEMPT | d. TITLE Dean of Instruction |
| (2) LICENSE FEE ENCLOSED \$ N/A | e. DATE 2/21/85 |

ITEM 15. RADIATION PROTECTION PROGRAM

- o Radiation Protection Officer* will handle, inventory, control and arrange for disposal of any and all radioactive materials. He will also supervise the training of students in the use of low energy isotopes; such as C^{14} and oversee the use of said isotopes by students. He will arrange for training of other faculty, as necessary. This training will be arranged with the Radiation Protection Officer, University of Delaware (Broad License), Newark, DE. The Radiation Protection Officer will then properly inform the NRC of any new individuals who will supervise the use of such materials.
- o Bioassay. Due to low levels and concentrations of isotopes to be used, no regular procedure is anticipated. However, if necessary, periodic urine testing will be conducted. It is also possible that the Radiation Protection Officer may collect and analyze expired pulmonary air for $C^{14}O_2$. If necessary, arrangements will be made for thyroid scanning. Periodic urine testing will be performed on personnel (at this time: Radiation Protection Officer) regularly using isotopes. (Also, see Item #12)
- o Day to Day General Safety
 - o Isotopes used only by designated personnel, i.e. those properly and formerly trained and certified.
 - o Lowest energy and concentration of isotope that can possibly be effective will be used.
 - o Student use will be the minimal that is necessary for adequate learning experience and be strictly supervised and monitored by designated personnel.
 - o Isotopes will be stored in obviously marked container in locked, designated areas (see Item #13). These areas will only be accessed by trained personnel (as of now: the Radiation Protection Officer). This area will be regularly monitored for spillage and leakage. Monitoring will be performed by instruments listed in Item #10. Frequency of monitoring will depend on whether or not isotopes are being stored. When they are, monitoring will be done at least monthly. Any spillage and/or contamination will be quickly and thoroughly cleaned and the area will be resurveyed. If any stubborn contamination exists aid will be sought from either service listed in Items 11 or 14.

*The Radiation Protection Officer will

- o review and place all purchase orders for radioactive samples.
- o inspect, monitor and store all incoming packages containing radioactive isotopes.
- o --if leakage of a package has occurred--determine how much, and take steps necessary to prevent further leakage.
- o assure proper disposal of all items containing and used in handling of radioisotopes (see Item #14).
- o assure students, and personnel are properly handling radioactive samples.
- o conduct regular surveys of all areas where isotopes are housed/used.
- o when film badges are required--assure that they are worn by personnel and monitored by proper service (see Item #12).

ITEM 16. FORMAL TRAINING IN RADIATION SAFETY

Jerry N. Blancato

Items A--D:

Fordham University
Department of Chemistry
Bronx, New York 10458
Two semester course in Radiochemistry, 1970

University of Delaware
Department of Safety and Radiation Protection
Newark, DE 19716
August, 1982
Three-day seminar reviewing material in Items A--D.

ITEM 17. EXPERIENCE

Jerry N. Blancato

1970 - Two Semester Lab Course (daily meeting: 5 hours)
Practicing principles of Radioisotope usage and handling,
including safety and monitoring. Isotopes used: C^{14} , Ur^{235} ,
 I^{125} , P^{32} , H^3 .

1978 - Present: As part of Doctoral Dissertation Studies at
the University of Delaware, regular used in animal tracer
analysis of drug distribution in body - Primary isotope C^{14} .
Maximum Spec. Activity: 9.63 mCi/mm
Maximum on Hand: 10 mCi



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

BETWEEN: William O. Miller, Chief
License Fee Management Branch
Office of Administration

Regional License Section
Material Licensing Branch
FCMS, Office of Nuclear Material
Safety & Safeguards

LICENSE FEE TRANSMITTAL

A. REGION I

1. APPLICATION ATTACHED

Applicant/Licensee: Delaware Technical & Comm. College
Application Dated: 2/21/85
Control No.: 18710
License No.: new

2. FEE ATTACHED

Amount:
Check No.:

3. COMMENTS

Signed

Date

B. LICENSE FEE MANAGEMENT BRANCH

1. Fee Category and Amount: Fee EX- 170.11(6)(9)

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

Amendment
Renewal
License

Signed Jo Jackson
Date 3/4/85