

### APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

**APPLICATIONS FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:**

U.S. NUCLEAR REGULATORY COMMISSION  
DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY, NMSS  
WASHINGTON, DC 20555

**ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS, IF YOU ARE LOCATED IN:**

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, MAINE, MARYLAND, MASSACHUSETTS, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, OR VERMONT, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION I  
NUCLEAR MATERIALS SAFETY SECTION B  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406

ALABAMA, FLORIDA, GEORGIA, KENTUCKY, MISSISSIPPI, NORTH CAROLINA, PUERTO RICO, SOUTH CAROLINA, TENNESSEE, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION II  
NUCLEAR MATERIALS SAFETY SECTION  
101 MARIETTA STREET, SUITE 2500  
ATLANTA, GA 30333

**IF YOU ARE LOCATED IN:**

ILLINOIS, INDIANA, IOWA, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION III  
MATERIALS LICENSING SECTION  
799 ROOSEVELT ROAD  
GLEN ELLYN, IL 60137

ARKANSAS, COLORADO, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, SOUTH DAKOTA, TEXAS, UTAH, OR WYOMING, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION IV  
MATERIAL RADIATION PROTECTION SECTION  
611 RYAN PLAZA DRIVE, SUITE 1000  
ARLINGTON, TX 76011

ALASKA, ARIZONA, CALIFORNIA, HAWAII, NEVADA, OREGON, WASHINGTON, AND U.S. TERRITORIES AND POSSESSIONS IN THE PACIFIC, SEND APPLICATIONS TO:

U.S. NUCLEAR REGULATORY COMMISSION, REGION V  
NUCLEAR MATERIALS SAFETY SECTION  
1460 MARIA LANE, SUITE 210  
WALNUT CREEK, CA 94606

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTION.

**1. THIS IS AN APPLICATION FOR (Check appropriate item)**

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER 01-06113-04
- C. RENEWAL OF LICENSE NUMBER \_\_\_\_\_

**2. NAME AND MAILING ADDRESS OF APPLICANT (Include Zip Code)**

Tennessee Valley Authority  
Senior Vice President of Nuclear Power  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

**3. ADDRESS(ES) WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED**

Western Area Radiological Laboratory  
Muscle Shoals, Alabama 35660  
and mobile monitoring vehicles at various locations

**4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION**

R. H. Shell, Manager, Regulatory Licensing

**TELEPHONE NUMBER**

(615) 751-8099

SUBMIT ITEMS 5 THROUGH 11 ON 8 1/2 x 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

**5. RADIOACTIVE MATERIAL**  
a. Element and mass number, b. chemical and/or physical form, and c. maximum amount which will be possessed at any one time.

**6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED**

**7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE**

**8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS**

**9. FACILITIES AND EQUIPMENT**

**10. RADIATION SAFETY PROGRAM**

**11. WASTE MANAGEMENT**

**12. LICENSEE FEES (See 10 CFR 170 and Section 170.31)**  
FEE CATEGORY \_\_\_\_\_ AMOUNT ENCLOSED \$ \_\_\_\_\_

**13. CERTIFICATION (Must be completed by applicant): THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.**

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, AND 40 AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR 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.

**SIGNATURE—CERTIFYING OFFICER**

**TYPED/PRINTED NAME**

**TITLE**

**DATE**

*[Signature]*

E. G. Wallace

Manager, Nuclear  
Licensing & Regulatory Affairs

**FOR NRC USE ONLY**

TYPE OF FEE	FEE LOG	FEE CATEGORY	COMMENTS

AMOUNT RECEIVED

CHECK NUMBER

9012130201 901210  
NMSS LIC-30  
01-06113-04 PDC

APPROVED BY

DATE

Item 5

Radioactive Material

a. <u>Element and Mass Number</u>	b. <u>Chemical and/or Physical Form</u>	c. <u>Maximum Amount Possessed At Any One Time</u>
1. Any by-product material with Atomic Nos. 1 through 83, inclusive	1. Any	1. Not to exceed 10 millicuries per nuclide and 50 millicuries total
2. Any by-product material with Atomic Nos. above 83, source and/or special nuclear material	2. Any	2. Not to exceed 50 microcuries per nuclide
3. Any isotopes contained in samples of reactor-produced material or reactor components	3. Any	3. 50 microcuries per sample
4. Cs-137	4. Check source mounted on Panasonic TLD	4. 5 microcuries per source and 50 microcuries total

01-06113-04  
11/90

Item 6

Purpose(s) For Which Licensed Materials Will Be Used

For possession and use in the calibration and standardization of instruments and for analysis of samples for radioactive material.

Item 7

Individual(s) Responsible For the Radiation Safety Program  
and Their Training and Experience:

A. Licensed material stored at the Western Area Radiological Laboratory shall be used by, or under the supervision of John L. Lobdell, William L. Raines, Ralph G. Wallace, R. Michael Clingan, or Roosevelt Carter. The qualifications of the above individuals are given in attachment 1.

1. The Radiation Protection Officer is Ralph G. Wallace.

The Radiation Protection Officer (RPO) is a professional health physicist within TVA and is available to the Radiation Control Supervisor for consultation and advice. He also has the responsibility to periodically monitor or audit licensed activities and to provide radiological services when they are needed. He may substitute requirements as necessary.

2. The Radiation Control Supervisor is Roosevelt Carter.

The Radiation Control Supervisor (RCS) has the direct responsibility to ensure that all licensed activities under his authority are conducted safely and in accordance with license conditions and the ALARA philosophy. He also has the responsibility to call upon the the RPO when his assistance is needed.

B. The sources listed in Item 5, No. 4, to be installed in the badge cleaning device and used in the Chattanooga Office Complex, will be used by or under the supervision of James A. Flanigan. His qualifications are also given in Attachment 1.

Item 8

Training For Individuals Working In Or  
Frequenting Restricted Areas

The background and experience of personnel involved in the use of licensed material is identified in Item 7. In addition, all Western Area Radiological Laboratory personnel are provided periodic reorientation consisting of a review of the principles of radiation protection and the safe handling of radioisotopes.

Item 9

Facilities & Equipment

The Western Area Radiological Laboratory (WARL) is the facility which provides the environmental radiological monitoring support to TVA's nuclear power plants. The laboratory also provides analytical support to the plants for the analysis of some intermediate level samples. The facility includes a chemical laboratory, sample preparation facilities, a calibration standards preparation laboratory, and counting equipment. A drawing of the laboratory is presented in attachment 2. The counting equipment includes low background beta counters, internal proportional counters, germanium gamma detection equipment with multichannel analyzer systems, liquid scintillation counters, and beta-gamma coincidence counting equipment.

The laboratories are equipped with filtered exhaust hoods. The hoods' ventilation system will be checked quarterly or whenever a noticeable decrease in the flow rate is apparent. Measurements will be made at five or more different points in the opening with a calibrated air velocity meter, such as a thermocanemometer, with the sash in the operating position. Corrective actions will be taken if the measured face velocity is less than 100 feet per minute. Records of airflow measurements and corrective actions will be maintained at WARL. Air released to the unrestricted areas does not contain radioactive material in concentrations which exceed those specified in 10 CFR 20.

Vehicles have been equipped with sampling and/or counting equipment for use in collecting routine environmental samples or for responding to a radiological emergency at any of TVA's nuclear power facilities. Sealed sources may be used in these vehicles for the calibration of equipment in the field. These vehicles are locked and the keys are kept in secure areas when not in use.

Quantities of radioactive materials exceeding the quantities given in 10 CFR 30.71, Schedule B, shall be stored in a locked cabinet at the Western Area Radiological Laboratory. The facility is locked during non work-hours and the area patrolled by TVA security personnel.

A Panasonic TLD badge cleaning device is installed in TVA's corporate office in Chattanooga, Tennessee. Ten check sources (approximately 5 microcuries of Cs-137 each) are required for use with the system. These check sources will be stored in a locked metal cabinet in the office complex and will be used by or under the supervision of James A. Flanigan. Access to the complex is controlled by TVA and is limited to TVA personnel and authorized visitors.



Item 10

Radiation Safety Program

Personnel Monitoring Equipment

All personnel using licensed material at the WARJ, shall wear a thermoluminescent dosimeter (TLD). The TLDs used are part of TVA's personnel dosimetry system and are exchanged at least quarterly. Dosimetry will not be required for personnel working with the badge cleaning device.

Radiation Detection Instrumentation

A wide variety of radiation detection instrumentation is available for use in support of the laboratory operations. The following radiation detection instruments, or similar, are examples of the instruments which may be used.

1. Ludlum Model 14C with an external GM detector.
2. Ludlum Model 3-99 with an external alpha detector.
3. Bicron Model RSO-5 with an ion chamber detector.
4. Eberline Model RM-19 scaler with a frisker probe.

Survey instruments shall be calibrated at intervals not to exceed 5 months and after each instrument servicing. Records of each instrument calibration shall be maintained for a period of 2 years after the date of calibration. Each radiation survey instrument shall bear a current calibration tag stating the date of calibration and calibration due date.

Instrument calibration will be performed by the Environmental Radiological Monitoring and Instrumentation Department of TVA's Operations Services. Each instrument will be calibrated so that a plus or minus 20-percent accuracy can be demonstrated at two or more widely separated points, other than zero, on each scale.

Radiation Surveys

Surveys of the Special Prep and Intermediate Laboratories are performed weekly when the laboratories are in use, but at least monthly. Surveys of the General Laboratory, Sample Prep, and Counting Rooms are performed at least every six months. Corrective actions are taken if transferable contamination levels exceed 200 dpm/100 cm<sup>2</sup> beta/gamma or 20 dpm/100 cm<sup>2</sup> alpha or if fixed levels, measured with a frisker or similar instrument, exceed 100 cpm above background. Since only calibration sources are used in the mobile units and the Chattanooga offices, surveys are not performed in these areas routinely, but will be performed on an as needed basis. Records of all survey results will be maintained at WARJ.

Item 10 (Continued)

Leak Testing

Leak tests of sealed sources shall be performed by or under the supervision of the RPO or RCS. Beta/gamma sources shall be tested for leakage at intervals not to exceed 6 months and alpha sources shall be leak tested every 3 months. The test shall be capable of detecting the presence of 0.005 microcuries of removable contamination. The test sample shall be taken from the source or from appropriate accessible surfaces of the device in which the source is mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained at the WARL for at least two years.

If the test reveals the presence of 0.005 microcuries or more of removable contamination, the source shall be withdrawn from use and shall be decontaminated, repaired, or disposed of in accordance with applicable regulations. Within 5 days after determining that a source has leaked, a report describing the equipment involved, the test results, and the corrective action taken shall be submitted to the Nuclear Regulatory Commission.

Any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material. The periodic leak test required by this section does not apply to beta/gamma sealed sources that are stored and not being used. Such sources shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six months prior to the date of use or transfer.

Receipt of Packages Containing Radioactive Materials

All packages identified as containing licensed radioactive materials (isotopes and quantities exceeding the levels identified in 10 CFR 30.71, Schedule B) coming into WARL shall be surveyed and leak tested during opening. Packages containing materials exceeding the Type A quantities referenced in 10 CFR 20.205 shall be surveyed within 3 hours if received during normal working hours or within 18 hours if received after normal working hours.

Transportation

The licensee may transport licensed material or deliver licensed material to a carrier for transport in accordance with the provisions of Title 10, Code of Federal Regulations, Part 71.

Records

Copies of all required records for this program will be maintained at WARL.



## Item 10 (Continued)

Rules

The following rules shall be observed when radioactive material is being used in the laboratory:

1. TLD badges shall be worn at all times.
2. Protective clothing (i.e., laboratory coat, gloves, safety glasses, etc.) shall be worn as deemed appropriate by the Radioanalytical Laboratory Section Supervisor.
3. Contaminated clothing must be disposed in or on designated places after use.
4. Spills of radioactive material or contamination of apparatus, surfaces, clothing, or the body must be immediately reported to the Radioanalytical Laboratory Section Supervisor and/or the FPO, or their designated representatives.
5. Smoking, eating, and drinking are forbidden in all areas subject to radioactive contamination.
6. All containers of nonexempt quantities of radioactive materials shall be clearly labeled with appropriate warnings and information.
7. All operations involving potential airborne contamination shall be conducted in a hood.
8. All contaminated waste material must be placed in designated containers. Liquid waste shall be stored or disposed of separately from solid waste.
9. Before leaving a designated contamination zone, an appropriate personnel survey must be performed. Any signs of contamination shall be immediately reported to the Radioanalytical Laboratory Section Supervisor, or his designated representative.
10. Operations involving solutions of radioactive materials shall be conducted in areas lined with absorbent paper, whenever possible.
11. No employee shall work with radioactive materials containing 1 millicurie or more of volatile radioiodine.

Item 11

Waste Management

All radioactive waste materials shall be appropriately packaged, surveyed, and labeled in accordance with applicable NRC and DOT regulations governing the transport of radioactive materials. Waste shall be transported to TVA nuclear plants, approved disposal sites, or other appropriate approved facilities for disposal.

Attachment 1

Qualifications of Supervisory Personnel

William L. Raines

Manager, Environmental Radiological Monitoring and Instrumentation Department

Mr. Raines has a Ph.D. in nuclear chemistry from the University of Arkansas, and a B.S. degree in chemistry from Henderson State University. He has approximately 10 years experience in using and handling radioactive materials. He carried out research using radioactive materials at the University of Arkansas. His work for the past 5 years has specifically included identification of radionuclide levels in environmental samples, preparation of calibrated standards, training of laboratory personnel, and the development of radioanalytical and calibration procedures.

John L. Lobdell

Supervisor, Instrumentation Calibration, Repair, and Control Section

Mr. Lobdell has a B.S. degree in physics from Spring Hill College, Mobile, Alabama, and a MSPH degree in radiological hygiene from the University of North Carolina at Chapel Hill. He is certified in health physics by the American Board of Health Physics. He has worked for 21 years at TVA in applied health physics, instrument calibration, dosimetry, emergency planning, and environmental monitoring.

R. Michael Clingan

Radiochemical Laboratory Analyst, Environmental Radiological Monitoring and Instrumentation Department, Tennessee Valley Authority.

Mr. Clingan has had 17 years experience as a radiochemical laboratory analyst which has included preparation of radioactive standards. He has completed a formal one and one-half year training program in radiochemistry at the Browns Ferry Nuclear Plant. He also completed a 15-hour health physics orientation program at the Browns Ferry Nuclear Plant.

Attachment 1 (Continued)

Ralph G. Wallace

Health Physicist, Radioanalytical Laboratory Section

Mr. Wallace has a B.S. degree in chemistry and mathematics from the University of North Alabama, Florence, Alabama, and a MSPH degree in radiological hygiene from the University of North Carolina at Chapel Hill. He has worked with TVA in the area of radiological health for more than 20 years. During this period, he has worked in a radioanalytical laboratory, in dosimetry, emergency planning, environmental monitoring, and offsite health physics support. His primary responsibilities have been in the environmental radiological monitoring program.

Roosevelt Carter, Jr.

Supervisor, Radioanalytical Laboratory Section

Mr. Carter has a M.S. degree in analytical chemistry from Southern University and a B.S. degree in chemistry from Alcorn State University. He has approximately 16 years experience with radioactive materials as a radiochemist with TVA. Work experience has specifically included the use and calibration of alpha, beta, and gamma counting systems; training of laboratory personnel; and preparation of radioanalytical procedures. He was the supervisor of the Eastern Area Radiological Laboratory at Vonore, Tennessee for approximately 3 years. He attended a 2-week course entitled "Basic Radiological Health" presented by the Public Health Service at Montgomery, Alabama.

James A. Flanigan

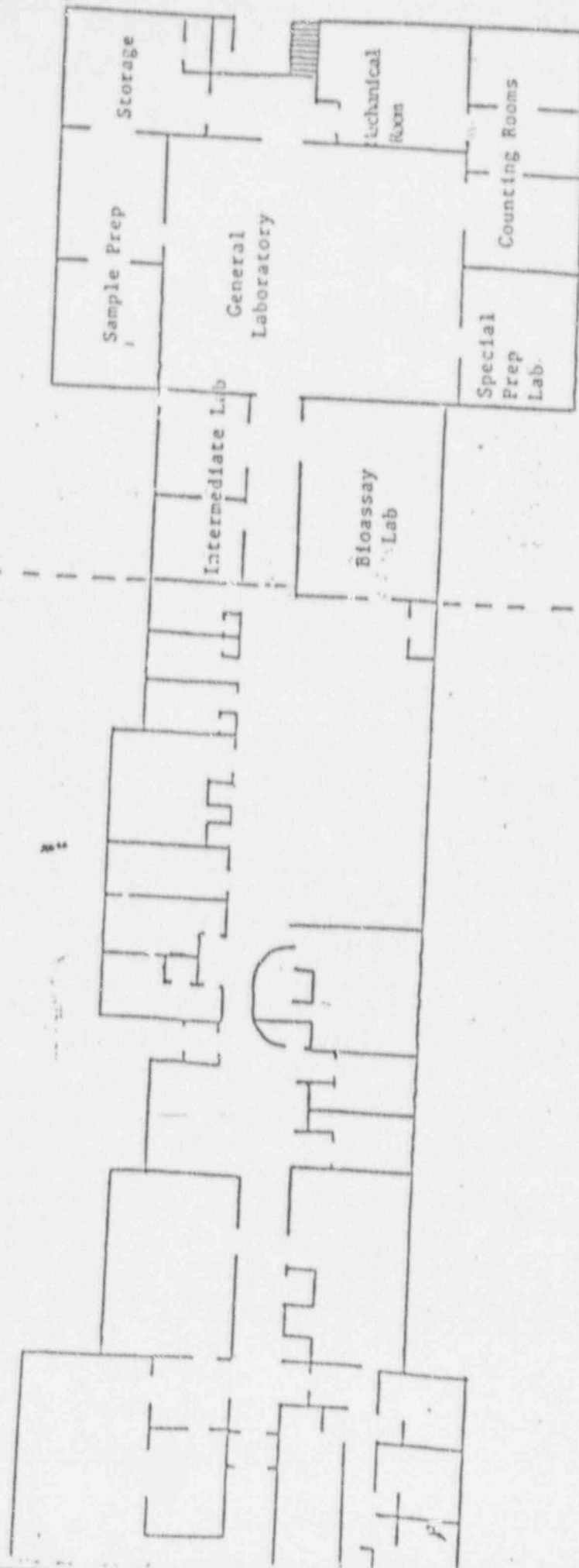
Program Manager, Radiological Control, Tennessee Valley Authority

Mr. Flanigan has had 23 years experience in the area of applied health physics. His formal training in the handling of radioactive material was completed as a leading Engineering Laboratory Technician in the Naval Nuclear Power Program. At TVA's Watts Bar Nuclear Plant he served as Health Physics Project Engineer for about 18 months and Radiological Protection Group Manager for 2 years. He has worked in TVA's corporate Radiological Control office as group manager and program manager for 3 years.

Attachment 2

Western Area Radiological Laboratory

RESTRICTED AREA



01-06113-01  
01/88