

(10-94)

10 CFR 30, 32, 33

34, 35, 36, 39 and 40

APPLICATION FOR MATERIAL LICENSE

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 9 HOURS. SUBMITTAL OF THE APPLICATION IS NECESSARY TO DETERMINE THAT THE APPLICANT IS QUALIFIED AND THAT ADEQUATE PROCEDURES EXIST TO PROTECT THE PUBLIC HEALTH AND SAFETY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-8 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0120), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

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:

LICENSING ASSISTANT SECTION
NUCLEAR MATERIALS SAFETY BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

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

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION II
101 MARIETTA STREET, NW, SUITE 2900
ATLANTA, GA 30323-0199

IF YOU ARE LOCATED IN:

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

MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
801 WARRENVILLE RD.
LISLE, IL 60532-4351

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS,
LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA,
OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH,
WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING SECTION
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-8064

41-08165-18

030-35695

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 JURISDICTIONS.

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

☒

A. NEW LICENSE

☐

B. AMENDMENT TO LICENSE NUMBER _____

☐

C. RENEWAL OF LICENSE NUMBER _____

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

TENNESSEE VALLEY AUTHORITY
PSC 1B-C
1101 MARKET STREET
CHATTANOOGA, TN 37402

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

TVA CENTRAL LABORATORIES SERVICES BUILDING
CHICKAMAUGA POWER SERVICE CENTER
N. SIDE CHICKAMAUGA RESERVATION
CHATTANOOGA, TN 37415

TVA NORRIS ENGINEERING
LABORATORY BUILDING
129 PINE ROAD
NORRIS, TN 37828

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Terry Knuettel
TELEPHONE NUMBER
423-751-6673

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 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, 36, 39 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.

CERTIFYING OFFICER - TYPED/PRINTED NAME AND TITLE

Mark J. Burzynski, Manager, Nuclear Licensing

SIGNATURE

Ralph H. Shell, M.S.B.

DATE

6/12/00

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		

APPROVED BY

DATE

NMSS/RGNI MATERIALS-002

258944

APPLICATION MATERIAL FOR NUCLEAR BY-PRODUCT MATERIAL LICENSE

Item 5

Radioactive Material

- | | | |
|-------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------|
| A. Any radioactive material with Atomic Nos. 1 through 96, inclusive, except: | A. Contamination on equipment or samples. | A. Not to exceed 1 millicurie per radionuclide and 10 millicuries total. |
| (1) Any radioactive material with Atomic Nos. <u>above</u> 83, | (1) Contamination on equipment or samples. | (1) Not to exceed 1 microcurie per radionuclide and 20 microcuries total. |

Item 6

Purpose(s) For Which Licensed Material Will Be Used

Possession, repair, inspection, and testing of contaminated equipment and chemical analysis of liquid samples.

Item 7

Individual(s) Responsible For Radiation Safety Program And Their Training And Experience

- A. Licensed material shall be used by, or under the supervision of Richard R. Grau, S. Scott Long, John B. Ragsdale Jr., or other individuals who have received the training equivalent to that described in this application, and who have been designated by the Radiation Safety Officer (RSO).
- B. The RSO is John B. Ragsdale, Jr.
- The RSO 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 obtain qualified health physics support for license activities.
- C. The qualifications for the individuals named above are contained in Attachment 1.
- D. Personnel who provide health physics support for activities covered by this license shall be health physics technicians with at least two years of experience.

Item 8

Training For Individuals Working In Or Frequenting Restricted Areas

Personnel involved in the use of licensed material shall receive a radiation protection orientation before their assignment to work in any contamination or radiation area. The orientation will cover all pertinent radiation protection practices and procedures to a degree sufficient to allow the individual to perform assigned work without incurring unnecessary radiation exposure. Reorientation will be provided within 24 months of initial or previous training. Orientations will be conducted by TVA health physics support personnel. A copy of the Training Agenda is shown in Attachment 2.

Item 9

Facilities And Equipment

TVA's Central Laboratories Services Building (CLS) is located on the same site and adjacent to Chickamauga Dam, Chattanooga, TN. It is primarily a facility for the support of TVA's nuclear plants in the area of calibration and repair of portable test equipment and the chemical analysis of specimens. Some of the items handled by this facility may be radiologically contaminated. A floor plan and glossary of the areas by function where licensed work will be performed is presented in Attachment 3.

TVA's Norris Engineering Laboratory facility is located at 129 Pine Road, Norris, TN. This facility will be used on a limited basis for the calibration of high volume flowmeters. Licensed material will be used only in the main laboratory area (one room). A floor plan of this facility which indicates where licensed work will be performed is presented in Attachment 4.

Item 10

Radiation Safety Program

The Radiation Safety Program is administered by those individuals listed in Item 7. Health physics support is available on request from TVA's nuclear plants.

Personnel Monitoring Equipment

TVA will monitor individuals with thermoluminescent dosimeters (TLDs) in accordance with the criteria in the section entitled "Radiation Safety Program - Occupational Dose" in NUREG-1556, Vol. 7, dated December 1999. The TLDs used are part of TVA's personnel dosimetry system and are exchanged quarterly. Direct reading dosimeters will be supplied by TVA, if deemed appropriate by health physics personnel. Direct reading dosimeters are calibrated at least annually.

Item 10 (Cont'd)

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. TVA will use instruments that meet the radiation monitoring instrument specifications published in Appendix M to NUREG-1556, Vol. 7. We reserve the right to upgrade our survey instrument as necessary.

1. Ludlum Model 14C with an external GM detector
2. Bicorn Surveyor MX with an external alpha detector
3. Bicorn Model RSO-5 with an ion chamber detector
4. Bicorn Surveyor 50 scaler with a frisker probe

Survey instruments shall be calibrated at intervals not to exceed six months and after each instrument servicing. Records of each instrument calibration shall be maintained at TVA's Western Area Radiological Laboratory (WARL) for a period of two 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 at WARL by the Environmental Radiological Monitoring and Instrumentation Department of TVA's Nuclear Assurance and 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

Radiologically restricted areas shall be established in accordance with 10 CFR 20. These areas shall be identified, posted, and surveyed. All work performed in any contaminated zone will be under the supervision of health physics personnel. The RSO will obtain backup and onsite assistance as needed.

Surveys of the facilities and equipment will be performed before release for unrestricted use. These surveys will be performed by personnel with at least two years experience in health physics. Residual contamination will be eliminated to the extent possible consistent with ALARA principles. No facilities or equipment will be released for unrestricted use if transferable contamination levels exceed 1000 dpm/100 cm² beta/gamma or 20 dpm/100 cm² alpha, or if fixed levels, measured with a frisker or similar instrument, exceed 100 cpm above background.

Leak tests of sealed sources will be performed by or under the supervision of health physics technicians with a minimum of two years experience. Beta/gamma sources shall be tested for leakage at intervals not to exceed six months and alpha sources shall be leak-tested every three

Item 10 (Cont'd)

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 by TVA Nuclear (TVAN), and a copy shall be maintained at CLS 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 five 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 (NRC).

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

Upon arrival of any contaminated item at the laboratory, the package will be placed in an area designated for the storage of contaminated items. The storage area will be secured and posted. These packages will not be opened until a work area is prepared for safely handling the material and qualified health physics support is present. Packages will be surveyed upon opening. Surveys and monitoring will be conducted in accordance with applicable regulations. No Type A packages will be received under this license.

Control of Radiological Material

A current inventory log of all nonexempt quantities of radioactive material possessed under the license shall be maintained. The inventory shall include the identity of each item, the nuclides present, and the activity of each nuclide. The records of the inventories shall be maintained by TVAN and copies shall be maintained at CLS.

All nonexempt quantities of radioactive materials shall be stored in covered containers and clearly labeled with the appropriate warnings and information.

These containers shall be in a locked room within the building, the building will be locked during nonwork hours, and the area patrolled by TVA security personnel. In addition, the building will have controlled access during work hours.

Item 10 (Cont'd)

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 shall be maintained at CLS, with the exception of instrument calibration records and radiation exposure/TLD records which are maintained by TVAN.

Rules

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

1. TLD badges as required by 10 CFR 20, shall be worn by personnel in radiologically controlled areas, radioactive materials area, contaminated area, radiation area, high radiation area, or airborne radioactivity area.
2. Protective clothing (i.e., laboratory coat, gloves, safety glasses, etc.) shall be worn as deemed appropriate by health physics personnel.
3. Contaminated clothing must be disposed in or on designated places after use.
4. Spills of radioactive material or contamination or apparatus, surfaces, clothing, or the body must be immediately reported to the RSO or his 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. Any contamination on the body must be removed under the direction of Health Physics personnel by immediate decontamination and must be reported to the RSO or his designated representative.
8. All contaminated waste material must be placed in designated containers. The mixing of liquid and solid waste shall be avoided whenever possible.
9. Before leaving a designated contamination zone, an appropriate personnel survey must be performed. Any signs of contamination shall be immediately reported to Health Physics personnel.

Item 10 (Cont'd)

10. No employee shall work with radioactive materials containing 1 millicurie or more of volatile radioiodine.
11. An initial bioassay will be required prior to initial entry into any contaminated areas. A termination bioassay will be required of individuals that have entered bioassay areas.

Item 11

Waste Management

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

ATTACHMENT 1

RICHARD RAYMOND GRAU

TENNESSEE VALLEY AUTHORITY

1998 - Present - Manager, Analysis and Evaluation Services, Central Laboratories Services

- Responsible for the management of the department to ensure customer satisfaction, quality standards are met, and fiscal responsibility for cost recovery for a 3 million dollar business. The department includes: Oil analysis, Metallurgy, Equipment Qualification, Coal analysis, and Analytical Chemistry. The department includes a mixture of personnel: Engineers, Chemists, Analysts, Technicians, and Instrument Mechanics.

1995 - 1998 - Project Manager, Fossil Generation Planning

- Performed Project Management/Program coordination functions for various system level projects (Makeup Water Supply, Relocation of Generator Controls, Control Room Consolidation, Fire Protection).
- Developed the multi-year Fossil Operations Outage O&M and Capital budget.
- Optimized the fossil system outage schedule to meet the generation needs.
- Performed financial analysis of outage costs, capital and O&M, versus revenue from generation.
- Participated on or lead various improvement teams. Teams included: PTS/Engineering consolidation, OTAG-NAAQS Environmental Regulations, Production Planning Process Development.

1991 - 1995 - Project Manager, Fossil Project Management

- Manage capital modification projects with budgets ranging from \$100,000 to \$25 million.
- Manage Cumberland Fossil plant's capital annual budget between \$25 to \$45 million.
- Manage boiler, turbine, auxiliary, coal handling, environmental, safety, and facility projects.
- Assist plant in development of long-range capital spend plan.
- Develop project justification including cost and benefit analysis and obtain approval from senior level management.
- Manage all phases of projects from development, detailed engineering, material procurement, and implementation.
- Aggressively challenged project scopes and cost to obtain the overall low cost solution.

ATTACHMENT 1

RICHARD RAYMOND GRAU

(423) 697-4290 Work

TENNESSEE VALLEY AUTHORITY

1998 - Present - Manager, Analysis and Evaluation Services, Central Laboratories Services

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- Aggressively challenged project scopes and cost to obtain the overall low cost solution.

RICHARD RAYMOND GRAU

Page 2

- Coordinate and monitor activities of many organizations such as plant, engineering, constructor, Power Service Shop, and OEMs ensuring a successful project from development through completion.
- Manage the Cumberland Unit 1 turbine recovery project as a result of the low pressure turbine failure. Project cost was \$25 million.
- Lead and participated on several quality teams.

1987 - 1991 - System Engineering and Prestart Test Manager, Watts Bar Nuclear Plant

- Managed the development and implementation of the Prestart Test Program.
- Ensured test program met the Final Safety Analysis Requirements.
- Supervised the activities of thirty five engineers of various disciplines.
- Responsible for the identification and resolution of system design and performance issues.
- Developed and managed the section budget for the Prestart organization.
- Primary interface with the Nuclear Regulatory Commission relating to system testing. Did not receive any NRC violations.

1985 - 1987 - Preoperational Test Section Supervisor, Watts Bar

- Supervised the section's activities in the performance of preoperational and post-modification testing.
- Developed the post-modification test program requirements.
- Project Manager for the development and implementation of the Lay-up program which was implemented for the long-term protection of inoperable equipment.

1982 - 1985 - Group Lead SC-4, Nuclear Central Office Mech. Sys. Group

- Performed detailed engineering, support, and problem resolution for Sequoyah, Watts Bar, and Browns Ferry on systems including Auxiliary Feedwater, Essential Raw Cooling Water, Component Cooling Water, and various others.
- Supervised the activities of up to four engineers.
- Provided single point contact for plants on common issues.

1980 - 1982 - Lead Engineer SC-3, Solar Applications Branch

- Directed the setup and operation of the Solar Test Facility.
- Evaluated and tested solar water heating systems to identify the optimal performers for use in the TVA solar program.
- Represented TVA at Solar Institute conferences and symposiums.

RICHARD RAYMOND GRAU

Page 3

1978 - 1980 - Preoperational Test Engineer SC-2, Sequoyah Nuclear Plant

- Prepared and directed the performance of preoperational test.
- Identified systems deficiencies and required changes to resolve them.
- Prepared final test data package reports.

UNITED STATES AIR FORCE

1974 - 1978 - Nuclear Research Project Officer

- Calculated and predicted responses of various aircraft components for exposure to nuclear thermal effects.
- Developed and implemented test, using solar simulation, to validate predicted responses.

EDUCATION

B.S. Mechanical Engineering - Texas A&M University, 1974

CERTIFICATIONS

Engineer In Training, 1974

Nuclear Manager and Engineering Cert. - Pressurized Water Reactors, 1988

EXPERIENCE SUMMARY

Twenty years of diversified engineering and management experience utilizing innovative approaches to resolve complex engineering and management issues. Fifteen of these years have been associated with testing of plant systems and equipment. Five years have been in project management of capital modifications. Through these years of testing, project management, and supervisory experience, I have exhibited the ability to perform and direct engineering activities and to supervise the activities of engineers of various disciplines.

JOHN B. RAGSDALE, JR.

TENNESSEE VALLEY AUTHORITY

September 1998 - present - Staff Metrologist, Instrumentation Services Department,
Central Laboratories Services

December 1990 - 1998 - Manager, Measurement Services Department

- Accountable for managing and directing department business and financial activities to ensure that high-quality instrument calibration services are provided to TVA customers in a timely manner at costs below prevailing market rates. Responsible for full cost recovery of services provided while generating sufficient revenues to cover new equipment purchases and replacement of antiquated equipment. Additional challenges of the position include enhancing customer/supplier relationships; developing/expanding internal and external markets; and developing Business Plans that include stretch goals, sound strategies, aggressive action plans, and measurable targets for success. Technical aspects of the position include ensuring that the calibration and repair of precision measuring and test equipment used throughout the TVA power generating and transmission programs are performed in accordance with required accuracy, reliability, safety, and nuclear quality assurance requirements. This also includes responsibility for the maintenance and measurement traceability to national standards for TVA's primary electrical, physical, and mechanical calibration standards. Other technical duties include responsibility for conducting special engineering tests and studies, environmental qualification testing, and commercial-grade dedication of nuclear power plant components. Responsible for managing laboratory material activities that involve the purchase of \$3 million worth of instrumentation annually for TVA customers, and accountable for maintaining an inventory of approximately 40,000 instruments.

June 1983 - December 1990 - Manager, Quality Assurance/Quality Control Department

- Responsible for planning, developing, and implementing a comprehensive nuclear Quality Assurance Program that complied with all applicable federal regulatory and TVA corporate quality assurance requirements. This program encompassed instrument calibration, chemical analyses, metallurgical analyses, environmental qualification, and commercial dedication of nuclear-grade components. Developed and implemented procedural controls for work accomplished in accordance with the CLS Nuclear By-Product Materials License and Special Nuclear Materials License.

JOHN B. RAGSDALE, JR.

Page 2

October 1977 - June 1983 - Supervisor, Electrical Calibration Group

- Responsible for the technical direction of group employees and for meeting workload schedules and customer commitments. Performed calibration and repair on a diverse scope of electrical, electronic, and physical measuring and test equipment, including primary measurement standards whose calibration is directly traceable to the National Institute of Standards and Technology.

COMBUSTION ENGINEERING, INC., CHATTANOOGA, TN

November 1976 - October 1977 - Research, Planning, and Design Engineer

- Designed prototype electronic circuitry for a wide variety of industrial applications including motor speed controls, equipment position monitoring circuits, welding machine controls, and circuitry required to interface instrumentation to various manufacturing processes. Other duties included testing, calibration, and repair of electrical and mechanical instrumentation.

BELL TELEPHONE LABORATORIES, GREENSBORO, NC

June 1972 - November 1976 - Senior Technical Associate

- Designed and developed digital signal processing and analog-to-digital conversion circuitry used in specialized military applications. Responsible for planning and implementation of experiments in both a laboratory and field environment to verify design parameters and to establish interface requirements with the customer's existing equipment.

EDUCATION

CHATTANOOGA STATE TECHNICAL INSTITUTE

ASEE, Electrical Engineering, 1972

Graduated Summa Cum Laude with a 3.98 GPA.

United States Navy -- 1966 to 1970

Numerous Electrical/Electronic courses related to the calibration and repair of test instrumentation and specific weapons systems. Honorably discharged.

UNIVERSITY OF TENNESSEE

Industrial Management, 1964 to 1966

JOHN B. RAGSDALE, JR.

Page 3

PROFESSIONAL MEMBERSHIPS

National Conference of Standards Laboratories (NCSL)

- Member Delegate to NCSL for Tennessee Valley Authority, 1994 to present
- Chairman of the NCSL Utilities Committee, 1994 to 1997
- NCSL Vice President, 1996 to 1998
- NCSL Executive Vice President, 1999

SKILLS

- Excellent teamwork skills. Team sponsor for the "Measurement Magic" Team which won the Hammer Award for reinventing Government and was also a semi-finalist in the Rochester Institute of Technology/USA Today Quality Cup competition.
- Excellent interpersonal relationship skills.
- Proven ability to work with customers and suppliers.
- Solid process management and process control skills.
- Proficient in Microsoft Office Excel, PowerPoint, and Word, Lotus 1-2-3, Freelance Graphics, and WordPerfect.
- Excellent oral and written communication skills.

SCOTT LONG

TENNESSEE VALLEY AUTHORITY

August 98 - Present - Manager, Instrumentation Services, Fossil Power Group, Central Laboratories Services

- Responsible for all departmental activities that provide calibration and repair services for precision measuring and test equipment that will perform in accordance with established accuracy, reliability, safety, and QA requirements.
- Manage department financial operations to generate an O&M budget of \$2M entirely by billing for services rendered with the goal of maintaining essentially a zero return on investment.
- Develop new sources of revenue or methods of cost avoidance to minimize rates charged to internal TVA customers.
- Maintain marketing and customer satisfaction interfaces with a broad customer base that expands through all TVA organizations as well as external utilities, manufacturing facilities, and other calibration laboratories.

July 97 - August 98 - Performance Analyst, Business and Work Performance, Sequoyah

- Design and implement site performance analysis and reporting systems that support TVAN's business plan. Interface with senior TVA management and external agencies to establish performance indicators and targets with specific operational and process improvement goals.
- Compile, trend, and analyze performance data to reduce costs, improve processes, and increase overall site effectiveness and efficiency. Perform baselining, benchmarking, and analysis of key processes and programs to identify problem areas and recommend improvements to be implemented.

November 96 - July 97 - Engineering Support Manager, Sequoyah

- Managed multi-faceted support functions within the Site Engineering organization that required extensive organizational interfaces. Utilized team building concepts to motivate dissimilar work groups toward common business goals.

ATTACHMENT 2

RADIATION SAFETY AND CONTROL TRAINING AGENDA

I. Introduction

II. Discussion of License

A. Source material

B. License Conditions

1. Location
2. Documents
3. Supervision and Authorized Use
4. Leak Testing and Instrumentation
5. Source Inventory
6. Records
7. Security and Storage Postings

III. Basic Principles of Radiation

A. Types of Radiation and Their Properties

1. Alpha
2. Beta
3. Gamma and X-ray
4. Neutron

B. Atomic and Nuclear Structure

1. Atoms and Elements
2. Fundamental Particles (Protons, Neutrons, and Electrons)
3. Isotopes

C. Instrumentation

D. ALARA

1. Time
2. Distance
3. Shielding

E. Radioactive Decay

1. Half-Lives
2. Decay Curves

F. Sources of Radiation

1. Natural
 - a. Cosmic and Solar
 - b. Terrestrial
 - c. Food
 - d. Geographic Location
2. Man-made
3. Medical

G. Radiation Measurements

1. Curies
2. REMS

H. Contamination and Radiation

IV. Dose and Dose Rates

A. TVA Limits

1. TEDE
2. TODE
3. Extremities

V. Personal Protection and Control

- A. Dressout Requirements
- B. Dosimetry
- C. Radiation Detection Instruments

VI. Biological Effects of Radiation

- A. Risk Factors in Comparison with Other Risks
- B. Short-Term and Long-Term Effects of Radiation
- C. Prenatal Effects

VII. Responsibilities of Workers

VIII. Radioactive Material - Receipt, Shipping, and Disposal

XI. Emergency Response

ATTACHMENT 3

Central Laboratories Services Floor Plan

First Floor

- 124 Dimensional and Mass instrument calibration/repair
- 125 Pressure instrument calibration
- 126 Torque/ Force instrument calibration
- 128 Electrical/Electronic instrument calibration/repair
- 150 Torque wrench repair
- 153 Secure storage area for licensed materials/samples

Second Floor

- 213 Ferrography laboratory
- 215 Analytical chemistry laboratory
- 226 Grease analysis laboratory
- 229 Fuel oil analysis laboratory
- 232 Lubricating oil analysis laboratory
- 237 Temperature/Humidity instrument calibration/repair
- 241 Dimensional instrument calibration/repair
- 249 High temperature instrument calibration/repair
- 250 Air and liquid flow meter calibration/repair
- 259 Electrical/Electronic instrument calibration/repair
- 261 Electrical Electronic instrument calibration/repair

ATTACHMENT 4

Norris Engineering Laboratory Floor Plan

SCOTT LONG

Work: (423) 697-4293

TENNESSEE VALLEY AUTHORITY

August 98 - Present - Manager, Instrumentation Services, Fossil Power Group, Central Laboratories Services

- Responsible for all departmental activities that provide calibration and repair services for precision measuring and test equipment that will perform in accordance with established accuracy, reliability, safety, and QA requirements.
- Manage department financial operations to generate an O&M budget of \$2M entirely by billing for services rendered with the goal of maintaining essentially a zero return on investment.
- Develop new sources of revenue or methods of cost avoidance to minimize rates charged to internal TVA customers.
- Maintain marketing and customer satisfaction interfaces with a broad customer base that expands through all TVA organizations as well as external utilities, manufacturing facilities, and other calibration laboratories.

July 97 - August 98 - Performance Analyst, Business and Work Performance, Sequoyah

- Design and implement site performance analysis and reporting systems that support TVAN's business plan. Interface with senior TVA management and external agencies to establish performance indicators and targets with specific operational and process improvement goals.
- Compile, trend, and analyze performance data to reduce costs, improve processes, and increase overall site effectiveness and efficiency. Perform baselining, benchmarking, and analysis of key processes and programs to identify problem areas and recommend improvements to be implemented.

November 96 - July 97 - Engineering Support Manager, Sequoyah

- Managed multi-faceted support functions within the Site Engineering organization that required extensive organizational interfaces. Utilized team building concepts to motivate dissimilar work groups toward common business goals.

SCOTT LONG

Page 2

- Engineering Processes (Procedures, design control, configuration management, performance monitoring, trending, and self-assessment) Implemented process redesign initiatives and developed new upper tier program procedures.
- Project Management - Used 3-phase business plan to manage multi-discipline TVA and contractor resources. Technical contract manager for majority of site engineering contracts.
- Technical Support - Responsible for vendor manual program, configuration drawing production staff, engineering computer support databases and interface with regulatory and other external agencies.
- Procurement Engineering Group (PEG) - Established technical and quality requirements for procurements of material and services in support of plant maintenance and modification functions.
- Administrative - Budget and financial reviews for all engineering sections, maintenance of integrated schedules, engineering personnel training and qualification programs, and clerical support.

October 96 - November 96 - Project Lead (Sequoyah) , Corporate Design, Chattanooga, TN

- Project Manager and site liaison for scoping, authorization and conducting design activities for site capital and O&M projects. Provided and monitored planning, conceptual design, cost estimating, scheduling, and coordination activities to ensure deliverables were performed as contracted.

January 95 - October 96 - Manager, Mechanical/Nuclear Operations Support Group, Sequoyah

- Acted as overall OSG Manager July-Oct 1996. Responsible for multi-discipline design engineering support to provide a single point interface with plant organizations, focusing on quick responses to emergent plant issues. Program cited as a "strength" by INPO.
- Relieved disciplines of emergent work impacts by addressing corrective actions for adverse conditions, 10CFR50.59 evaluations, operability evaluations, temporary leak repairs, and resolution of drawing deviations. Provided technical direction, review and approval of design change packages, procurements, and vendor manual changes targeted at effective problem resolution, system performance improvement, cost savings, and equipment obsolescence.
- Responsible for Procurement Engineering Group (PEG) in providing technical evaluations and determination of quality requirements for procurement of materials and equipment.

SCOTT LONG

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January 91 - January 95 - Task Manager, Nuclear Engineering, Sequoyah

- Directed NE contractor and TVA personnel in the three phase project management business plan. Budgets exceeded \$7M per FY, generally with medium to high risk to plant operation. Developed team oriented approach to meet project objectives.
- Standardized NE schedule formats and monitoring tools for controlling and reporting on projects. Coordinated quarterly award fee reviews of contractor performance and monitored labor rates.
- Team leader for QIT on improving interface among NE, Project Management and Modifications organizations. Member of QIT to develop NE quality performance indicators.

February 90 - January 91 - Engineering Support Section Supervisor (Acting), Sequoyah

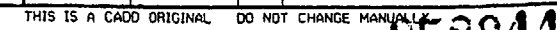
- Coordinated development of site business plan goals. Supervised statistical reporting function of plant performance indicators to NRC, INPO, and TVA. Directed ASME Section XI, 10CFR50 Appendix J, and snubber test programs. Provided daily plant operation and outage support for maintenance and modification activities. Directed programs for Temporary Alterations, Incident Investigations, and Root Cause Analysis.

July 89 - February 90 - Mechanical Engineer (Engineering Support / Systems), Sequoyah

- Developed corporate standard on TACFs for direct site implementation. Reduced TACF inventory by 67% to meet FY goal and resolve INPO finding. Consolidated incident investigation and root cause analysis programs and coordinated self-assessments and preparations for INPO evaluations. Performed operability and reportability determinations on corrective action documents.

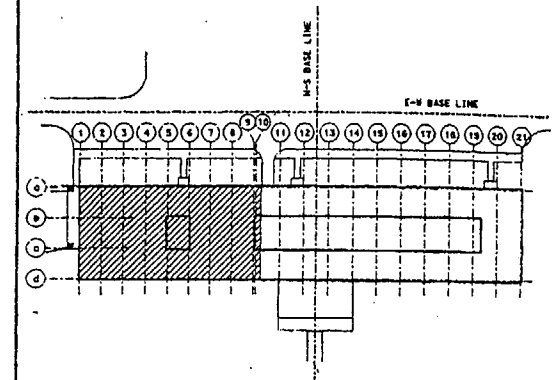
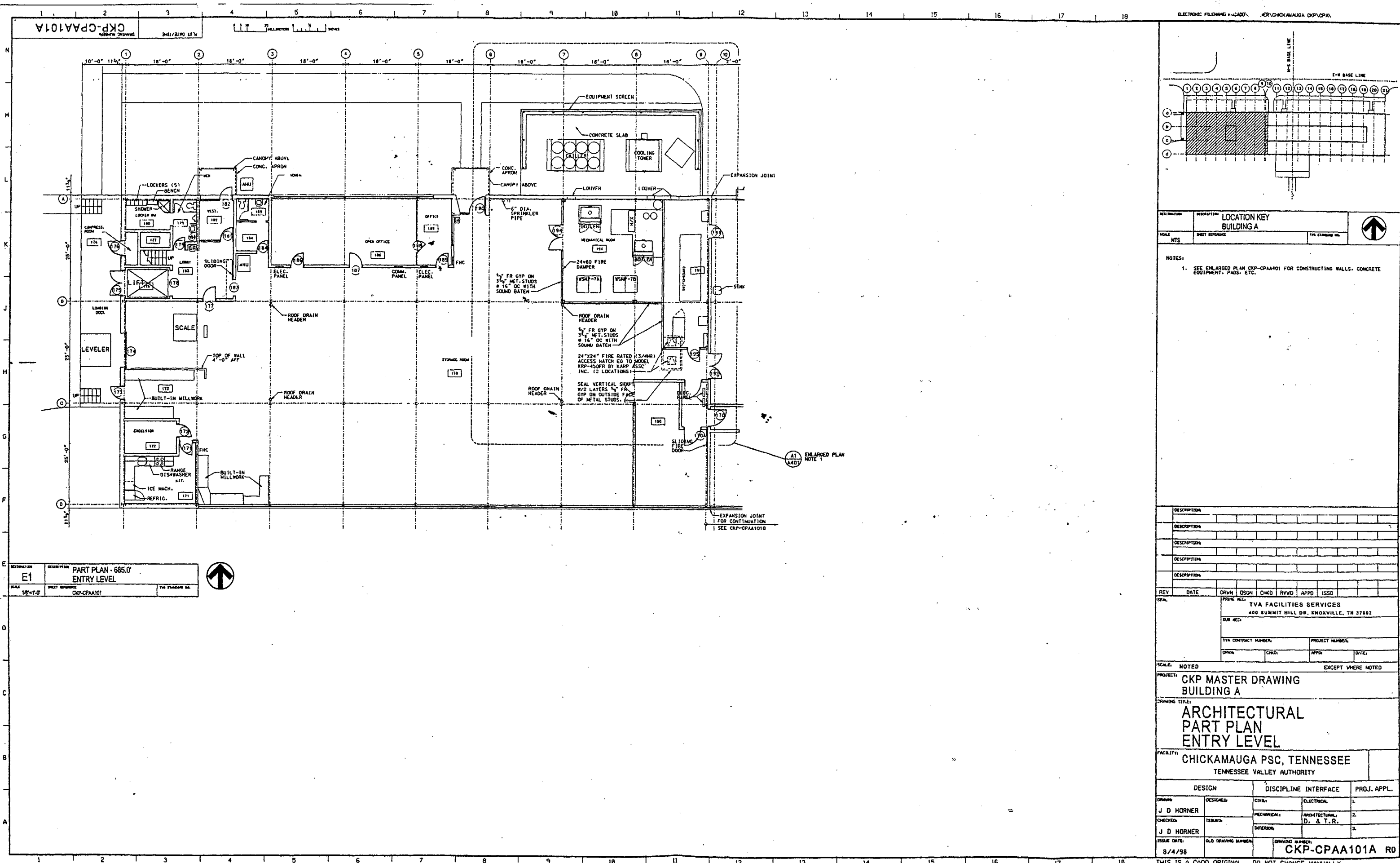
November 88 - July 89 - Supervisor, Technical Support Programs, Sequoyah

- Supervised engineering personnel in multi-system projects and programs. Developed and monitored site performance against Nuclear Power goals and objectives. Obtained contract engineering and vendor support for Systems Engineering organization.



ATTACHMENT 3

ANNUALLY
258944



REVISION	DESCRIPTION	LOCATION KEY
SCALE	SHEET REFERENCE	BUILDING A
MTS		

NOTES:
1. SEE ENLARGED PLAN CKP-CPAA401 FOR CONSTRUCTING WALLS, CONCRETE EQUIPMENT, PADS, ETC.

DESCRIPTION	
DESCRIPTION	
DESCRIPTION	
DESCRIPTION	
DESCRIPTION	

REV	DATE	DRWN	DSGN	CHKD	RYND	APPD	ISSD
1							

PRIME ACCT: TVA FACILITIES SERVICES
400 SUMMIT HILL DR, KNOXVILLE, TN 37602

SUB ACCT:

TVA CONTRACT NUMBER: PROJECT NUMBER:

DRWN: CHKD: APPD: DATE:

SCALE: NOTED EXCEPT WHERE NOTED

PROJECT: CKP MASTER DRAWING
BUILDING A

DRAWING TITLE: ARCHITECTURAL
PART PLAN
ENTRY LEVEL

FACILITY: CHICKAMAUGA PSC, TENNESSEE
TENNESSEE VALLEY AUTHORITY

DESIGN	DISCIPLINE INTERFACE	PROJ. APPL.
DESIGNED: J D HORNER	CIVIL: ELECTRICAL	1
CHECKED: J D HORNER	MECHANICAL: ARCHITECTURAL	2
	INTERIOR: D. & T.R.	3

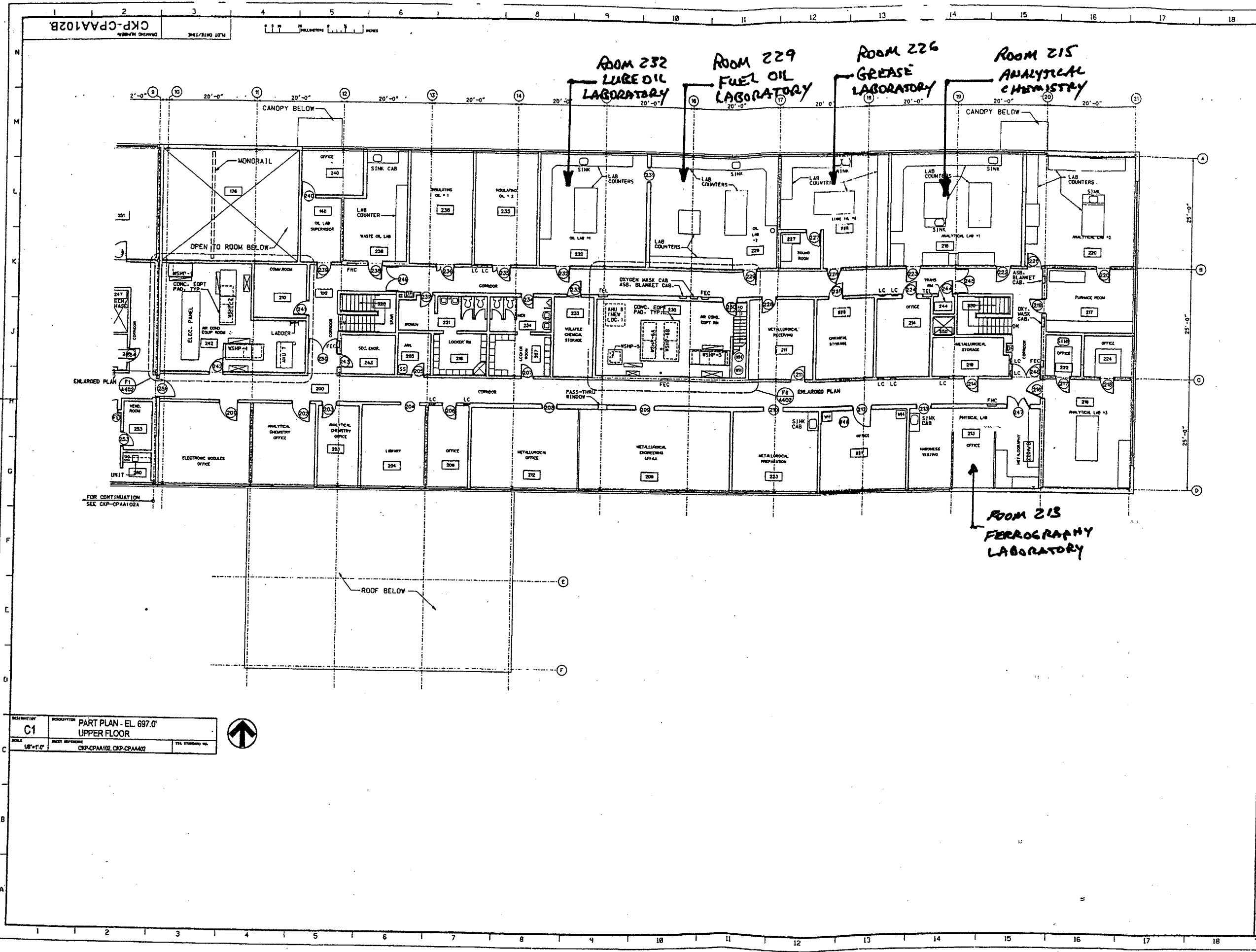
ISSUE DATE: 8/4/98 OLD DRAWING NUMBER: DRAWING NUMBER: CKP-CPAA101A R0

THIS IS A CADD ORIGINAL DO NOT CHANGE MANUALLY

C:\HOLD\101a.CAL

ITEM 9
ATTACHMENT 3

:\HOLD\101a.cad



LOCATION KEY	
BUILDING A	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22

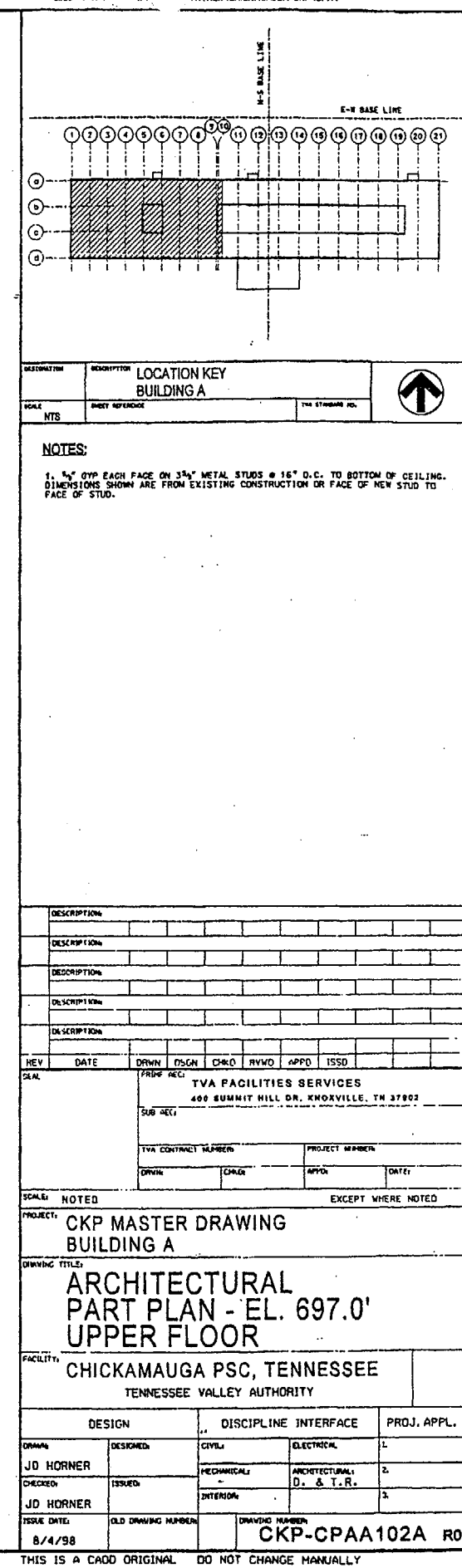
REVISION	DESCRIPTION
1	LOCATION KEY
2	BUILDING A

REV	DATE	DRWN	DS'N	CHK'D	RVND	APPR	ISSU
1							

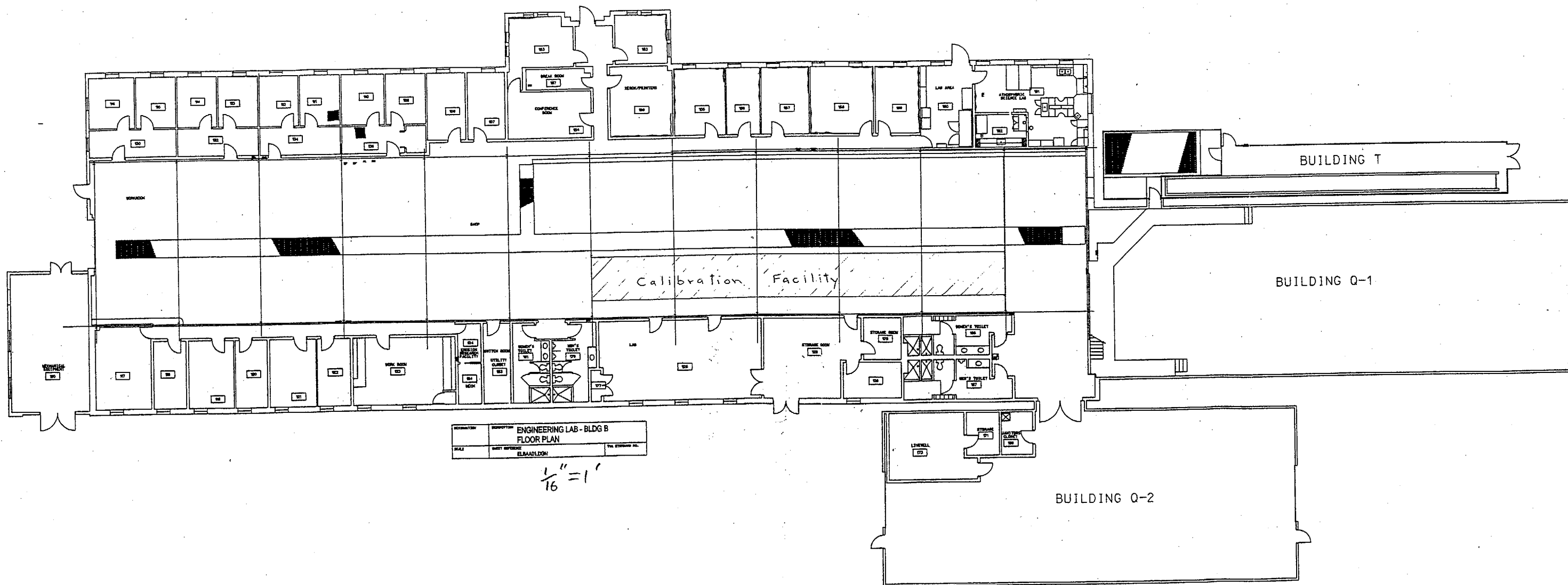
TVA FACILITIES SERVICES	
400 SUMMIT HILL DR. KNOXVILLE, TN 37902	
TVA CONTRACT NUMBER	PROJECT NUMBER
DRWN	CHK'D
APPR	DATE

CKP MASTER DRAWING		
BUILDING A		
ARCHITECTURAL		
PART PLAN - EL. 697.0'		
UPPER FLOOR		
CHICKAMAUGA PSC, TENNESSEE		
TENNESSEE VALLEY AUTHORITY		
DESIGN	DISCIPLINE INTERFACE	PROJ. APPL.
DESIGNED	ELECTRICAL	1.
ISSUED	MECHANICAL	2.
	ARCHITECTURAL	3.
	D. & T.R.	
ISSUE DATE	OLD DRAWING NUMBER	DRAWING NUMBER
8/4/98		CKP-CPAA102B R0

ITEM 9
ATTACHMENT 3



ITEM 9
ATTACHMENT 3



REVISION:	NOV 01/01	ENGINEERING LAB - BLDG B
SCALE:	1/16" = 1'	FLOOR PLAN
DATE:	NOV 01/01	BY: J. J. J.
DATE:	NOV 01/01	BY: J. J. J.

1/16" = 1'