UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
801 WARRENVILLE ROAD
LISLE, ILLINOIS 60532-4351

DEC 13 1995

95-158

SCDB Action

REQUEST FOR TECHNICAL ASSISTANCE

DATE: December 11, 1995

TO: Don Cool, Chief, Medical, Academic, and Commercial Use Safety Branch, NMSS

FROM: John Madera, Chief, Nuclear Materials Safety Branch Region III

LICENSEE: Advanz-SRL, New Applicant LICENSE NO. 34-26683-02

Control No. 399345

Application dated October 23, 1995

Problem/Issue: This applicant is currently licensed by the State of Rhode island to manufacture and distribute beta gauges that have been evaluated by the State of Rhode Island and are listed in the SSD. Sandy Kimberley requested that Region III forward a copy of the application package with a TAR. Therefore, please review the application to determine whether an administrative approval may be granted to list the devices under an NRC Registry No. or whether NRC needs to review and approve the devices independently. The applicant does request an expedite from both Region III as well as Headquarters. Region III will continue its review of both applications to manufacture and distribute.

Action Required: Please review sealed sources and devices currently manufactured and distributed by this State of Rhode Island licensee.

Alternatives Considered: None
Recommended Alternative: None
Remarks: None

Regional Reviewer: James R. Mullauer, M.H.S.

Reviewer Code: R4

Reviewer Phone No. 708-829-9873

cc: C. Pederson, RIII

290800

SYSTEMS RESEARCH LABORATORIES, INC.
A DIVISION OF SPACE INDUSTRIES INTERNATIONAL, INC.

2800 Indian Ripple Road
Dayton, Ohio 45440-3696

74-1292
724

DATE	CHECK NUMBER	AMOUNT
9/27/95	290800	******2,700.00

VOID AFTER 90 DAYS

PAY TO THE ORDER TO

UNITED STATES NUCLEAR
REGULATORY COMMISSION
REGION III
801 WARRENVILLE RD
LISLE, IL 60532-4351

ACCOUNTS PAYABLE

John A Walter

NATIONAL BANK OF DETROIT - DEARBORN

⑈290800⑈ ⑆072412922⑆ 00295506⑈ 399344+397345

290800

SYSTEMS RESEARCH LABORATORIES, A DIVISION OF ARVIN/CALSPAN, DAYTON, OHIO 45440-3696

INVOICE DATE	INVOICE NUMBER	CODES	INVOICE AMOUNT	CASH DISCOUNT	NET
9/20/95	CR32715	ER	2,700.00		2,700.00

399344
+
397345

SALES TAX DEDUCTED FROM THIS INVOICE - X

OHIO DIRECT PAY PERMIT NO. 98-002105

PAID TO: UNITED STATES NUCLEAR

VENDOR #: 84792-0

ADVANZ-SRL

NRC

BETA-GAUGE MANUFACTURING LICENSE

APPLICATION

ADVANZ-SRL MANUFACTURING APPLICATION

Item 5: RADIOACTIVE MATERIAL

A.	Element-Mass No.	B.	Physical Form (All Sealed Sources)	C.	Activity(*)
(1)	Krypton-85	(1)	American Atomic Corp. Model 40000A or 40054	(1)	250 mCi
(2)	Krypton-85	(2)	3M Company Model 3E40	(2)	500 mCi
(3)	Krypton-85	(3)	U.S. Radium Corp. Model LAB 323A	(3)	200 mCi
(4)	Krypton-85	(4)	New England Nuclear Model NER 8180	(4)	1500 mCi
(5)	Strontium-90	(5)	U.S. Radium Corp. Model LAB 733, Rev. A; 3M Company Model 3A1Q	(5)	10 mCi
(6)	Strontium-90	(6)	3M Company Model 3Q1D	(6)	200 mCi
(7)	Strontium-90	(7)	3M Company Model 3F1L	(7)	100 mCi
(8)	Strontium-90	(8)	Amersham Corp. Model S1F.D1	(8)	125 mCi
(9)	Promethium-147	(9)	3M Company Model 3L2D	(9)	150 mCi
(10)	Promethium-147	(10)	New England Nuclear Model NER 8190	(10)	200 mCi
(11)	Promethium-147	(11)	Amersham Corp. Model PHC.L1	(11)	200 mCi
(12)	Promethium-147	(12)	Amersham Corp. Model PHC.C1 Dwg.VZ-464	(12)	625 mCi
(13)	Krypton-85	(13)	Sealed Sources	(13)	1000 mCi
(14)	Strontium-90	(14)	Sealed Sources	(14)	500 mCi
(15)	Promethium-147	(15)	Sealed Sources	(15)	200 mCi

* maximum single source activity

ADVANZ-SRL MANUFACTURING APPLICATION

Item 6: PURPOSE

(1) through (12):

For storage and for use and/or possession in Advanz-SRL devices incident to research, development, assembly, maintenance, leak testing, operation testing, demonstration, and packing for transportation.

(13) through (15):

Receipt of sealed sources in obsolete or unwanted source holders for temporary storage, not to exceed three years, and transfer to an authorized user or disposal agent. Possession and use incident to performing leak tests and shutter function tests on other manufacturers' beta or gamma sheet material measurement gauges or replacement of same with Advanz-SRL device.

ADVANZ-SRL MANUFACTURING APPLICATION

Item 7: INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM

A. Radiation Protection Officer and Deputy Radiation Safety Officer

James D. Hoeffel, M.Sc. - Radiation Protection Officer

Thomas E. Greeger - Deputy Radiation Safety Officer

(1) The Radiation Protection Officer (RPO) will be responsible for the overall management of the radiation safety program and will report directly to management with regard to radiation safety matters. The Deputy Radiation Safety Officer (DRSO) will be responsible to the RPO with regard to radiation safety matters and will assist the RPO with the management of the radiation safety program. See sections 2 and 3 of the Radiation Safety Manual (appended as ATTACHMENT 10B) for the specific responsibilities and duties of the RPO and DRSO.

James Hoeffel is the Technical Program Manager and Thomas Greeger is the Engineering Technician at Advanz-SRL. Copies of their curriculum vitae are appended as ATTACHMENTS 7A and 7B.

Both of these individuals have completed a radiation safety training program consisting of formal lectures, reading assignments, and supervised training in source handling procedures.

(2) The formal training consisted of 40 hours of classroom lectures, divided into 10 modules, and 10 hours of associated reading assignments for a total of 50 hours. A typical outline of the lecture modules and associated hours is appended as ATTACHMENT 7C. This training was conducted at Advanz-SRL headquarters in Dayton, Ohio by Douglas Glenn Draper, M.S., a certified health physicist. A copy of Mr. Draper's curriculum vitae is appended as ATTACHMENT 7D. Reading assignments were taken from the text "Basic Radiation Protection Technology" by Gollinick and "Radiation Safety Training Course Manual" by Moe, et al. The formal lectures were completed during the period of 12/2/94 through 3/10/95 with a course review conducted on 6/30/95. A final exam given and satisfactorily completed.

(3) The supervised training involved instruction in various source handling procedures, including actual performance of such procedures. This training was provided and supervised by George W. Rickard, III at Advanz's East Providence, Rhode Island facility on 8/9/95 and at various gauge customer sites between 12/94 and 8/95. George Rickard is the RSO under Advanz's Rhode Island Licenses #3A-085-01 and 3G-085-01. Preceptorship statements describing this training are appended as ATTACHMENTS 7E and 7F.

(4) Competency for the formal training portion of the train ing was determined by satisfactory completion of a comprehensive final exam consisting of 72 multiple choice questions. Competency in the supervised training portion was demonstrated by observing the satisfactory performance of each of the source handling tasks.

B. Radiological Physics Consultant

Advanz-SRL has arrangements with radiological physics consultant(s) to assist the RPO with the management of the radiation safety program. The specific functions of the consultant(s) include:

(1) Advising RPO on radiation safety program components, protocol, regulatory requirements, equipment, record keeping, etc.

(2) Prepare and/or review content of radiation safety training and participate in conduct of training.

(3) Conduct periodic audits of radiation safety program.

(4) Assist RPO with license amendments and NRC correspondence.

(5) Advise RPO on radiation safety aspects and response to any special situations which may arise.

(6) Miscellaneous health physics services.

William A. Roventine, M.Sc., a certified Radiological Physicist, has been our consultant for the past several years under our Rhode Island licenses. He is presently assisting us with the preparation of this NRC license application and the transfer of our radiation operations from Rhode Island to Ohio.

Douglas Glenn Draper, M.Sc, a certified Health Physicist, is the local consultant who has been assisting us with the training of our RPO and DRSO. Upon issuance of our NRC license and transfer of our radiation operations from Rhode Island, he will provide the consultant functions now provided by Mr. Roventine.

C. Responsible Users

(1) Level I Personnel

Level I personnel are the only individuals permitted to work directly with sealed sources in the process of unpacking or packing, wipe testing, loading or unloading source capsules from source holders. Only Level I individuals have access to the source storage safe.

(2) Level II Personnel

Level II personnel are permitted to work only with sources in loaded source holders. They are not allowed to work with the source capsules directly. These individuals are qualified to:

(a) Service the beta-gauge equipment in the plant and in the field.

(b) Perform source wipe and shutter checks on source holders.

(c) Install equipment at general licensees.

(d) Train general licensed customers in the operation, safety, and technical aspects of beta-gauge equipment.

(e) Demonstrate beta-gauge equipment at temporary job sites.

(3) Level III Personnel

Level III personnel consist of sales and technical representatives qualified to train general licensee personnel in the radiation safety and technical aspects of the use and operation of the beta gauge. They are permitted to operate the fully installed beta gauge for the purpose of demonstrating normal operation, maintenance procedures, and safety features. They will not work with source capsules or loaded source holders or perform other service functions.

(4) Level I, Level II, and Level III Training Programs

Training for Level I, Level II, and Level III personnel consists of a combination of formal classroom instruction and practical on-the-job training. See Section 4.1, Section 4.2, Section 4.3, Appendix A, and Appendix B of the attached Radiation Safety Manual for a description of the Level I, Level II, and Level III training programs, including an outline of the topics included in the program. This training is provided by the RPO and/or DRSO with the assistance of other qualified personnel as required. The radiological physics consultant will participate in the Level II formal classroom instruction. Completion of the training program requires successful completion of a written examination and satisfactory demonstration of required handling procedures and safety tasks.

A list of Level I, Level II, and Level III personnel will be maintained along with a file of all related training and experience records.

Item 8: TRAINING PROVIDED FOR OTHER USERS

A. Ancillary Personnel

Radiation Safety training for ancillary personnel will be provided by the RPO and include an orientation program for general plant personnel and an annual management overview of the radiation safety program. See Section 4.4 ~~4.3~~ of the attached Radiation Safety Manual for more detailed information on the training program for ancillary personnel.

B. Customer Personnel

Training for customer personnel in the safe use of the beta gauge will be provided by Advanz-SRL Level I, Level II, or Level III personnel. This training will involve 2 - 8 hours of instruction, depending upon the complexity of the gauge installation and the number of customer personnel to be trained. See Section 4.5 as well as Appendix C, of the attached Radiation Safety Manual for a detailed description of this training and an outline of the topics covered.

ADVANZ-SRL MANUFACTURING APPLICATION

Item 9: FACILITIES AND EQUIPMENT

Advanz-SRL is located on the first floor of Building #40 of the SRL complex located at 2800 Indian Ripple Road in Dayton, Ohio. See ATTACHMENT 9A for a floor plan showing the proposed location of the Source Storage and Assembly Room, the Beta-Gauge Testing and Demonstration areas, and the adjacent facilities. Building #40 is a two floor structure built on slab with a flat roof. The first floor level is below grade at the Source Room location and progresses to or slightly above grade at the dock area location. The first floor slab to second floor distance is about 10 feet with a minimum second floor slab thickness of 4 inches of concrete. The roof is located about 10 feet above the second floor. Exterior walls are of cement block and brick construction. All interior walls are of studded gypsum board construction.

A. Source Storage and Assembly Room

The source storage and assembly room is used for storage of the sealed source capsules, assembly of source capsule into the source holders, and testing of the loaded source holders. This area will be located in the northwest corner of the building and measures approximately 8′ x 11′ with approximately 88 sq. ft. of space. ATTACHMENT 9B shows the room layout. The door to this area will be kept locked and placarded with metal "Caution -Radiation Area" and "Caution - Radioactive Material" signs. Only authorized personnel will have access.

The fire-rated steel storage safe measures 63.5"H x 37"W x 25"D and will be used for storage of sealed sources in their original shipping pigs or sources loaded into source holders. Two large doors open outward to provide access to the safe interior which is divided with shelves into several storage areas. The storage safe door will be placarded with a "Caution - Radioactive Materials" sign.

To the left of the storage safe is the source assembly bench. This is depicted in ATTACHMENT 9C. It consists of a plexiglass box measuring approximately 36"W x 30"D x 18"H with 1/2" thick walls sitting on top of a wooden work bench measuring 30"D x 60"L. The front surface of the box has an opening at either side of a central shielded area to allow arm/hand access for assembly of sealed sources into source holder assemblies and wipe testing of sealed source capsules. Located within the box are two 1.5 mm lead equiv. L-block shields with lead acrylic viewing areas.

Opposite the source assembly bench is a work counter used for testing of source holder assemblies, leak testing measurements, and maintenance of source records. A storage cabinet is provided for storage of additional equipment and supplies.

B. Beta-Gauge Testing Area

The beta-gauge testing area will be located within the Production Unit Test area (within the dashed rectangular area) shown on the floor plan. The "O" frames for the beta gauges are assembled in this area and interfaced to the electronic control racks. Pre-loaded source holders are then mounted into the beta-gauge assemblies for the purpose of performing detector calibration and sensitivity adjustments as well as evaluation of the overall performance of the beta-gauge prior to shipment. During this phase of testing, the area around the beta-gauge will be cordoned off with warning rope or chain and properly posted so that radiation levels in the adjacent areas will be within the regulatory limits. It is anticipated that no more than two beta-gauges will be tested simultaneously. Upon completion of testing, the loaded source holders are removed for separate shipment to the client facility.

C. Beta-Gauge Demonstration Area

The Beta-Gauge Demonstration Area is shown in the lower section of the floor plan and measures approximately 15' x 22' with approximately 330 sq. ft. of space. This area will contain a permanent "O" frame beta-gauge centrally located for purposes of demonstrating the Advanz-SRL Beta-Gauges product line to prospective clients and other interested parties. The sources loaded into the demo beta-gauge may be any of those listed on the Advanz-SRL license. These sources will usually be in place for 24 to 48 hours when demonstrations are scheduled. The entrance to this area will be cordoned off with warning rope or chain and placarded with the appropriate caution signs. Only authorized personnel will have access to this area.

D. Security

The source storage, testing, and demonstration areas are equipped with smoke detectors. Only authorized personnel will have access to the sealed source storage safe and storage room. Access to the demonstration area will be limited to individuals escorted by authorized personnel. The four entrances to the Production area will be posted with signs indicating "Restricted Area - Authorized Personnel Only". Entry access through the front entrance is regulated by the receptionist. After normal working hours, all doors to the first level (including front entrance, loading dock, and stairwell doors) are electronically locked. Authorized SRL identification cards are required for entry.

ADVANZ-SRL MANUFACTURING APPLICATION

Item 10: RADIATION SAFETY PROGRAM

A. Personnel Monitoring

Personnel monitoring is provided by an NVLAP-approved vendor with a monthly exchange frequency. All Level I and Level II personnel and other personnel who are frequently in the beta-gauge testing area will be issued and required to wear a whole body film/TLD badge. In addition, all Level I personnel who handle source capsules will also be issued a TLD ring badge. See Section 5.0 of the attached Radiation Safety Manual for our personnel monitoring procedures.

B. Radiation Detection Instruments and Instrument Calibration

Type	Number Available	Radiation Detected	Sensitivity Range	Use
(1) Keithley Model 36155 Cutie Pie	2	beta, gamma	0-200 mR/hr 0-20 R/hr	Survey
(2) Ludlum Model-3 with 44-3 scintillation probe	1	beta, gamma	0-500 Kcpm	Monitoring
(3) Ludlum Model-3 with scaler option, 44-9 GM probe, and sample holder	1	beta, gamma	0-200 mR/hr 1000K count	Survey & Counting
(4) Eberline MS-3 mini-scaler with HP-190 GM probe and sample holder	1	beta, gamma	1E-3 uCi	Analytical

Instruments (1) through (3) will be calibrated annually and after major repairs by the manufacturer or the Nuclear Instrument Company, Rockland, MA 02370, NRC Lic. #20-16972-01. Instrument (4) will be calibrated annually with a pulser calibration either by the manufacturer or the Nuclear Instrument Company. Appropriate reference calibration sources (uCi level) are used routinely to determine counting efficiency for converting cpm to uCi.

One Keithley Cutie Pie and one of the Ludum - 3 instruments are available for field measurements during gauge installation and servicing.

C. Operating and Emergency Procedures

Operating and emergency procedures are detailed in our Radiation Safety Manual and Operating Procedures appended as ATTACHMENT 10B.

(1) Operating Procedures

Operating procedures for the loading of source holders, installation of source holders, wipe tests, source shutter checks, and radiation surveys are described in Sections 8, 10, 11, and 15 of the attached Radiation Safety Manual and Operating Procedures.

Formal lock out procedures are not necessary since the size of the beta gauge and the small source-detector gap of 1" to 2" precludes the liklihood of a major portion of the body being exposed. Users are cautioned in the user's manual and during customer training to stay at least 18" away from the source. They are further instructed that if they need to work closer than 18", they should close the source shutter and verify that the green "source closed" light is on.

Sample copies of the following customer reports are appended as ATTACHMENT 10A:

(a) Wipe and Shutter Test Certificate,

(b) Radiation Profile Survey, and

(c) Customer Training Certification.

(2) Emergency Procedures

Emergency procedures for Advanz-SRL personnel to follow in the event of a fire or source leakage at the manufacturing facility are described in Section 14 of the attached Radiation Safety Manual.

ADVANZ-SRL MANUFACTURING APPLICATION

Item 11: WASTE MANAGEMENT

Sealed sources removed from service will either be returned to the manufacturer in accordance with the manufacturer's specific packaging and shipping instructions or transferred to a waste disposal service or broker licensed by the NRC or an Agreement state for the disposal of byproduct materaial. Prior to disposal they may be stored for up to three years. We do not expect to accummulate more than a maximum of 6 to 10 sources over this period of time. We feel that these can be safely stored in our storage safe in shielded containers and that they will not significantly contribute to the radiation levels in adjacent areas. In practice, we discourage acceptance of sources which we are unable to return to the source manufacturer on a one-for-one basis. We have requested a three year storage period because of the existing uncertainties in the accessibility to low level waste disposal sites.

ATTACHMENTS

ATTACHMENT 7A: Curriculum Vitae for James D. Hoeffel

ATTACHMENT 7B: Curriculum Vitae for Thomas E. Greeger

ATTACHMENT 7C: RPO/DRSO Course Topical Outline

ATTACHMENT 7D: Curriculum Vitae for Douglas G. Draper

ATTACHMENT 7E: Preceptorship Statement - James Hoeffel

ATTACHMENT 7F: Preceptorship Statement - Thomas Greeger

ATTACHMENT 9A: Advanz-SRL Floor Plan

ATTACHMENT 9B: Source Storage and Assembly Room

ATTACHMENT 9C: Source Assembly Bench

ATTACHMENT 10A: Customer Report Forms

(1) Wipe and Shutter Test Certificate

(2) Radiation Profile Measurements

(3) Customer Personnel Training Certificate

ATTACHMENT 10B: Radiation Safety Manual and Operating Procedures

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 7A

Curriculum Vitae for James D. Hoeffel

JAMES D. HOEFFEL, Technical Program Manager

EDUCATION: B.S. Electrical Engineering, University of Dayton
M.Sc. Electrical Engineering, The Ohio State University
Various Ph.D-level course, The Ohio State University

TRAINING: Computer Programming School, Hewlett-Packard
Dale Carnegie Course

EXPERIENCE: Mr. Hoeffel's present responsibilities as Technical Program Manager with SRL's Intelligent Systems Division include RFC program management, robotic-type mechanical modules, and signal processing techniques for the RFC System.

While with the Visual and Training Center (VTS), Mr. Hoeffel designed the focus servo for the target projection system used in the Navy F/A-18 weapons tactics trainer. This position servo responds to computer commands with a high degree of accuracy and repeatability. He also designed a microprocessor-driven simulator for the target projection system. He is experienced in the development of solid-state TV cameras, microprocessor-based control circuits, and electronic image storage and display devices. He also designed a digital system involving the Motorola 68000 Exormacs Development System, a DEC PDP-11/70, and a DEC/VAX 11/780 computer. He designed an interprocessor DMA communicaton link between the Motorola 68000 and the two DEC computers. This system is used in a helmet-mounted CRT display wit binocular viewing. He was also involved in the design and test of the SRL Model 2305 Advanced Digitizer, which uses digital memory systems, and the development of a remote document viewing system test bed for resolution studies.

Before joining SRL, Mr. Hoeffel was employed with Technology Inc., where he worked on several projects incorporating microprocessor technology, including design, software, prototype fabrication, and testing.

While with DEPCO, Mr. Hoeffel directed and contributed to Government-sponsored research and development projects involving airborne oscilloscopes, high-resolution flying spot scanners, signal analyzers, and countermeasures and electronic intelligence equipment.

Mr. Hoeffel holds seven patents relating to oscilloscopes, electronics, magnetic tape circuits, and eddy current transducers. He also is an adjunct assistant professor and teaches a graduate-level feedback control system course at the University of Dayton.

PATENTS: Oscilloscope with Visual Indication of Control Switch Settings, No. 3,281,861.
Billing Demand Recorder, No. 3,673,607.
Interval Counting Circuit and Method, No. 3,761,887.
Billing Tape Recorder Conversion Unit for a Watthour Meter, No. 3,808,602.
Pneumatic Surface-Following Control System (for RFC eddy current probes), No. 4,854,156.
Control Circuit for Variable Characteristic Rotating Eddy Current Probe, No. 5,059,904.
Variable Characteristic Rotating Eddy Current Probe, No. 5,111,142

AFFILIATIONS: Institute of Electrical and Electronic Engineers (IEEE)
Tau Beta Pi

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 7B

Curriculum Vitae for Thomas E. Greeger

THOMAS E. CREEGER, Sr.

Professional Experience

April, 1990 to Present

Systems Research Laboratories, Inc.
Beavercreek, Oh 45440
Assembler III

Since joining the D.S.C. group I have developed and built RC 135 DSC tester, GOI DSC systems. I have built hot test benches for APN-59 and APS-133 radar systems, HC-130 simulator, HC-130 control box tester, HC-130 cable harness fixture for production. I developed HC-130/C-141 harness board and helped develop the simulator, of which I built three HC-130/C-141 systems and built a FLIR test bench. I built and helped sell off the RC-135 test systems. I made field trips to support SRL equipment and perform customer sell offs. I performed GFE repairs of DSC's and control boxes, pincushion CRT's for AWADS and Fokker. I perfected the repair of Type V lighted panels. I built all types of viewing filters and have developed a paint touch up process that insures a better end product. I have attended and have been certified in two separate Soldering Techniques Courses and completed the General Workmanship Course at SRL

Month, 1984 to July, 1990

Systems Research Laboratories, Inc.

Assembler III

Worked in V.T.S./D.E.S. Department of Systems Research Laboratories. Turned the Slumberger' project from a working prototype to production. Designed, built, and tested unit fixtures for digiscan and programmed it. Ran wave solder and worked in unit assembly. Worked closely with Engineering and Manufacturing to establish and perfect a conformal coating process to Mil Standards. Also trained others to this procedure.

January, 1978 to August, 1983

Audiovox Midwest
Cincinnati, Ohio
Field Service Engineer

Installed and performed field service on automotive sound systems, cruise control and window defogger systems. Performed these services at the Stengers Ford facility in Dayton, Ohio.

January, 1978 to August, 1983

Arcade Companies
Cincinnati, Ohio and New York City, New York
Store Manager

Worked for several Arcade business, Red Baron, Games People Play of Cincinnati, and Fun and Skills of New York. Worked as a multi-store manager and also as an electro mechanical technician. Trained others to read schematics, service and repair electro mechanical arcade devices.

March, 1968 to
March, 1974

United States Marine Corp.

Communication Specialist/Military Air Controller

Honorably discharged as a Sergeant E-5. Trained and served as a Communication Specialist and a Military Air Controller. I was stationed at San Diego, Ca.; Camp La June, N.C.; Guantanimo; Cuba; Vietnam; Quantico, Va.; Okinawa, Japan; Iwakuni, Japan; and 8th Barracks in Washington D.C. where I served on White House duty and held a Top Secret clearance with Presidential access. I received the Bronze Star Medal with Combat V for heroic achievement in connection with combat operations in the Republic of Vietnam.

Education

Present

Sinclair Community College
Dayton, Ohio

Currently studying Kurs Kash Digital Electronics Course

Graduated High School from Fairmont High School, Kettering, Ohio.

Skills

Through the course of work and experience I have gained an eye for accuracy and minute detail. Have strong skills in manufacturing and production of electronic assemblies. Presently as well as in the past I have been involved and greatly interested in the art of replica design and building. I was commissioned by a nationally known model company to build an automotive replica, and commissioned by SRL to custom build the replicas of the Pav Low project. I have also had technical automotive articles published.

ATT-7C

ATTACHMENT 7C

RPO/DRSO Course Topical Outline

RPO/DRSO

COURSE SCHEDULE
SRL-ADVANZ, INC

HOURS	SUBJECT	TOPICS
5	Math Review	Scientific notation, decimals, operations with signed numbers, operations with exponents, algebraic manipulations, basic trigonometry, definition and use of logarithms
5	Quantities & Units	Dimensional analysis, exposure, exposure rate, dose, dose rate, dose equivalent, radioactivity, radioactive materials, contamination, specific activity, activity, half life
4	Basic Radiation Physics	Atomic structure, isotopes, types of radiation, interaction with matter, equilibrium, balancing nuclear equations, atomic wt
2.5	Dosimetry	Internal/ external exposure, contamination/ radiation, self reading dosimeters, TLDs, film badges, exposure records, dose limits, visitor badges, badge control, thermoluminesence demonstration
2.5	Transportation	10 CFR 71, 49 CFR 170 series, packaging, labelling, placarding, receipt inspections, shipping papers, shipment of empty containers
5	Radiation Protection Principles	ALARA, posting, controlled areas, access controls, surveys, source control, logs, half values/ tenth values, types of workers, time/ distance/ shielding, radiation symbol, leak testing, transfers, records
4.5	Biological Effects	Internal exposure, external exposure, acute radiation syndrome, stochastic/ non-stochastic, prenatal exposure rules, relative risk, risk- benefit, ALARA, dose limits for visitors, occupational, public, minors, and pregnant workers
4	Rules and Regulations	Discuss and handout excerpts from applicable 10 CFR and 49 CFR, agreement states, audit program, training program, emergency preparedness, Radiation Safety Committee, management responsibilities, ALARA, NCRP/ ICRP, ANSI
2	Background Radiation	Naturally occurring radiation, medical exposure, radon issues, risk, ALARA philosophy, reporting unusual observations
2	Instrumentation	Portable survey instruments, counting instruments, scalers, energy and efficiency, beta measurement, gamma/ X-ray measurement, contamination surveys, instrument calibration and functional checks, check sources
2.5	Course Review	All notes and material
1		Final Exam

[SRL]<TNG>crs-sched.txt

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 7D

Curriculum Vitae for Douglas G. Draper

Douglas Glenn DRAPER, CHP

WORK EXPERIENCE

1981- Present EG&G Mound Applied Technologies
Miamisburg, OH 45343-3000

Aug94- present Health and Safety Senior Technical Specialist
Provide technical expertise for numerous technical committees including Nuclear Safety Oversight, and Chairman of the Nuclear Criticality Safety Committee. Manage the Criticality Safety Program which includes day-to-day activities associated with criticality safety, including posting, training, calculations to support changes in conditions, etc. Manage the plant Emergency Preparedness Program which includes interfacing with local emergency response organizations, hospital staff, and various governmental agencies. Organize and supervise a major DOE Radiological Assistance Team. Provide technical support on air sampling strategies, equipment, and regulatory requirements. Elaborate and expand technical procedures. Contribute to development of corporate policies. Enhance corporate image through public relations engagements and presentation of technical advancements at professional meetings.

Nov 88- Aug 94 Manager
Direct and plan activites for site radiological health and safety program. Prioritize and allocate resources from a $4 million budget. Develop and implement action plans for improving organizational effectiveness. Recruit, hi·e, train and supervise professional, technical, clerical and hourly bargaining unit personnel. Provide v.orker training for compliance with 29CFR1910 (OSHA). Manage the respiratory protection program that includes qualification, fitting, training, and issuance of negative pressure, pressure demand, and self contained breathing apparatus. Provide technical oversight for the occupational worker air sampling and analysis program for radioactive gaseous and particulate contaminants. Manage the Criticality Safety Program to assure compliance with applicable standards and orders. Direct and provide technical support to the dose assessment group which involves records management, Freedom of Information Act requests, and dose calculations. Manage the operation of four area radiochemistry counting laboratories which provided direct support to Health Physics Operations groups. Fund and priortize the development of a state-of-the-art facility for acceptance testing and calibration of dosimeters and instrumentation which detect and measure X-ray, gamma, neutron, alpha and beta-gamma radiation. Provide technical expertise to DOE committees in the safe use, handling and storage of tritium and its compounds.

Dec 81- Nov 88 Health Physics Technical Specialist
Provide detailed technical expertise for the Health Physics Manager. In this capacity developed a comprehensive documentation system from policies to detailed operating procedures along with companion program manuals. Based on identified hazard, design unique and special- purpose instrumentation for specific applications. Coordinate a plant- wide characterization study to determine soil contamination levels and their significance. Participate on Department of Energy Technical Safety Appraisal Teams and technical review teams. Serve as a member of the Criticality Safety Committee and Transuranics Safety Committee. Develop Radiological Protection support plans for major Decommissioning and Decontamination efforts in facilities contaminated with plutonium, thorium, tritium, radium and other radionuclides. Provide radiological protection guidance for the General Purpose Heat Source program which builds radioisotopic thermoelectric generators for terrestrial and space applications. Provide technical assistance at shuttle launches.

EDUCATION AND TRAINING

From	Duration	Degree	Course	School/ Institution
9-66	4 yrs	BS	Chemistry	Eastern Ky Univ
1-70	18 mos		Chemistry (Graduate work)	Eastern Ky Univ
1-72	18 mos		Teaching Certification (Ohio)	Xavier University
9-72	18 mos		Physics (Graduate work)	Ohio State University
3-73	13 wks	13E00	Officer Basic Course	US Army Field Artillery School
6-73	3 mos		Physics (Graduate work)	University of Wisconsin- Milwaukee
9-73	2 yrs		Chemistry (Graduate work)	Xavier University
9-74	2 yrs	13A00	Officer Advanced Course	2075th USAR School
8-76	120 hrs	ASI5H	Nuclear/ Chem Target Analysis Course	US Army Field Artillery School
2-79	400 hrs		Health Physics	Oak Ridge Associated Universities
9-79	15 mos	MS	Chemistry	Xavier University
2-80	40 hrs		Radiochemistry	Nuclear Regulatory Commission
4-80	40 hrs		Emergency Response Dose Assessment	Federal Interagency Training Course
10-80	80 hrs		Radiological Emergency Response Opns	NRC/ Federal Emergency Mgt Agency
9-80	3 yrs		Command & General Staff College	US Army
3-82	80 hrs	ASI3R	Nuclear, Biol, Chemical Defense Course	2074th USAR School
2-83	40 hrs		Career Planning	Howard Stevens & Co, Inc
10-83	80 hrs		Health Physics Certification Prep Course	Rockwell International
6-84	16 hrs		Decommissioning/ Decontam Safety	Monsanto
6-84	40 hrs		Effective Communications	Monsanto
3-86	40 hrs		Effective Meetings	Monsanto
4-86	8 hrs		Haz Comm Awareness	Monsanto
11-86	40 hrs		Managerial Analytics	Monsanto
6-87	10 hrs		Rad Material Transport & Emerg Resp	Dept of Energy/ Dept of Transportation
8-87	40 hrs		Nuclear Criticality Safety	Los Alamos National Laboratory
2-88	10 hrs		News Media Training	Keppler & Associates
10-88	16 hrs		Security Crisis Management	US Dept of Energy
4-89	4 hrs		Ethics Training	EG&G Mound
5-89	40 hrs		Effective Presentations	EG&G Mound
6-89	40 hrs		Pathway Analysis	Health Physics Society
4-91	16 hrs		Haz Comm- Train the Trainer	Moreland Associates
7-91	40 hrs		Internal Dosimetry	Ken Skrable
7-91	20 hrs		Hazard Analysis/ Risk Assessment	JBF & Associates
9-91	10 hrs		Root Cause Analysis	EG&G Mound
10-91	20 hrs		OSHA Parts D, G, O, P & S	EG&G Mound
10-91	16 hrs		Building Manager OSHA Course	EG&G Mound
2-92	20 hrs		Project Management	TASC Corporation
5-92	4 hrs		Process Qual Mgmt & Improvement	EG&G Ound
8-92	4 hrs		Bloodborne Pathogens	EG&G Mound
9-92	4 hrs		Americans With Disabilities Act	EG&G Mound
3-93	10 hrs		Formal Conduct of Operations	EG&G Mound
5-93	32 hrs		Hazard Recognition- OSHA Compliance	EG&G Mound
9-93	40 hrs		Nuclear Criticality Safety	Battelle Columbus Institute
3-94	40 hrs		Comprehensive ABIH Preparation Crs	University of Cincinnati
6-94	40 hrs		Hazardous Waste Opns (HAZWOPER)	University of Findlay
10-94	40 hrs		OJT/ Classroom Presentations	EG&G Mound
4-95	40 hrs		Hazardous/ Radioactive Matl Transport	US Dept of Energy
4-95	16 hrs		DOE Radworker II Certification	EG&G Mound
5-95	24 hrs		Keno Va Criticality Code Training	Battelle Columbus Institute

II. PROFESSIONAL MEMBERSHIPS

Amrican Board of Health Physics
American Chemical Society
Association of the Century Division
Association of the United States Army
Bluegrass Chapter Health Physics Society
Cincinnati Radiation Society
Conference of Radiation Control Program Directors
Field Artillery Association
Health Physics Society
Reserve Officers Association

III. COMMITTEES, AWARDS, AND SPECIAL PROJECTS

Cincinnati Radiation Society President 1986 and 1988	1986 and 1988
American Board of Health Physics Certification Panel	1985- 94
ABHP Professional Development Committee	1990- 94
Health Physics Society Public Information Committee	1985- 88
US Dept of Energy Technical Safety Appraisal Team	1987- Present
US Army Meritorious Service Medal	1988
US Army Commendation Medal 1982	1982
National Science Foundation Scholarship in Physics	1973
EG&G Corp Committee for Excellence in Radiol Prot	1988- 94

Certifications:

Health Physics- American Board of Health	1984, 88, 92
Physics,Chemistry,Science(Teaching)- State of Ohio	1974, 78, 86
Nuclear,Biological,Chemical Defense- USArmy	1982
Nuclear/Chemical Target Analysis- USArmy	1976, 79, 82, 85, 88
Hazardous Waste Operations	1994
DOE Radiation Worker	1995

Special Skills:

Operate lab instruments, use health and safety instruments, use common tools with general trade skills including soldering, plumbing, etc. Understand and operate personal computers and software.

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 7E

Preceptorship Statement - James Hoeffel

ATT-7E

BETA GAUGE SOURCE HANDLING TRAINING

Jim Hoeffel has recieved training in the following source handling procedures and has actually preformed such procedures under supervision.

	PROCEDURE	DATES OF TRAINING
1.	Inspection, monitoring and opening sealed source shipment package.	8-9-95
2.	Wipe test of sealed source capsule.	8-9-95
3.	Loading of sealed source capsule into source holder.	8-9-95
4.	Unloading of sealed source capsule from source holder.	8-9-95
5.	Wipe test of loaded source holder.	8-9-95
6.	Loaded source holder shutter test.	12/94 → PRESENT
7.	Installation of loaded source holder into Beta Gauge assembly.	12/94 → Present
8.	Monthly survey of source storage, work and test area.	8-9-95
9.	Site survey of Beta Gauge after installation or source replacement.	8-9-95
10.	Packing of loaded source holder assembly for shipment to customer.	12/94 → PRESENT

Signature: Gary Rukard Date: 8-9-95
Radiation Protection Officer

ATTACHMENT 7F

Preceptorship Statement - Thomas Greeger

ATT-7F

BETA GAUGE SOURCE HANDLING TRAINING

Tom Creecer has recieved training in the following source handling procedures and has actually preformed such procedures under supervision.

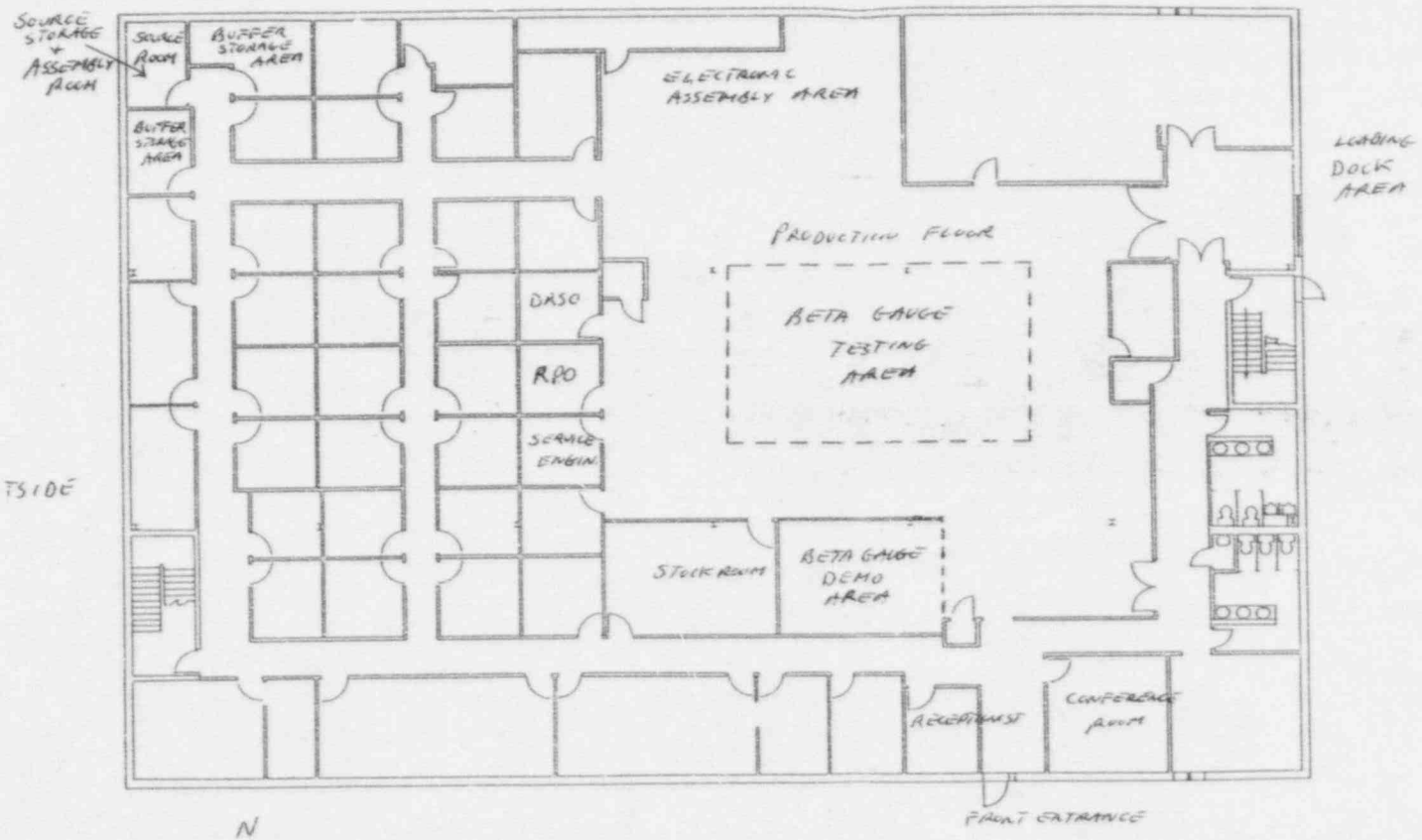
	PROCEDURE	DATES OF TRAINING
1.	Inspection, monitoring and opening sealed source shipment package.	8-9-95
2.	Wipe test of sealed source capsule.	8-9-95
3.	Loading of sealed source capsule into source holder.	8-9-95
4.	Unloading of sealed source capsule from source holder.	8-9-95
5.	Wipe test of loaded source holder.	8-9-95
6.	Loaded source holder shutter test.	12/94 → PRESENT
7.	Installation of loaded source holder into Beta Gauge assembly.	12/94 → PRESENT
8.	Monthly survey of source storage, work and test area.	8-9-95
9.	Site survey of Beta Gauge after installation or source replacement.	8-9-95
10.	Packing of loaded source holder assembly for shipment to customer.	12/94 → PRESENT

Signature: Greg Rich
Radiation Protection Officer

Date: 8-9-95

ATTACHMENT 9A

Advanz-SRL Floor Plan



Scale of 1/16" = 1'

SYSTEMS RESEARCH LABORATORIES

BLDG 40-1
(FIRST FLOOR)

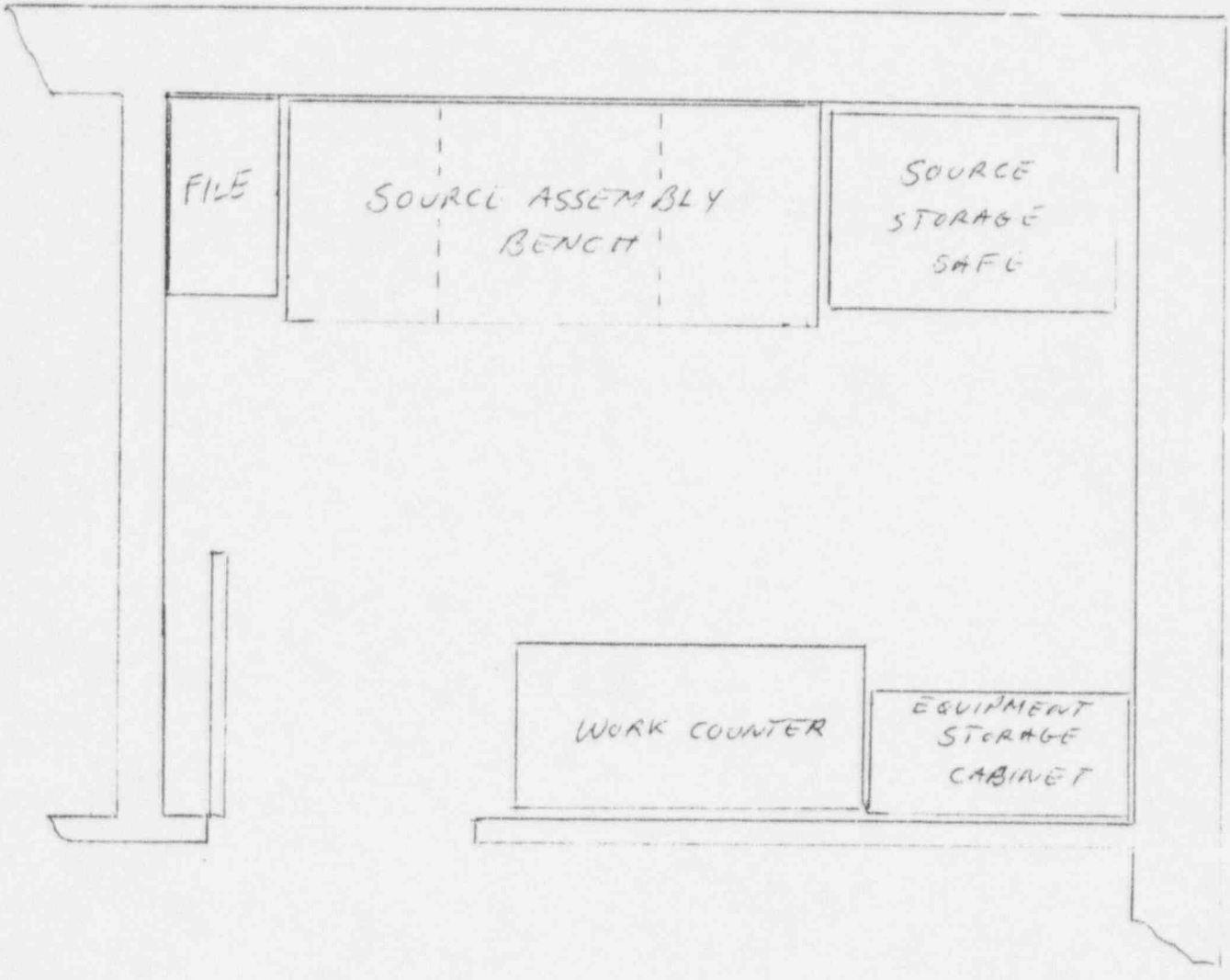
D | 14590

ATT-9B

ATTACHMENT 9B

Source Storage and Assembly Room

SOURCE STORAGE & ASSEMBLY ROOM



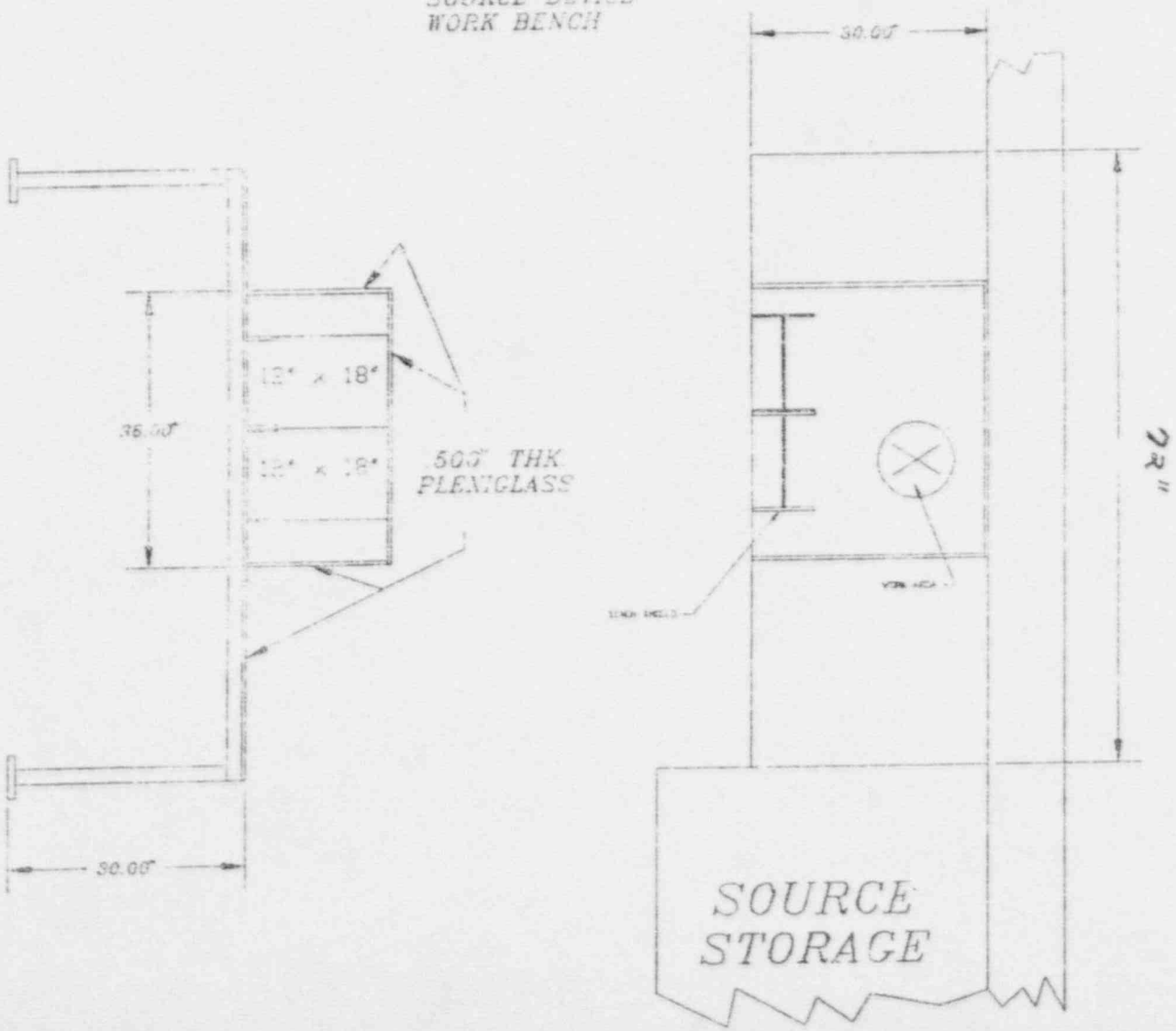
Scale: 1/2" = 1'

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 9C

Source Assembly Bench

FIGURE 13.3
REVISED 02/06/92
SOURCE DEVICE
WORK BENCH



ATTACHMENT 10A

Customer Report Forms

(1) Wipe and Shutter Test Certificate

(2) Radiation Profile Measurements

(3) Customer Personnel Training Certificate

ATT-10A

RADIATION SAFETY MANUAL
AND
OPERATING PROCEDURES

SOURCE WIPE AND SHUTTER TEST CERTIFICATION

Customer:

Gauge: Make:

Model:

Serial No.:

Location: Plant:

Machine:

Source: Type:

Serial No.:

Original Date:

We hereby certify that the SOURCE WIPE TEST# performed by us on the above described source showed the source to be sealed and permissible for use.

Results of this source wipe in microcuries: No Significant Radioactivity Leakage

Count is less than .005 microcurie, therefore the source has no significant leakage.

Date of Test _____ Signed:

Next Test Date _____

James D. Hoeffel
Radiation Protection Officer
ADVANZ-SRL Corporation

We hereby certify that the SOURCE SHUTTER TEST performed by us on the above described equipment showed the shutter to be operating properly.

Date of Test _____ Signed:

Next Test Date _____

James D. Hoeffel
Radiation Protection Officer
ADVANZ-SRL Corporation

FORM 10.3

SOURCE HOLDER MODEL NO. _____

SOURCE MODEL NO _____

ISOTOPE _____

ACTIVITY _____ mCi

SURVEY INSTRUMENT MFG. _____

MODEL NO _____

FILTRATION _____ mg/cm2

DATE _____ BY _____

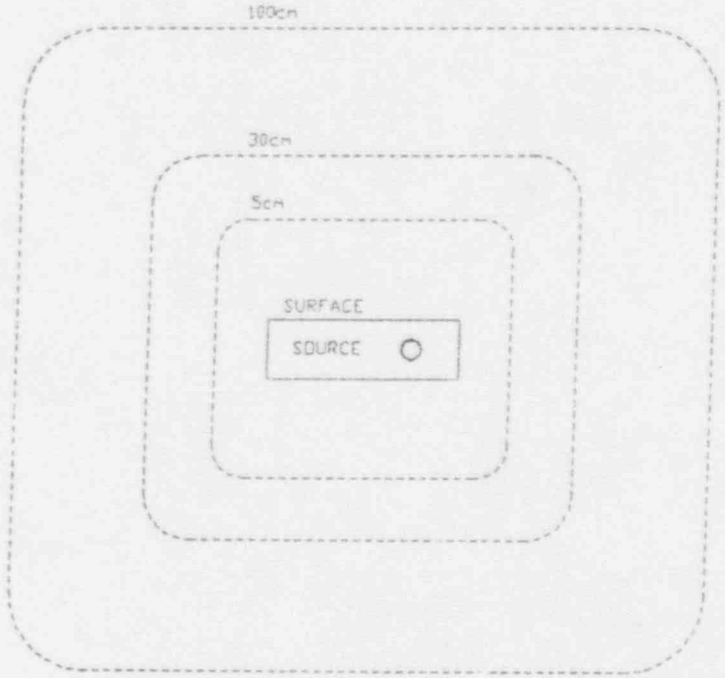
CONFIGURATION

- ☐ HIGH RESOLUTION
- ☐ LOW RESOLUTION
- ☐ SOURCE HOLDER OPEN
- ☐ SOURCE HOLDER CLOSED

GAP _____ INCH

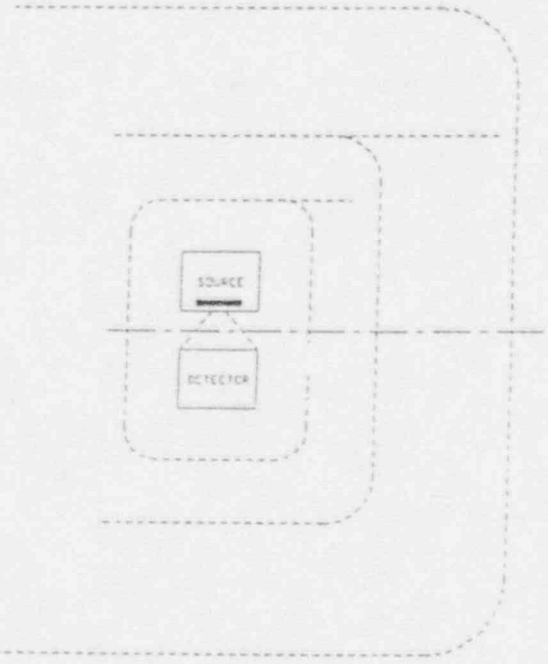
RADIAL DISTANCE _____ cm MAX.

TOP VIEW



END VIEW

AT ℄ OF SOURCE



ITEM	QTY.	PART NO	NAME	MATERIAL
FINISH			SIZE B	TITLE: SOURCE HOLDER RADIATION	ADVANCED TECHNOLOGIES CORP

RADIATION SAFETY MANUAL
AND
OPERATING PROCEDURES

CUSTOMER BETA GAUGE TRAINING CERTIFICATE

_____ has received the following training regarding NRC regulations, safety procedures, operation, use, maintenance, and emergency procedures for the Advanz-SRL Beta Gauge.

1. BASIC BETA-GAUGE RADIATION SAFETY PRACTICES

   (a) Review of user's manual and specific instructions
   (b) Source shutter mechanism and lock procedures
   (c) Control of access and ways to minimize external exposure
   (d) Maintenance procedures - permitted and prohibited
   (e) Performance of periodic wipe tests and shutter checks

2. NRC GENERAL LICENSE REGULATIONS

   (a) Review of pertinent 10CFR31 regulations
   (b) Maintenance of records including:
      (1) Records of receipt
      (2) Radiation surveys
      (3) Wipe tests
      (4) Shutter operational checks
      (5) Training of user personnel

3. OPERATION OF BETA-GAUGE

4. MAINTENANCE PROCEDURES

5. EMERGENCY PROCEDURES

Signature:_____ Date:_____
Advanz-SRL Authorized Instructor

ADVANZ-SRL MANUFACTURING APPLICATION

ATTACHMENT 10B

Radiation Safety Manual

and

Operating Procedures

ATT-10B