Advanced Medical Systems, Inc.
121 North Eagle Street • Geneva, Ohio 44041
(216) 466-4671 FAX (216) 466-0166

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February 14, 1995

Mr. John A. Grobe
Nuclear Materials Inspection Section 2
United States Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60523-4351

Re: Treatment of Water at the London Road Facility (License No. 34-19089-01)

Dear Mr. Grobe:

Attached is Advanced Medical Systems, Inc.'s (AMS) response to the questions raised in your letter of February 10, 1995. We hope that this information will permit you to complete your evaluation of the procedures and protocols we intend to implement for the water treatment process. We are still awaiting your approval of our remedial alternative for the existing lateral connection, as well as the other items contained in my letter to you dated February 10, 1995.

Please forward your written responses on all outstanding items to Dwight Miller, Esq., Stavole & Miller, 55 Public Square, 1604 Illuminating Building, Cleveland, Ohio, 44113. However, feel free to contact me at (216) 466-4671 if you have additional questions. Thank you for your assistance, and we are looking forward to your timely response.

Sincerely,

David Cesar,
Treasurer

cc: D. Miller, Esq.
H. Billingsley, Esq.

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RESPONSE TO USNRC QUESTIONS REGARDING WATER TREATMENT PROPOSAL

General (1): What licensed entity will direct the activities? Will the work be performed under the Advanced Medical Systems, Inc. NRC license or Diversified Technologies Services, Inc.?

Response: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer and the provisions of AMS License No. 34-19089-01.

Action Taken: If deemed necessary by the USNRC, an application to amend License No. 34-19089-01 to permit "one time only" water handling/treatment and sewer remediation pursuant to the provisions of a closed-ended Radiation Work Permit (RWP) will be submitted immediately upon notification.

General (2): Describe the scope of radiological surveillance and coverage that will be provided during the processing project. Who will provide this coverage?

Response: Radiological surveillance consistent with the provisions of License No. 34-19089-01 and the requirements of the AMS ISP Manual is the responsibility of the AMS Radiation Safety Officer. Continuous health physics coverage of the water treatment and sewer remediation activities will be provided by the on-site project manager, Mr. Allen Duff. Mr. Duff's qualifications and experience were submitted to the USNRC in a letter from C. D. Berger to J. A. Grobe (February 2, 1995).

Action Taken: None required.

General (3): Will RWPs be developed detailing the radiological controls for various phases of the project? RWPs should address personnel dosimetry requirements, protective clothing and survey requirements, and contamination control mechanisms.

Response: A Radiation Work Permit (RWP) will be developed to address the various phases of the project.

Action Taken: An application to amend License No. 34-19089-01 to permit "one time only" water handling/treatment and sewer remediation pursuant to the provisions of a closed-ended RWP will be submitted to the USNRC shortly.

General (4): What are the radiation protection/health physics qualifications of contractor staff? Describe the site specific training that will be provided to contractor staff

Response: Health physics coverage of contractor staff (e.g., water treatment and excavation/construction personnel) will be provided by a contracted project manager, Mr. Allen Duff, under the oversight of the AMS Radiation Safety Officer. Mr. Duff's qualifications and experience were submitted to the USNRC in a letter from C. D. Berger to J. A. Grobe (February 2, 1995). Also, Mr. Jim Mooney of Diversified Technologies Services, Inc. (DTS), will be responsible for training of DTS and subtier (if any) personnel who are involved in the water treatment operations. A copy of Mr. Mooney's resume, as well as that of Mr. Paul Werner (Site Supervisor) are included as Attachments 1 and 2, respectively. The excavation/plumbing contractor personnel will receive continuous health physics coverage, and will be provided with Tailgate Safety Training at the start of each day's operations.

Action Taken: Provisions for Tailgate Safety Training will be included in the RWP.

General (5): What provisions will be made for storing and disposing of solid radwaste resulting from the processing activities?

Response: All solid waste generated from the processing activities that contains ^{60}Co in concentrations that exceed 8 pCi per gram will be stored on-site and indoors. Waste with ^{60}Co in concentrations that are less than 8 pCi per gram will be disposed of by conventional means at the discretion of the contractor personnel.

Action Taken: Solid waste handling provisions will be addressed in the RWP.

Procedure # MFIX-01 (1): Item 3.3.4 - What are the specific ALARA procedures and safeguards that will be implemented?

Response: In general, time, distance, shielding and contamination control principles will be implemented to maintain personnel exposure ALARA. Since the act of filtration and ion exchange tends to concentrate activity from a large volume of water into a much smaller confined space, the project manager will alert those in the vicinity of the operation that dose rates may (will) increase over a period of time during daily Tailgate Safety Training. Safeguards to minimize unnecessary exposure will include performance of ambient radiation surveys prior to entering the area, along with planned and periodic routine surveys to assess changing radiological conditions, and communication of survey results to all operations personnel.

Action Taken: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer, the provisions of AMS License No. 34-19089-01, and the AMS ISP Manual. ALARA procedures and safeguards will be addressed in the RWP for the project.

Procedure # MFIX-01 (2): Have contaminated water spill/leak and cleanup procedures been developed for the project?

Response: Contaminated water spill/leak and cleanup procedures will be written for this project by DTS based on the actual physical layout of the process equipment, which is yet to be determined. A copy of this procedure, which will be developed and implemented prior to initiation of the processing operations, will be forwarded to the USNRC for review as soon as available.

Action Taken: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer, the provisions of AMS License No. 34-19089-01, and the AMS ISP Manual. Spill and decontamination procedures will be addressed in the RWP for the project.

Procedure # MFIX-02 (1): Item 4.11 - Will this step be designated as a health physics "hold point" to provide an opportunity for radiation measurements?

Response: The dose rate in the vicinity of the filter will be monitored prior to filter change-out, during draining of the filter unit and prior to its opening.

Action Taken: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer, the provisions of AMS License No. 34-19089-01, and the AMS ISP Manual. Monitoring locations and frequencies will be addressed in the RWP for the project.

Procedure # MFIX-02 (2): Item 4.12 - Describe what constitutes "appropriate radiological readings".

Response: Measurements of ambient exposure rate "on contact" and at a distance of one foot from the item(s) of interest provide useful information for assessing the magnitude of contained radioactivity and likely personnel exposures. Other radiological measurements may be obtained as workplace conditions dictate, and at the discretion of the Project Manager or the AMS Radiation Safety Officer.

Action Taken: None required.

Procedure MFIX-02 (3): - Item 5.0 - Records should include radiological information (e.g., radiation levels on filters, equipment, supplies, etc.)

Response: Concur.

Action Taken: Radiation exposure rates will be measured by the Project Manager and recorded on a survey map. A copy of the map will be made available to the operator prior to his working with the equipment, but would not normally be maintained as part of the Daily Log maintained by DTS. DTS's Daily Log typically includes pertinent data and information about the status of the operating system, as well as logistical information important to continuity of operations.

DTS Sampling Protocol (1): Acidification of samples with nitric or other acids could significantly increase the solubility of the cobalt in the untreated sample matrix. Sample acidification prior to filtration may invalidate the filtration study. Please respond to this concern.

Response: Concur.

Action Taken: The sample handling procedure, forwarded to the USNRC in a letter from C. D. Berger to J. A. Grobe (February 2, 1995), will be modified to reflect the fact that samples will not be subject to acidification or any other form of preservation.

DTS Sampling Protocol (2): - How many samples will be collected per tank? How will the samples be collected? If sample collection will be by a spigot on the tank, (a) where is the spigot located; and (b) how many spigot volumes will be flushed through the spigot before the sample is collected?

Response: Two samples will be collected per tank. The water will be dipped from the tank through the open manway or taken from a sample port on the recirculation pump when the tank has been "turned over" a pre-determined number of times. Sample ports used on DTS equipment do not have a dead-leg or static line leading to the valve, so flushing prior to filling the sample bottle is not necessary.

Action Taken: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer, the provisions of AMS License No. 34-19089-01, and the AMS ISP Manual. Sampling protocols will be addressed in the RWP for the project.

DTS Sampling Protocol (3): Will provisions be made to supply the NRC with split samples?

Response: Yes.

Action Taken: Sampling protocols will clearly specify collection of sufficient sample to permit it to be "split" (in volume) with the USNRC. Other agencies wishing to perform confirmatory analyses must notify AMS the number and volume of samples needed in advance of the start of the water treatment operation.

DTS Sampling Protocol (4): Will any reagents be added to the bulk water prior to its processing? If so, what will be added and why?

Response: The use of, or need for, reagents is not envisioned at this time.

Action Taken: None required.

DTS Sampling Protocol (5): What are the volumes of the tanks that will contain the processed water? What is the capacity of the recirculation pumps and how long will recirculation of three tank volumes take?

Response: The capacity of the tank(s) that are intended to be used for sampling is 3,000 gallons. The recirculation pump has a capacity of 150 gallons per minute. Therefore the pump must be run for a minimum of 60 minutes prior to sampling since:

$$3{,}000\ gal \times 3\ turn\text{-}overs = 9{,}000\ gal \times \frac{1\ min}{150\ gal} = 60\ min$$

Action Taken: Sampling protocols will be address the recirculation time.

DTS Sampling Protocol (6): What provisions are in place for contamination control in the event of spills or leaks during the sampling?

Response: Industry-standard contamination control practices will be instituted during sampling. For example:

- Personnel will wear latex gloves to collect and handle samples.
- The sample port will be located in an area readily accessible to personnel.
- An impervious area under the sample port from which water can be readily absorbed with rags should a small spill or drop occur.
- The drawing of the sample itself will be controlled with a valve that is manually-operated by the individual taking the sample.

However, it is important to note that the sampled water is expected to have little-to-no residual contamination.

Action Taken: Sampling protocols will address contamination control measures.

DTS Sampling Protocol (7): Radiation measurements should be made on basement samples prior to further handling. These samples could contain discrete articles or sediment containing greater concentrations of cobalt.

Response: Concur. Continuous health physics coverage of the operation will ensure "real time" knowledge of radiological conditions during processing.

Action Taken: All work performed with licensed materials at the AMS facility will be completed under the direction of the AMS Radiation Safety Officer, the provisions of AMS License No. 34-19089-01, and the AMS ISP Manual. Provisions for exposure rate monitoring will be addressed in the RWP for the project.

Procedure # SL13014 - Calibration of the Germanium Spectroscopy System: If the new efficiency curve yields results more than 10% different from the previous efficiency curve, this would indicate significant detector and/or electronics problems. The system should be investigated before being used for sample analysis.

Response: AMS does not understand the purpose of this question. There may be a variety of reasons why "the shape" of an efficiency curve may vary by greater than 10%, most of which would not trigger an "nonconforming condition". However, the acceptance criteria for the efficiency curve is included in the quality control provisions of the procedure (Section 5.9.3.1), which means that the laboratory's response to nonconforming actions would be as specified in their quality assurance manual (referenced in Section 2.0 of the procedure).

Action Taken: AMS has obtained permission from the commercial analytical laboratory for the USNRC to audit their procedures and/or to observe the handling of the samples collected during the water treatment and sewer remediation operations. However, advance notice (at least five days) of the date of the audit would be appreciated in order to assure the availability of a technical representative to serve as escort/guide, and to compile/collate all supporting procedures and documentation.

Procedure # SL13017 - Daily Calibration Verification and Maintenance: An optimal daily calibration check should be a spectrum activity analysis of at least two separate radionuclides and not only a logging of total counts in a single peak. The spectrum analysis will verify that the continuum subtraction, half-life correction, peak analysis, etc. of the software are functioning properly.

Response: AMS does not understand the purpose of this question. Calibrations are performed with a "mixed gamma source" (see Section 5.5.1), and quality

control provisions, including software performance, are addressed in the laboratory's quality assurance manual, referenced in Section 2.0. It is not at all clear what the USNRC means by using spectrum analysis to verify "continuum subtraction, half-life correction, peak analysis, etc."

Action Taken: AMS has obtained permission from the commercial analytical laboratory for the USNRC to audit their procedures and/or to observe the handling of the samples collected during the water treatment and sewer remediation operations. However, advance notice (at least five days) of the date of arrival would be appreciated in order to assure the availability of a technical representative to serve as escort/guide, and to compile/collate all supporting procedures and documentation.

Germanium Detector Settings: In SOP No. SL13017, the settings for GE1 are Course Gain = 50 and Peaking Time = 8 μsec, while in SOP No. SL13018, the settings for GE1 are Course Gain = 100 and Peaking time = 4 μsec. Are these the same detector; if so, why are the settings different?

Response: AMS does not understand the purpose of this question. If any instrument, with whatever gain or peaking time settings, does not meet the quality control parameters of both procedures, action as specified in the quality control manual (Section 2) will be instituted.

Action Taken: AMS has obtained permission from the commercial analytical laboratory for the USNRC to audit their procedures and/or to observe the handling of the samples collected during the water treatment and sewer remediation operations. However, advance notice (at least five days) of the date of arrival would be appreciated in order to assure the availability of a technical representative to serve as escort/guide, and to compile/collate all supporting procedures and documentation.

Procedure # SL13002 - Gross Alpha/Beta: In the calculations, define "Absolute Efficiency" and "Transmission Factor" and describe how these values are determined.

Response: AMS does not understand the purpose or the relevance of this question. Absolute efficiency is a simple measurement of a NIST-traceable source so that the relationship between "counts per minute" and "disintegrations per minute" can be determined. A value for absolute efficiency is unitless. Transmission factor is used to correct the result for self-absorption of the particulate radiation within the sample. Transmission factor curves based upon activity recovery versus weight of the planchet are developed pursuant to procedure SL13012 "Evaluation of the Sample Transmission Factor", referenced in Section 2. AMS did not request copies of all supporting procedures from the analytical laboratory, however they

would be pleased to do so if the USNRC determines they are needed in order to evaluate the efficacy of the primary procedures.

Action Taken: AMS has obtained permission from the commercial analytical laboratory for the USNRC to audit their procedures and/or to observe the handling of the samples collected during the water treatment and sewer remediation operations. However, advance notice (at least five days) of the date of arrival would be appreciated in order to assure the availability of a technical representative to serve as escort/guide, and to compile/collate all supporting procedures and documentation.

ATTACHMENT 1 - RESUME OF JIM MOONEY

JAMES L. MOONEY, RADIATION SAFETY OFFICER
RESUME

EXPERIENCE

1994 - DIVERSIFIED TECHNOLOGIES, Knoxville, Tennessee

Radiation Safety Officer

Develops and maintains comprehensive radiation protection program. Insures continued compliance with corporate radiation safety policies and state and federal regulations. Monitors or directs corporate activities affecting radiation safety of employees, visitors, and the general public. Performs periodic audits of operations involving radioactive material, and insures that employees visitors receive appropriate training to perform their assignments. Reports directly to the President.

1993 - 94 G&S SAFETY SERVICES OF TENNESSEE, INC., Oak Ridge, Tennessee
Hazardous Materials & Environmental Training

General Manager

Developed and conducted training programs in health physics, hazardous materials, transportation, and OSHA construction safety. Programs were designed to meet requirements of 29 CFR 1910.120, 29 CFR 1926, 49 CFR 171-178, and 10 CFR 20, 50, 61, and 71. Developed new client contracts and expanded existing business lines in training, health physics, industrial health and safety, and related fields.

1992 - 93 POPLAR CREEK SOLUTIONS, Kingston, Tennessee
Computer Consulting Firm

Marketing and Sales Representative

Developed new markets and new client contracts in database management, desktop publishing, and networking. Specific products included Waste Inventory Tracking System (WITS) designed to track radioactive waste through volume reduction facilities and track or control radioactive material inventories.

JAMES L. MOONEY
Resume - 2 -

1989 - 92 SCIENTIFIC ECOLOGY GROUP, Oak Ridge, Tennessee
Radioactive Waste Processing

91 - 92 Customer Service Representative

Responsible for sales and service of contracts for radwaste processing and volume reduction. Monitored company activities relative to client contracts, reviewed client specifications, submitted proposals, negotiated contracts, and resolved problems.

89 - 91 Quality Assurance Manager

Responsibilities included re-writing and obtaining NRC approval of three QA Programs, surveillance of radiological control practices, audit of health physics program, managing quality activities related to radioactive waste transportation, volume reduction, solidification, resin dewatering and new product development.

1986 - 89 LN TECHNOLOGIES, Columbia, South Carolina
Radioactive Waste Processing and Transportation

Quality Assurance Manager

Duties included responsibility for quality-related activities in design, fabrication, operation and maintenance of Type A and B shipping casks, fabrication and operation of waste processing equipment, development of operating techniques and procedures, and establishment of quality control program for steel and plastic waste containers. Maintained control for corporate records, and developed and conducted training programs for shipment and processing of radioactive material.

Other assignments included obtaining final approval for composite High Integrity Container by USNRC and state approval by South Carolina, Washington, and Nevada, shift supervision for chemical decontamination operations of three nuclear utility systems, performance of health physics audits to support the radioactive materials license, participation in ALARA design reviews, and support of the HP in field operations involving decon of public locations with polonium contamination.

JAMES L. MOONEY
Resume - 3 -

1985 - 88 BEI, Barnwell, South Carolina
Engineering, Waste Processing Consultants

Consultant

Wrote and conducted 10 CFR 50 Appendix B training for leading architectural-engineering firm to support a major DOE construction project.

1978 - 85 CHEM-NUCLEAR SYSTEMS, INC, Barnwell, South Carolina
Radioactive Waste Burial, Transportation, and Processing

82 - 85 Quality Assurance Manager

Responsible for management of activities supporting USNRC-approved QA program. Key program elements included design, fabrication, operation and maintenance of approximately 50 shipping casks, monitoring of all operations to determine compliance with health physics and safety requirements, continued safe operation and development of SC radioactive waste burial site, development and approval of High Integrity Containers; and continuing relationships with SC Department of Health and Environmental Control, US Nuclear Regulatory Commission, and customer representatives.

79 - 82 Quality Assurance Supervisor

Directly supervised inspection staff of ten, performed internal and external audits, developed inspection techniques for new products, performed inspections of company operations at numerous nuclear utilities. Certified as welding inspector.

78 - 79 Decontamination Supervisor

Designed equipment and developed techniques for effective decontamination of field operations, supervised health physics activities supporting client operations, directed operations in decontamination of reactor coolant piping, TMI equipment and feedwater spargers, and participated in emergency response teams. Methods included electro-polishing, vapor degreasing and traditional techniques.

DIVERSIFIED TECHNOLOGIES SERVICES, INC.
RADIOACTIVE MATERIAL LICENSE APPLICATION

JAMES L. MOONEY
Resume - 4 -

1971 - 78 U.S. NAVY

78 - 78 Radiological Control Shift Supervisor, USS Hunley AS-31

Supervised maintenance of submarine reactor plants. Accomplishments included supervision of all HP activities for steam generator inspection performed outside of US naval shipyards. Developed internal monitoring program, supervised/performed environmental surveys at remote sites with international sources of contamination, monitored radiation exposure, received/shipped radioactive material, conducted radiation/contamination surveys, directed shielding design/installation, and performed environmental monitoring. Developed/conducted training of all personnel assigned to perform reactor inspections and maintenance. Trained and supervised emergency response teams for nuclear weapons accident response team.

71 - 78 Senior Reactor Operator, USS James K. Polk SSBN 645

Operated S5W reactor plant, supervised and performed maintenance and calibration of reactor instrumentation and control equipment, and maintained radiation protection equipment.

CERTIFICATION

Certified Welding Inspector, American Welding Society
Certified Lead Auditor, American Society for Quality Control
Level III Visual Inspector
Level II Liquid Penetrant Inspector
Level II Magnetic Particle Inspector
Level II UT Inspector

EDUCATION AND TRAINING

Tusculum University - enrolled in Professional Studies Program
U.S. Naval Nuclear Power Training Unit; 1972
U.S. Naval Nuclear Power School; 1971-72
U.S. Navy, Electronics Technician "A" School; 1969-71
North Carolina University, School of Textiles; 1967-69
29 CFR 1910.120 Hazardous Materials Operations
29 CFR 1910.120 Manager and Supervisor
29 CFR 1926 Construction Safety
Train-The-Trainer

JAMES L. MOONEY, RADIATION SAFETY OFFICER TRAINING

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	OJT/FORMAL
a - d	U.S. Navy Nuclear Power School	6 months	OJT & Formal
a - d	U.S. Navy Prototype S3G Plant	6 months	OJT & Formal
a - d	USS James K. Polk SSBN 645	3 years	OJT & Formal
a - d	USS Hunley, AS 31	3 Years	OJT & Formal
a - d	Chem Nuclear Systems, Inc. @ several nuclear utilities	0 Years	OJT & Formal
a - d	UN Technologies @ at several nuclear utilities	4 years	OJT & Formal
a - d	Scientific Ecology Group @ several nuclear utilities	4 years	OJT & Formal
a - d	DTS	1 year	OJT & Formal

JAMES L. MOONEY, RADIATION SAFETY OFFICER
EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Mixed Fission and Activation Products	>100 Curies	S3G Reactor, U.S. Navy Prototype	6 months	Supervise and perform maintenance, calibration and operation of S5W reactor control equipment and instrumentation.
MF & AP	>100 Curies	USS James K. Polk, SSBN 645	3 Years	Supervise and perform maintenance, calibration and operation of S5W reactor control equipment and instrumentation.
MF & AP U-235	Unknown	USS Hunley, AS 31	3 Years	HP supervision of all radioactive material operations for maintenance of submarine nuclear plants, including steam generator inspection/repair and resin discharge. Provided HP supervision and support for nuclear weapons activities and accidents. -Established Technician and craft labor training program in accordance with NAVSEA OS regulations. -Supervised development and performance of environmental monitoring program. -Established and conducted internal monitoring program. -Supervised radiochemistry activities -Packaged and transported radwaste. -Conducted surveys and monitored critical projects with high contamination and high radiation concerns. -Developed shielding designs for steam generator operations.
MF & AP U-235 [redacted] Pu	>1 Curies	Chem-Nuclear Systems, Inc. @ several nuclear utilities including: VP-Surry, PECO-Peach Bottom, NYPA-J.A.Fitzpatrick, Nine Mile Point, FPC-Crystal River, and CP&L-Brunswick.	8 Years	Radwaste disposal, design, fabrication, licensing and operation of radwaste transport containers and HICs, processing of radwaste at nuclear facilities, decon of radioactive materials.

DIVERSIFIED TECHNOLOGIES SERVICES, INC.
RADIOACTIVE MATERIAL LICENSE APPLICATION

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
		CNSI @ GPU - TMI		TMI accident support, design and install decon facility, write procedures, obtain NRC approval.
		CNSI @ VP - Surry		Installed and operated electro-polishing system for reactor primary coolant piping
		CNSI @ GPU - Cycler Creek		Supervised decon and shipment of high rad level reactor components
MF & AP	<1 Curies	LN Technologies	4 Years	Radwaste processing utilizing solidification, demin, and dewatering, transport and packaging of radwaste, design, fabrication, and licensing of radwaste transport containers and HICs, chemical decon of nuclear facilities.
MF & AP	>1 Curies	LN @ CECO - LaSalle, Quad Cities, and Dresden		Reactor coolant system chemical decon, and stabilization and disposal of waste.
Po-210	Unknown	LN @ client site	2 Months	Directed decon and decommissioning of contaminated photo lab in commercial department store.
MF & AP	>1 Curies	Scientific Ecology Group	4 Years	Radwaste VP services using compaction, incineration, and metal-melt. Radwaste processing at nuclear utilities.
NA	NA	DTS	1 Year	Determine corporate capabilities and quantities of radioactive material, write and submit application for TN Radioactive Material License.

ATTACHMENT 2 • RESUME OF PAUL WERNER

PAUL M. WERNER, SERVICE OPERATIONS MANAGER
RESUME

EXPERIENCE

1989 DIVERSIFIED TECHNOLOGIES, Knoxville, Tennessee

Services Manager

Oversees the company's service operations at all client sites. Company designs, procures, and installs specialty equipment for use in the nuclear industry, with special emphasis on providing services for removal of low-level radioactive materials from waste water and preparation of these materials for disposal.

Also, responsible for implementation and oversight of the firm's approved Quality Assurance Program, with authority to act independently. In this capacity, Mr. Werner reports directly to Diversified's President.

1984 - 89 DURATEK CORPORATION, Greenbelt, Maryland

Services Supervisor

Oversaw and coordinated daily operations at 12 contract sites, including technical consultation with field technicians and clients.

Responsible for QA/QC, and technician personnel/security functions, including background checks and site access qualifications. Interfaced between Service and Accounting departments to verify billing.

Supervised installation and/or start-up of demineralization systems at 8 nuclear stations:

Utility	Plant	Date
Public Service Electric & Gas	Salem	6/84
Florida Power & Light	Turkey Point	4/85
Indiana & Michigan Electric (AEP)	D.C. Cook	9/86
Arkansas Power & Light	ANO	11/86
Virginia Power	Surry	3/87
South Carolina Electric & Gas	V.C. Summer	9/87
Sacramento Munic. Util. Dist.	Rancho Seco	9/88
Consolidated Edison Company	IP2	11/88

Services Technician

On-site company representative at 4 nuclear utility sites, responsible for setup and operation of demineralization equipment, recordkeeping, reporting, and customer relations. Sites served:

Utility	Plant
Public Service Electric & Gas	Salem
Florida Power & Light	Turkey Point
Arkansas Power & Light	ANO
Virginia Power	North Anna

1982 - 84 CHEM NUCLEAR SYSTEMS, INC., Barnwell, South Carolina

Demineralization Technician

Operated and maintained demineralization equipment at 4 nuclear utility sites. Maintained operation logs, radiation and contamination records, and shipment records. Served as client-company interface. Field assignments included:

Utility	Plant	Date
Arkansas Power & Light	ANO	5/82
Virginia Power	North Anna	6/82 - 8/83
Public Service Electric & Gas	Salem	8/83 - 2/84
General Public Utilities	Oyster Creek	2/84 - 4/84

1981 - 82 N-REACTOR, HANFORD RESERVATION, UNITED NUCLEAR CORPORATION, INC., Richland, Washington

Nuclear Reactor Operator; Fuels

Performed critical inspections and handling of irradiated and unirradiated nuclear fuel. Responsible for proper handling of contaminated wastes and equipment for disposal or release.

FAUL M. WERNER
Resume - 3 -

1981 QUADREX CORPORATION, Richland, Washington

Decommissioning Technician

Removed all contaminated instruments and fixtures from decommissioned DOE scientific laboratory.

EDUCATION

Business Administration, Central Washington University, 1981
Business Administration, Kennesaw College, 1979-81
Engineering, University of Minnesota, 1977

PAUL M. WERNER, SERVICE OPERATIONS MANAGER
TRAINING

TYPE OF TRAINING	WHERE TRAINED	DURATION OF TRAINING	OJT/FORMAL
a - d	Quadrex Corp.	2 Months	OJT & Formal
a - d	United Nuclear Corp. N-Reactor	1 Year	OJT & Formal
a - d	Chem-Nuclear Systems, Inc. @ several nuclear power plants including: PSE&G-Salem, AP&L-ANO, VP-North Anna and GPU-Oyster Creek.	2 Years	OJT & Formal
a - d	Duratek Corp. @ several nuclear power plants including: PSE&G-Salem, FP&L-Turkey Pt, AEP-D.C. Cook, AP&L-ANO, VP-Surry & North Anna, SCE&G-V.C.Summer, CP&L-H.B.Robinson, ConEd-IP2, and Maine Yankee.	5 Years	OJT & Formal
a - d	OTS @ several nuclear power plants including: PSE&G-Salem, VP-North Anna, SCE&G-V.C.Summer, PG&E-Diablo Canyon, CECO-Dresden, TUECO-CPSES, and GPU-Oyster Creek.	5 Years	OJT & Formal

DIVERSIFIED TECHNOLOGIES SERVICES, INC.
RADIOACTIVE MATERIAL LICENSE APPLICATION

PAUL M. WERNER, SERVICE OPERATIONS MANAGER
EXPERIENCE

ISOTOPE	MAXIMUM AMOUNT	WHERE EXPERIENCE WAS GAINED	DURATION OF EXPERIENCE	TYPE OF USE
Tritium	Unknown	Quadrex Corp.	2 Months	Packaged instruments and fixtures for disposal in support of DOE scientific laboratory decommissioning
Mixed Fission and Activation Products, U-235, U-238, Pu	>100 Curies	United Nuclear Corp. N-Reactor	1 Year	Performed critical inspections and receipt of irradiated fuel from reactor and prepared for shipment; un-irradiated fuel, handled radwaste and equipment for disposal and release. Materials included weapons grade Uranium and Plutonium.
MF & AP	Unknown	Chem-Nuclear Systems, Inc. @ client sites including: PSE&G-Salem, AP&L-ANO, VP-North Anna, and GPU-Oyster Creek.	6 Years	Operated and maintained demin systems at four nuclear utility sites, performed radiation and contamination surveys on all equipment, packaged radwaste.
MF & AP	>1 Curies	Duratek Corp. @ client sites including: PSE&G-Salem, FP&L-Turkey Pt, AEP-D.C. Cook, AP&L-ANO, VP-Surry & North Anna, SCE&G-V.C.Sunimer, CP&L-H.B.Robinson, ConEd-IP2, and Maine Yankee.	5 Years	Supervised corporate radwaste service operations at client sites. Responsible for installation and maintenance of radioactive equipment, packaging and shipment of contaminated equipment.
MF & AP	<1 Curies	DTS @ client sites including: PSE&G-Salem, VP-North Anna, SCE&G-V.C.Summer, PG&E-Diablo Canyon, CECO-Dresden, TUECO-CPSES, and GPU-Oyster Creek.	8 Years	Supervised corporate radwaste service operations at client sites. Re-responsible for installation and maintenance of radioactive equipment, packaging and shipment of contaminated equipment.