

APPENDIX A
RESUMES AND QUALIFICATIONS

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JOHN E. REDDINGTON

Work experience

January 2007 to present:

Principal Consultant, Probabilistic Risk Analysis: Lead fire PRA for the Davis-Besse fire PRA, including contractor oversight and coordination; specialization in HRA, including operations interface, model integration, dependency analysis and PWROG HRA Subcommittee; fire PRA peer reviews; currently technical lead for seismic PRA for FENOC fleet; mentor to junior and co-op engineers.

August 2004- January 2007:

Principal Programs Engineer, Fleet office Akron, OH: responsible for the fire protection program for the FENOC fleet

August 2003 to August 2004: Davis-Besse Nuclear Station Oak Harbor, OH

Training Manager: Responsible for direction and implementation of site's accredited training programs. Heavily involved with high intensity training required to get Davis-Besse back on line following a two year outage replacing the reactor head.

January 2001 to August 2003 : Davis-Besse Nuclear Station Oak Harbor, OH

Supervisor Quality Assurance Oversight for Maintenance:

Responsible for value added assessments based on performance as well as compliance. Ensure industry best practices are used as standards for performance in maintenance, outage planning, and scheduling.

1996 to January 2001,

Superintendent Mechanical Maintenance

Manage the short and long term direction of the Mechanical and Services Maintenance Departments. Responsible for 80 to 90 person department with a budget between 7 and 15 million dollars a year. Direct the planning, engineering, and field maintenance activities. Direct oversight of outage preparations and implementation. One year assignment working with Technical Skills Training preparing for accreditation.

1993 – 1996

Shift Manager

Act as the on-shift representative of the Plant Manager. Responsible for providing continuous management support for all Station activities to ensure safe and efficient plant operation. Establish short term objectives for plant control and provide recommendations to the Shift Supervisor. Monitor core reactivity and thermal hydraulic performance, containment isolation capability, and plant radiological conditions during transients and advise the operating crew on the actions required to maintain adequate shutdown margin, core cooling capability, and minimize radiological releases.

1991 – 1993

Senior System and Maintenance Engineer

Provide Operations with system specific technical expertise. Responsible for maintaining and optimizing the extraction steam and feedwater heaters, the fuel handling equipment and all station cranes.

Acted as **Fuel Handling Director** during refueling outages. Responsibilities Included maintaining the safe and analyzed core configuration, directing operation personnel on fuel moves, directing maintenance personnel on equipment repair and preventative maintenance.

1986 – 1991

Senior Design Engineer and Senior Reactor Operator student

Activities included modification design work and plant representative on the Seismic Qualification Utilities Group and the Seismic Issues subcommittee. Licensed as a Senior Reactor Operator following extensive classroom, simulator, shift training, and Nuclear Regulatory Commission examination.

1984 – 1986

Sargent & Lundy Engineers

Chicago, IL

Senior Structural Engineer

Responsible for a design team of engineers for the steel design and layout to support the addition of three baghouses on a coal fired plant in Texas. Investigated and prepared both remedial and long term solutions to structural problems associated with a hot side precipitator.

1980 – 1984

Structural Engineer

Responsible for steel and concrete design and analysis for LaSalle and Fermi Nuclear Power plants. Performed vibrational load and stability analysis for numerous piping systems. Member of the on-site team of engineers responsible for timely in-place modifications to the plant structure at LaSalle.

1979 – 1980

Wagner Martin Mechanical Contractors Richmond, IN

Engineer/Project Manager

Responsible for sprinkler system design through approval by appropriate underwriter. Estimator and Project Manager on numerous mechanical projects up to 1.8 million dollars.

Education	1975 - 1979	Purdue University	West Lafayette, IN
		Bachelor of Science in Civil Engineering	

	1990- 1995	University of Cincinnati	Cincinnati, OH
		Master of Science in Nuclear Engineering	

**Professional
memberships**

Professional Engineer, State of Illinois, 1984

Professional Engineer, State of Ohio, 1986

Senior Reactor Operator, Davis-Besse Nuclear Power Plant,
1990

Qualified Lead Auditor, 2003

SQUG qualified 1987

Other

Committee Chairman, Young Life Toledo Southside, Lake Erie West
Region

Sunday School Teacher- College age young people.

FARZIN R. BEIGI, P.E.

PROFESSIONAL HISTORY

ABSG Consulting Inc., Oakland, California

Senior Consultant, 2004-Present

Technical Manager, 2001-2004

EQE International, Principal Engineer, 1990-2001

TENERA L.P., Berkeley, California, Project Manager, 1982-1990

PROFESSIONAL EXPERIENCE

Mr. Beigi has more than 29 years of professional structural and civil engineering experience. As a Senior Consultant for ABS Consulting, Mr. Beigi provides project management and structural engineering services, primarily for seismic evaluation projects. He has extensive experience in the areas of seismic evaluation of structures, equipment, piping, seismic criteria development, and structural analysis and design. Selected project accomplishments include the following:

- Most recently, Mr. Beigi has been involved in performing seismic fragility analysis of equipment and structures at Gösgen Nuclear Power Plant in Switzerland, Lungmen Nuclear Power Plant in Taiwan, Oconee Nuclear station in U.S., Point Lepreau Nuclear Plant in Canada, Beznau Nuclear Power Plant in Switzerland, Olkiluoto Nuclear Power Plant in Finland, and Neckarwestheim Nuclear Power Station in Germany.
- Provided new MOV seismic qualification (weak link) reports, for North Anna, Surry and Kewaunee nuclear plants to maximize the valve structural thrust capacity by eliminating conservatisms found in existing qualification reports and previously used criteria.
- At Salem Nuclear Power Plant Mr. Beigi developed design verification criteria for seismic adequacy of HVAC duct systems. He also performed field verification of as-installed HVAC systems and provided engineering evaluations documenting seismic adequacy of these systems, which included dynamic analyses of selected worst-case bounding samples.
- Mr. Beigi has participated in several piping adequacy verification programs for nuclear power plants. At Watts Bar and Bellefonte Nuclear Plants, he was involved in the development of walkdown and evaluation criteria for seismic evaluation of small bore piping and participated in plant walkdowns and performed piping stress analyses. At Oconee Nuclear Station, Mr. Beigi was involved in developing screening and evaluation criteria for seismic adequacy verification of service water piping system and performed walkdown evaluations, as well as, piping stress analyses. At Browns Ferry Nuclear Plant, Mr. Beigi was involved in the assessment of seismic interaction evaluation program for large and small bore piping systems.

- Mr. Beigi performed a study for the structural adequacy of bridge cranes at DOE's Paducah Gaseous Diffusion Plant utilizing Drain-2DX non-linear structural program. The study focused on the vulnerabilities of these cranes as demonstrated in the past earthquakes.
 - Mr. Beigi has generated simplified models of structures for facilities at Los Alamos National Lab and Cooper Nuclear Station for use in development of building response spectra considering the effects of soil-structure-interactions.
 - Mr. Beigi has participated as a Seismic Capability Engineer in resolution of the US NRC's Unresolved Safety Issue A-46 (i.e., Seismic Qualification of Equipment) and has performed Seismic Margin Assessment at the Browns Ferry Nuclear Power Plant (TVA), Oconee Nuclear Plant (Duke Power Co.), Duane Arnold Energy Center (Iowa Electric Company), Calvert Cliffs Nuclear Power Plant (Baltimore Gas and Electric), Robinson Nuclear Power Plant (Carolina Power & Light), and Bruce Power Plant (British Energy – Ontario, Canada). He has performed extensive fragility studies of the equipment and components in the switchyard at the Oconee Nuclear Power Plant.
 - Mr. Beigi has developed standards for design of distributive systems to be utilized in the new generation of Light Water Reactor (LWR) power plants. These standards are based on the seismic experience database, testing results, and analytical methods.
 - Mr. Beigi managed EQE's on-site office at the Tennessee Valley Authority Watts Bar Nuclear Power Plant. His responsibilities included staff supervision and technical oversight for closure of seismic systems interaction issues in support of the Watts Bar start-up schedule. Interaction issues that related to qualification for Category I piping systems and other plant features included seismic and thermal proximity issues, structural failure and falling of non-seismic Category I commodities, flexibility of piping systems crossing between adjacent building structures, and seismic-induced spray and flooding concerns. Mr. Beigi utilized seismic experience data coupled with analytical methods to address these seismic issues.
 - As a principal engineer, Mr. Beigi conducted the seismic qualification of electrical raceway supports at the Watts Bar Plant. The qualification method involved in-plant walkdown screening evaluations and bounding analysis of critical case samples. The acceptance criteria for the bounding analyses utilized ductility-based criteria to ensure consistent design margins. Mr. Beigi also provided conceptual design modifications and assisted in the assessment of the constructability of these modifications. Mr. Beigi utilized similar methods for qualification of HVAC ducts and supports at Watts Bar, and assisted criteria and procedures development for HVAC ducting, cable trays, conduit and supports at the TVA Bellefonte nuclear power plant.
- Mr. Beigi also has extensive experience utilizing finite element computer codes in performing design and analysis of heavy industrial structures, systems, and components. At the Texas Utility Comanche Peak Nuclear Power Plant, Mr. Beigi administered and scheduled individuals to execute design reviews of cable tray supports; evaluated generic design criteria for the design and construction of nuclear power plant systems and components and authored engineering evaluations documenting these reviews.

Mr. Beigi has also been involved in a number of seismic risk assessment and equipment strengthening programs for high tech industry, biotech industry, petrochemical plants and refineries, and industrial facilities. Selected project accomplishments include:

Most recently performed Seismic Qualification of Critical Equipment for the Standby Diesel Power Plants Serving Fort Greely, and Clear Air Force Station, Alaska. Projects also included design of seismic restraints for the equipment and design of seismic supports for conduit, cable tray, duct, and piping systems. Both facilities are designated by the Department of Defense as a Seismic User Group Four (SUG-IV) facility. Seismic qualification of equipment and interconnections (conduit, duct and piping) involved a combination of stress computations, compilation of shake table data and the application of experience data from past earthquakes. Substantial cost savings were achieved by maximum application of the experience data procedures for seismic qualification.

- Assessment of earthquake risk for Genentech, Inc., in South San Francisco, CA. The risk assessments included damage to building structures and their contents, damage to regional utilities required for Genentech operation, and estimates of the period of business interruption following a major earthquake. Provided recommendations for building or equipment upgrades or emergency procedures, with comparisons of the cost benefit of the risk reduction versus the cost of implementing the upgrade. Project included identification of equipment and piping systems that were vulnerable under seismic loading and design of retrofit for those components, as well as, providing construction management for installation phase of the project.
- Fault-tree model and analysis of critical utility systems serving Space Systems / Loral, a satellite production facility, in Palo Alto, CA.
- Seismic evaluation and design of retrofits for equipment, tools and process piping, as well as, clean room ceilings and raised floors at UMC FABs in Taiwan.
- For LDS Church headquartered in Utah, performed seismic vulnerability assessment and ranked over 1,200 buildings of miscellaneous construction types for the purpose of retrofit prioritization.
- Seismic evaluation and design of retrofits for clean room ceilings at Intel facilities in Hillsborough, Oregon.
- Assessment of programmable logic controls as part of year 2000 (Y2K) turn over evaluation at an automatic canning facility in Stanislaus, ca.
- Seismic evaluation and design of retrofits for equipment and steel storage tanks at the Colgate-Palmolive plant in Cali, Colombia.
- Design of seismic anchorage for equipment and fiberglass tanks at the AMP facilities in Shizouka, Japan.
- Evaluation and design of seismic retrofits for heavy equipment, and piping systems at Raychem facilities in Redwood City and Menlo Park, CA.
- Assessment of the seismic adequacy of equipment, structures and storage tanks at the Borden Chemical Plant in Fremont, CA.

- Design of seismic bracing for fire protection and chilled water piping systems at the Goldman Sachs facilities in Tokyo, Japan.
- Design of seismic retrofits for low rise concrete and steel buildings and design of equipment strengthening schemes at AVON Products Co. in Japan.
- Managed the design and construction of seismic retrofits for production equipment and storage tanks at Coca Cola Co. in Japan.
- Seismic evaluation and design of retrofit for equipment, piping and structures at the UDS AVON Refinery located in Richmond, CA.
- Seismic assessment and peer review of the IBM Plaza Building, a 31 story high rise building located in the Philippines.
- Seismic evaluation and conceptual retrofit design for the headquarters building of the San Francisco Fire Department.
- Equipment strengthening and detailed retrofit design for the Bank of America Building in San Francisco.
- Equipment strengthening and detailed retrofit design for Sutro Tower in San Francisco.
- Equipment strengthening and detailed retrofit design for Pacific Gas & Electric (PG&E) substations in the San Francisco area.
- Seismic evaluations and loss estimates (damage and business interruption) for numerous facilities in Japan, including Baxter Pharmaceuticals, NCR Japan Ltd., and Somar Corporation.

Seismic evaluation of concrete and steel buildings at St. Joseph Hospital in Stockton, Ca, in accordance with the guidelines provided in FEMA 178.

EDUCATION

B.S., Civil Engineering, San Francisco State University, San Francisco, CA, 1982

REGISTRATION

Professional Engineer: California

Seismic Qualification Utilities Group Certified Seismic Capability Engineer

Training on Near Term Task Force Recommendation 2.3 – Plant Seismic Walkdowns

AFFILIATIONS

American Society of Civil Engineers, Professional Member

SELECTED PUBLICATIONS

M. Richner, Sener Tinic, M. Ravindra, R. Campbell, F. Beigi, and A. Asfura, "Insights Gained from the Beznau Seismic PSA Including Level 2 Considerations," American Nuclear Society PSA 2008, Knoxville, Tennessee.

U. Klapp, F.R. Beigi, W. Tong, A. Strohm, and W. Schwarz, „Seismic PSA of Neckarwestheim 1 Nuclear Power Plant,” 19th International Conference on Structural Mechanics in Reactor Technology (SMIRT 19), Toronto, Canada, August 12-17, 2007.

A. P. Asfura, F.R. Beigi and B. N. Sumodobila. 2003. “Dynamic Analysis of Large Steel Tanks.” 17th International Conference on Structural Mechanics in Reactor Technology (SMIRT 17), Prague, Czech Republic, August 17-22, 2003.

“Seismic Evaluation Guidelines for HVAC Duct and Damper Systems,” April 2003. EPRI Technical Report 1007896. Published by the Electric Power Research Institute.

Arros, J, and Beigi, F., “Seismic Design of HVAC Ducts based on Experienced Data.” Current Issues Related to Nuclear Plant Structures, Equipment and Piping, proc. Of the 6th Symposium, Florida, December 1996. Publ. by North Carolina State University, 1996.

F.R. Beigi and J. O. Dizon. 1995. “Application of Seismic Experience Based Criteria for Safety Related HVAC Duct System Evaluation.” Fifth DOE Natural Phenomenon Hazards Mitigation Symposium. Denver, Colorado, November 13-14, 1995.

F.R. Beigi and Don R. Denton. 1995. “Evaluation of Bridge Cranes Using Earthquake Experience Data.” Presented at Fifth DOE Natural Phenomenon Hazards Mitigation Symposium. Denver, Colorado, November 13-14, 1995.

EDDIE M. GUERRA, E.I.T.

PROFESSIONAL HISTORY

ABSG Consulting Inc., Contractor, Presently

Paul C. Rizzo Associates, Inc., Pittsburgh, PA, Assistant Project Engineering Associate, Presently

*Thornton Tomasetti, Inc., Philadelphia, PA, Structural Engineer Intern,
January 2009–June 2009*

Skanska USA, Inc., San Juan, Puerto Rico, Civil Engineering Intern, May 2008–July 2008

*Network for Earthquake Engineering Simulation, Bethlehem, PA, Research Assistant, May 2007–
July 2007*

PROFESSIONAL SUMMARY

Mr. Eddie M. Guerra, E.I.T. is an Assistant Project Engineering Associate with Paul C. Rizzo Associates, Inc. (RIZZO). Mr. Guerra has been involved primarily in the structural design and analysis of power generation structures in both nuclear and wind energy sectors. Mr. Guerra specializes in structural dynamics, Performance Based Seismic Design methodologies and elastic and inelastic behavior of concrete and steel structures. He is fluent in both English and Spanish.

PROFESSIONAL EXPERIENCE

Nuclear:

AP1000 HVAC Duct System Seismic Qualification -

October 2010 - Present

SSM/Westinghouse Electric Company, Pittsburgh, Pennsylvania:

Engineer for the seismic qualification of AP1000 HVAC Duct System.

Structural dynamic analysis of all mayor steel platforms inside steel containment vessel.

Investigation on the interaction of steel vessel and HVAC system displacements due to normal operational and severe thermal effects.

Finite element modeling of HVAC access doors under static equivalent seismic loads.

Followed AISC, ASCE and SMACNA standards for the qualification of steel duct supports.

Wind:

Analysis and Design Revision of Wind Turbine Tower -

October 2010 - February 2011

Siemens, Santa Isabel, Puerto Rico:

Engineer for the analysis and design revision of a wind turbine tower to be constructed in Santa Isabel, Puerto Rico.

Developed design criteria based on local building code requirements and the International Electrotechnical Commission (IEC) provisions for wind turbine design.

Dynamic analysis of wind turbine.

Design revision of turbine tower shell, bolted flange connections and global stability of the tower.

EDUCATION

M. Eng., Structural Engineering, Lehigh University, Bethlehem, PA - May 2010

B.S., Civil Engineering, University of Puerto Rico, Mayaguez, PR - Dec. 2008

SKILL AREAS

Structural Analysis

Seismic Design

Reinforced Concrete Design

Structural Steel Design

Wind Aerodynamics

Wind Turbine Design

Plastic Steel Design

Foundation Design

COMPUTER SKILLS

STAAD, ANSYS, AutoCAD, ADAPT, SAP2000, RAM, MATHCAD, PCA Column, MS Office

REGISTRATIONS

Engineer-In-Training: Puerto Rico - 2009

MEMBERSHIPS

American Society of Civil Engineers (ASCE)

American Concrete Institute (ACI)

Network for Earthquake and Engineering Simulation (NEES)

U.S. Dept. of Labor (OSHA)

Society of Hispanic Professional Engineers (SHPE)

HONORS AND AWARDS

2010 Recipient of the Thornton Tomasetti Foundation Scholarship

Golden Key International Honor Society

Tau Beta Pi Engineering Honor Society

University of Puerto Rico at Mayaguez Dean's List

PUBLICATIONS

Guerra, Eddie M., "Impact Analysis of a Self-Centered Steel Concentrically Braced Frame,"
NEES Consortium, May - July 2007.

BRIAN A. LUCARELLI, E.I.T.

PROFESSIONAL HISTORY

ABSG Consulting Inc., Contractor, Presently

Paul C. Rizzo Associates Inc., Pittsburg, PA, Engineering Associate II, 2010- Present

Engineers without Borders, Aquaculture Development, Makili, Mali, Africa September 2007 – December 2009,

Southwestern Pennsylvania Commission, Pittsburgh, Pennsylvania, Transportation Intern, May 2008 – August 2008

PROFESSIONAL SUMMARY

Mr. Lucarelli has experience providing engineering support for a number of domestic and international nuclear power plants. He has also completed RIZZO's in-house training course on NTTF 2.3 Seismic Walkdowns. This course was delivered by RIZZO's senior staff that had completed the two day course.

PROFESSIONAL EXPERIENCE

February 2012 – July 2012

Vogtle NPP Units 3 and 4 – Westinghouse Electric Company, Burke County, Georgia:

RIZZO conducted a settlement analysis to predict the total and differential settlements expected during construction of the Vogtle Units 3 and 4. Mr. Lucarelli was responsible for reviewing on-site heave and settlement data and the excavation sequence to calibrate the material properties in the settlement model. He was also responsible for creating a settlement model that implemented the expected AP1000 construction sequence and presenting the results in a report.

January 2010 – June 2012

Levy County NPP Foundation Considerations – Sargent & Lundy/Progress Energy, Crystal River, Florida:

Mr. Lucarelli was extensively involved in the design and specification of the Roller Compacted Concrete Bridging Mat that will support the Nuclear Island foundation. He has authored numerous calculations and reports related to the work conducted for this project, including responding to requests for additional information from the NRC. His analyses for this project included finite element analyses of the stresses within the Bridging Mat under static and dynamic loading and the determination of long-term settlement at the site.

Mr. Lucarelli also authored the Work Plan and served as on-site quality control during laboratory testing of RCC block samples in direct tension and biaxial direct shear. His responsibilities included inspection of the testing being performed and control of documentation related to testing activities.

September 2011 – March 2012

Akkuyu NPP Site Investigation – WorleyParsons/Akkuyu Project Company, Mersin Province, Turkey:

RIZZO conducted a geotechnical and hydrogeological investigation of the proposed site for four VVER-1200 reactors. This investigation entailed geotechnical and hydrogeological drilling and sampling, geophysical testing, and geologic mapping. Mr. Lucarelli served as on-site quality control for this project. His responsibilities included controlling all records generated on site, interfacing with TAEK (Turkish Regulatory Agency) auditors, and tracking nonconformances observed during the field investigation. Mr. Lucarelli also assisted in the preparation of the report summarizing the findings of the field investigation.

May 2010 – November 2010; July 2011 – January 2012

Calvert Cliffs NPP Unit 3 – Unistar, Calvert County, Maryland:

RIZZO completed a COLA-level design of the Ultimate Heat Sink Makeup Water Intake Structure at the Calvert Cliffs site. Mr. Lucarelli authored and checked a number of calculations to determine the design loads to be used in a Finite Element model of the structure. Mr. Lucarelli was also responsible for ensuring that the design met the requirements of the Design Control Document.

Mr. Lucarelli has also performed a settlement analysis for the Makeup Water Intake Structure.

February 2010 – March 2010

C.W. Bill Young Regional Reservoir Forensic Investigation – Confidential Client, Tampa, Florida:

RIZZO conducted a forensic investigation into the cause of soil-cement cracking on the reservoir's upstream slope. This investigation involved a thorough review of construction testing results and documentation to determine inputs for seepage and slope stability analyses. Mr. Lucarelli reviewed construction documentation and conducted quality control checks on the data used for the analyses. Mr. Lucarelli also prepared a number of drawings and figures that presented the results of the forensic investigation.

Previous Experience:

September 2007 – December 2009

Aquaculture Development – Makili, Mali, Africa:

The University of Pittsburgh Chapter of Engineers Without Borders designed and constructed an aquaculture pond in rural Mali, Africa with a capacity of 3.6 million gallons. This pond is designed to maintain enough water through a prolonged dry season to allow for year-round cultivation of tilapia. As the project technical lead, Mr. Lucarelli was involved in developing

conceptual design alternatives and planning two site assessment trips. These scope of these site assessment trips included topographic surveying, the installation of climate monitoring instrumentation, soil sampling and characterization, and laboratory soils testing.

As the project coordinator, his primary responsibilities included maintaining a project schedule, developing a budget for project implementation, and coordinating technical reviews of project documentation with a Technical Advisory Committee.

May 2008 – August 2008

Southwestern Pennsylvania Commission – Pittsburgh, Pennsylvania:

As a transportation intern, Mr. Lucarelli analyzed data in support of various studies dealing with traffic forecasting, transit use, and highway use. He also completed fieldwork to assess the utilization of regional park-and-ride facilities.

EDUCATION

B.S., Civil Engineering, University of Pittsburgh, Pittsburgh, PA, 2009

B.S., Mathematics, Waynesburg University, Waynesburg, PA, 2009

CONTINUING EDUCATION

Short Course on Computational Geotechnics and Dynamics, August 2011

ASDSO Estimating Permeability Webinar, December 2010

COMPUTER SKILLS

SAP2000, PLAXIS, SEEP/W, SLOPE/W, THERM, AutoCAD, ArcGIS, Phase2, Slide, MathCAD

REGISTRATIONS

Pennsylvania: Engineer-in-Training #ET013562

MEMBERSHIPS

American Concrete Institute (ACI)

- ACI Committee 207 (Mass Concrete) – Associate Member

American Society of Civil Engineers (ASCE)

Engineers Without Borders (EWB)

Resume of Mohammed F. Alvi, P.E.

SUMMARY:

- Thirty-three years of experience as an engineering professional (27 years in nuclear)
- Professional Engineer, registered in the State of New York, USA
- Completed the Boiling Water Reactor (BWR) Plant Certification Course for Nine Mile Point Unit-1 Nuclear Station
- Experience as a Structural Design Engineer, Engineering Supervisor for Structural/Mechanical Design and Plant Support Engineering, Manager Mechanical/Structural Design and Project Manager
- Innovative and resourceful engineer with problem solving skills
- Excellent leadership skills with proven record
- Excellent analytical, design, decision making, communication, organizational, and interpersonal skills
- Proficient in computer skills

EXPERIENCE:

June 2012 –
Present

First Energy Nuclear Operating Company Senior Consulting Engineer

Project Manager for Seismic Probabilistic Risk Assessment (SPRA) Project. Responsibilities include vendor oversight for 50.54(f) Letter Seismic 2.1 and 2.3 as well as technical overview of the SPRA project.

March 2008 –
May 2012

Entergy Nuclear Operations James A. Fitzpatrick Nuclear Power Plant Oswego, New York Supervisor, Mechanical/Civil Design Engineering

Responsible for supervising a group of 10 mechanical/civil/structural engineers at the James A. Fitzpatrick Nuclear Plant. Responsibilities included issuing plant modifications, evaluations, engineering changes, equivalency changes, supporting refueling and forced outages, acted as engineering duty manager, identified training needs, participated in the daily fleet telephone calls, resolved operability issues related to degraded conditions, assisted in resolving plant emergent issues, responded to US Nuclear Regulatory Commission (NRC) Resident questions, supported emergency response organization duties, etc. Oversight of construction activities, owner acceptance of A/E Consulting Firm design. Performed duties of acting design engineering manager, trained staff on technical/administrative skills, etc.

February 2007 –

Public Service Electricity & Gas (PSEG) Nuclear

February 2008

**Hope Creek Nuclear Generating Station
Branch Manager, Mechanical/Structural Design**

Responsible for managing a staff of 8 Mechanical/Structural engineers at Hope Creek Nuclear Generating Station. Responsibilities included analysis, design of Structures, Systems, Components, resolving operability issues, preparing design change packages, evaluating non-conforming conditions, addressing short and long term issues for the station, supporting outages, address training needs of the group, participate in Plant Health Committee, interface with resident NRC inspectors, etc.

I was also responsible for performing the duties as the site reviewer of all Structural/Mechanical related license renewal documents being prepared by the License Renewal Group. I was implementing the Hope Creek primary containment (Drywell and Torus) ageing management program to support the license renewal process. I was also assisting in the implementation of FatiguePro software at Hope Creek.

1988 – Oct. 2006

**Nine Mile Point Nuclear Station
(Constellation Nuclear)
Oswego, New York
Engineering Supervisor/Principal Engineer**

Responsible for analysis, design and maintenance of various nuclear power plant structures at Nine Mile Point Nuclear Station Units 1 & 2. Analysis includes design of reactor building superstructure, turbine building superstructure, yard structures, masonry wall design, piping analysis and supports for safety related systems, cable tray supports and various electrical and mechanical components supports, etc.

Supervised a group of 10 engineers/designers, coordinated projects with site engineering consultants, performed engineering evaluations and cost benefit studies for various projects for an economical design.

As one of the leaders of the engineering organization, I directed and supervised individuals technically and administratively to make sure the job is done correctly the first time and per schedule. I had the decision making authority for all structural engineering issues at the station.

License Renewal: I was also the Manager for Fatigue Monitoring Program for Nine Mile Point Nuclear Station, Units 1 & 2. I was involved in setting up the software "FatiguePro" at the station for a cost of \$500K. This was in commitment to the Nuclear Regulatory Commission as part of License Renewal program for NMP station. This program included identifying the various transients that the plants were originally designed for, historical count of transients, identifying cumulative usage factors at critical locations, identifying what locations CUFs will be exceeded for a 60 year plant life and what actions were needed to resolve the same. Also addressed the environmental fatigue issues.

I was also responsible for managing all structural aspects of license renewal program at the station. This included preparation of program basis documents (e.g., masonry walls, bolting, monitoring of structures, etc.), scoping documents, ageing management program documents, time limiting ageing analysis (TLAAs), performed walkdowns for defining boundaries.

I was also part of the design team that gave a presentation to NRC license renewal team at Rockville, MD regarding the primary containment ageing management program for torus and drywell shell thickness at Nine Mile Point Unit-1.

Note: I was also the Nine Mile Point Nuclear Station Lead for the NRC Component Design Bases Inspection (CDBI) that was conducted in September/October 2006. I successfully lead the NMP team, supported the inspection with no major violations for the station. This project started in May 2006 which included self assessment (mock inspection), taking appropriate corrective actions prior to the actual inspection for a successful outcome.

Acting Manager, Engineering Unit 1 Nine Mile Point Nuclear Station

Performed the duties of an engineering manager, attended the daily leadership meetings, resolved the plant issues, prioritized and coordinated the work activities of various disciplines in Engineering, conducted branch staff and safety meetings, successfully resolved all engineering issues during this period for safe operation of the plant.

Supervisor, Civil/Structural Engineering, Unit 1 Nine Mile Point Nuclear Station

Responsible for all structural engineering issues at Nine Mile Point Unit. Major accomplishments as Structural Supervisor included implementation of Structural Maintenance Rule Program, development of various engineering specifications and drawings for the older vintage plant.

Attended various structural seminars on Seismic Qualification Utility Group (SQUG), concrete and masonry walls, structural maintenance program, completed various training on leadership skills, supervisory skills, performance appraisals, effective communication, Labor training, Leadership Academy and completed two weeks of training at Institute of Nuclear Power Operations (INPO)-Atlanta for Engineering Supervisors Professional Development Seminar.

1983 – 1988

Sargent & Lundy Engineers Chicago, Illinois Lead Structural Engineer

Responsible for analysis and design of various nuclear power plant structures using ACI and AISC codes, was responsible for designing pipe supports, conduit supports, pipe whip restraints, masonry walls, steel frames, used various in-house computer programs for analysis

design, performed walk-downs, performed structural calculations, resolved non-conformance reports, performed seismic qualification calculations, etc.

1978 – 1983

Klein & Hoffman, Inc
Consulting Engineers, Chicago, Illinois
Structural Engineer

Structural engineer responsible for analysis and design of schools, parking garages, industrial buildings, high rise buildings, sewage treatment plant structures, etc. Extensively used AISC and ACI codes and various in house computer programs for analysis and design.

EDUCATION:

- Master of Science (Structural Engineering), University of Illinois, Chicago (1977)
- Bachelor of Engineering (Civil), Bhopal University, India (1976)

PROFESSIONAL LICENSES/CERTIFICATIONS:

- Registered Professional Engineer, State of New York
- Boiling Water Reactor (BWR) Plant Certification Course for Nine Mile Point Unit-1 Nuclear Station

PROFESSIONAL SOCIETY MEMBERSHIP:

- Member, American Society of Civil Engineers (ASCE)

REFERENCES:

Provided upon request

CITIZENSHIP:

Citizen of the United States of America

RICHARD C. SIEMBOR

Education:

Case Western Reserve University
Cleveland, Ohio
Bachelor of Science – Mechanical Engineering
January 1991

Case Western Reserve University
Cleveland, Ohio
Bachelor of Science – Fluid and Thermal Engineering Sciences
January 1991

Edinboro University
Edinboro, Pennsylvania
Bachelor of Arts - Physics
January 1991

Nuclear License:

FirstEnergy- Perry Nuclear Power Plant
Senior Reactor Operator (SRO) License Number 31758
Operator Docket Number 55-32836
February 2003

Work History:

Perry Nuclear Power Plant
January 1991 – Present

2008 – Present

Probabilistic Risk Assessment
Perry Nuclear Power Plant PRA Lead. Regulatory Guide 1.200
model compliance efforts. Post Fukushima analyses and
mitigative strategy development. Concentration in event
modeling, accident analysis/strategies, and human reliability
analysis aspects.

2006 – 2008

Responsible System Engineer. Systems included: Residual Heat
Removal, Control Rod Drive, Suppression Pool, Suppression Pool
Cleanup.

2003 – 2006

Senior Reactor Operator License holder / Shift Engineer.

2001 – 2003

Training for Senior Reactor Operator License.

1996 – 2001	<p>Probabilistic Risk/Safety Assessment</p> <p>Instrumental in PSA product preparation for License Amendment 99 Diesel Generator Allowed Outage Time Submittal including establishment of the Configuration Risk Management Program.</p>
1991 – 1996	<p>Applied Engineering Analysis</p> <p>Generic Letter 89-10 Design Basis calculations, Improved Technical Specifications, Emergency Operating Procedure calculations/verification, USAR Chapter 15 accident analyses and radiological assessments, Probabilistic Risk Analysis.</p>
Other:	<p>Fuel Handling Supervisor, Refueling Supervisor (SRO), Project Manager (Feedwater Check Valves, Residual Heat Removal System), Safe Shutdown Advisor.</p>

Alexandra Zelaski
azelaski@firstenergycorp.com

FirstEnergy Nuclear Operating Company
Perry Nuclear Power Plant
10 Center Rd
Perry, OH 44081

1392 Oakwood Trail
Painesville, OH 44077
(440) 666-4317

EDUCATION

The Ohio State University, M.S. Class of 2011 Columbus, OH
Nuclear Engineering Program
Institute of Nuclear Power Operations: National Academy of Nuclear Training Fellow
Passed Doctoral Qualifying Exam
Master's Thesis related to SiC alpha particle detector to take actinide inventories in pyroprocessing streams

Swarthmore College, Class of 2009 Swarthmore, PA
Bachelor of Arts
Major: Physics
Minor: Education

Midpark High School, Class of 2005 Middleburg Heights, OH
GPA – 4.0/4.0, Class rank – 3rd in class of 276
Honors: Phi Beta Kappa, Bausch and Lomb Science Scholar

EXPERIENCE

Nuclear Engineer, Analytical Methods

Fleet Design Engineering – Analytical Methods, FirstEnergy Nuclear Operating Company August 2011 – Current

- Developing, updating and maintaining current PRA model for Perry Nuclear Power Plant
- Supported data collection and documentation of internal flooding model
- Currently supporting model development for seismic and external flooding PRA
- Qualified to do PRA on-line risk management

Nuclear Engineering Graduate Fellow The Ohio State University

Department of Mechanical Engineering, The Ohio State University August 2009 – Current

- Working to develop SiC detector to determine actinide concentrations in pyroprocessing molten salt
- Developing TCAD model to simulate SiC detector damage
- Wrote MATLAB code to analyze SRIM program files
- Developed and machined parts for alpha particle detection experimental set-up
- Certified to work in class 100 cleanroom

Physics Research Intern Oberlin College

Department of Physics and Astronomy, Oberlin College Summer 2007, 2008

- Synthesized and characterized Fe₃O₄ nanoparticles using VSM, XRD, SANS
- Performed a small angle neutron scattering experiment at NIST Center for Neutron Research

Science Associate Swarthmore College

Department of Physics and Astronomy, Swarthmore College Spring 2007-Fall 2008

- Led problem session for Physics 4: General Physics II (E&M)
- Led problem session for Physics 3: General Physics I (Mechanics)

Physics Instructional Aide Swarthmore College

Department of Physics and Astronomy, Swarthmore College Fall 2006 – Fall 2007

- Graded for Physics/Astronomy 5: Spacetime, Quanta, and Cosmology
- Graded for Astronomy I: Introductory Astronomy
- Graded for Physics 8: Introduction to Electricity and Magnetism

American Sign Language Drill Instructor Swarthmore College

Department of Linguistics, Swarthmore College Fall 2006

- Created curriculum and lesson plans and lead drill section
- Led drill section of a First Year Seminar: Language and Deafness

SKILLS

- Able to operate Vibrating Sample Magnetometer (VSM), X-ray diffractometer (XRD)
- Knowledge of MCNP, MATLAB, Mathematica, Igor, SRIM, Kaleidagraph, LabView, Genie2000
- Physics machine shop and electronics experience: familiarity with milling machine, lathe, table saw, soldering
- Language proficiency in Spanish and American Sign Language
- Able to use both Macintosh and Windows

ACTIVITIES**The Ohio State University Student Chapter of the American Nuclear Society** Columbus, OH

President Spring 2010-Current

- Given tours of OSU Nuclear Reactor Lab to Sen. Voinovich, Commissioner Magwood of NRC
- Hosted movie showing November 15, 2010 to OSU student body
- Planning outreach activities for surrounding Columbus high schools, teacher workshops and for Boy and Girl Scouts

SWAP: Swarthmore Women in Astronomy and Physics Swarthmore, PA

Co-Leader 2007-Spring 2009

- Planned Liquid Nitrogen Ice Cream Social for incoming freshmen to interest them in Physics, Astronomy and Engineering (2007, 2008)

EYH: Expanding Your Horizons Conference Swarthmore, PA

Conference Planner and Recruiter 2007-2008

- Helped plan conference to get middle school aged girls more interested in science
- Gathered contact information to send to minority schools in suburbs of Philadelphia

Swarthmore College Women's Varsity Fastpitch Softball Swarthmore, PA

Varsity Pitcher Fall 2005 – Spring 2009

- National Fastpitch Coaches Association Academic All-American (2009)
- All Centennial Conference Academic Team (2008, 2009)
- Member of first softball team in college history to make Centennial Conference playoffs (2006, 2007, 2008) and East Coast Athletic Conference Playoffs (2008)
- ECAC South Region Pitcher of the Week
- First pitcher in Swarthmore College softball history to win 10 or more games, 3rd most career wins in Swarthmore College softball history

Softball Pitching Instructor Cleveland, OH

Summer 2003 – Current

- Teach younger girls the art of fastpitch softball pitching
- Teach pitching camps to diverse (skill, age) groups of girls
- Coached RBI (Reviving Baseball in the Inner City) and other travel teams

PRESENTATIONS**Materials and Energy: The Building Blocks for Ohio's Economic Future**

Spring 2010

- Poster Title: The Effect of Neutron Irradiation and Low Temperature Annealing on the Electrical Properties of Highly Doped 4H Silicon Carbide
- Presented poster related to current and past research conducted at The Ohio State University

OWU Poster Presentation

Summer 2007

- Presented poster about summer research symposium hosted by Ohio 5 Research Consortium

ABS Consulting

DANIEL A. RENY

PROFESSIONAL HISTORY

ABSG Consulting Inc, Irvine, CA, Senior Consultant, 2008-Present

ARES Corporation, Los Angeles, CA, Senior Consultant, 2002-2008

SCIENTECH, Inc., Kent, WA, Senior Consultant, 1997-2002

Jason Associates Corporation, Idaho Falls, ID, Senior Consultant, 1993-1997

TENERA, L. P., Idaho Falls, ID, Senior Consultant, 1991-1993

EG&G Idaho, Inc., Idaho Falls, ID, Senior Engineering Specialist, 1987-1991

Rockwell International, Anaheim, CA, Senior Engineer, 1985-1987

PLG Inc., Irvine, CA, Engineering Analyst, 1981-1985

PROFESSIONAL SUMMARY

Senior Nuclear Power Plant PRA, Risk and Reliability Consultant and Project Manager with over 31 years professional experience providing services to Nuclear Power Operators in USA and former Soviet Union countries, US NRC, US DOE, and NASA.

Mr. Reny has over 31 years experience as technical lead and project manager conducting probabilistic risk analyses (PRA), IPEs, IPEEEs seismic and fire PRAs, human reliability analyses (HRA), safety and risk informed management applications for domestic and international commercial nuclear power utilities and DOE nuclear facilities. Developed PRA tools such as SAPHIRE, and have performed PRAs using SAPHIRE, CAFTA, WINNUPRA, and RISKMAN.

PROFESSIONAL EXPERIENCE

ABS Consulting, Technical Manager, Irvine, CA (May 2008 - present)

Mr. Reny served as Technical Manager performing PRA analyses for South Texas Project, First Energy Corporation, Diablo Canyon, Entergy and Swiss NOK nuclear plants. He performed PRA analyses for shutdown risk, internal flooding, seismic, internal fires, external flooding, other external events, data updates, and PRA program planning and procedures for PRA model updates and other risk-informed applications.

ARES Corporation, Senior Consultant, Los Angeles, CA (2002 - May 2008)

Mr. Reny served as Project Manager and Senior Consultant performing PRA, external events including fire PRA, and risk-informed analyses for Diablo Canyon Nuclear Power Plant. He performed PRA analyses in support of upgrades and improvements of plant PRA model for fire PRA uses and other risk-informed applications.

Mr. Reny was technical lead on Northrop Grumman/Boeing teams performing PRA and reliability assessments of NASA Orbital Space Plane (OSP) and Crew Exploration Vehicle (CEV). Performed PRA studies and conducted reliability programs on system architectures, vehicle designs, lunar and earth orbit missions.

Performed risk assessments, conducted risk management programs and prepared risks for proposals for Jupiter Icy Moons Orbiter nuclear vehicle, NASA Constellation architecture studies, NASA human and robotic research initiatives for Boeing, Strategic Border Initiative (SBINET) for Boeing, GOES satellite for Lockheed Martin, and Future Combat System for Raytheon.

Mr. Reny performed hazard analyses and preparation of safety analysis report for Los Alamos Neutron Beam (LANSCE) facility; including review and walkdown of facility systems and operations and analysis of procedures.

SCIENTECH, Inc., Senior Consultant, Kent, WA (1997- 2002)

Member of USNRC sponsored international review panel providing safety review and systems upgrade of the Lithuanian RBMK plant. Participated in safety reviews of design and operations, preparation and review and approval of I&C Systems design, installation, and PRA analyses. He also conducted Human Reliability Assessment (HRA) for Ukraine nuclear power plants.

Performed PRA updates, fault tree/event tree modeling, data analysis, Human Reliability Analysis, IPEEE, seismic and fire PRAs, quantification, and consequence analysis of nuclear power plant PRAs at Indian Point 2, Wolf Creek, Columbia, Diablo Canyon, San Onofre and other nuclear facilities. He performed plant system walkdowns, operational data gathering, and operator interviews to update PRAs. He participated in development of models for real-time plant Safety Monitor applications. He performed RAM analyses for nuclear plant emergency operations center, and loss of offsite power risk study for San Onofre Nuclear plant.

Jason Associates Corporation, Office Manager - Senior Consultant, Idaho Falls, ID (1993-1997)

Office Manager, Project Management, Administration Management, Program Development for DOE Facilities. Mr. Reny served as Idaho Falls Office Manager responsible for 35 employees and \$6 to \$10 million worth of contracts with DOE.

Project Safety engineer responsible for development of SARs for Pit 9 buried waste remediation facility at INEL Radioactive Waste Management Complex.

Program Manager for DOE technical support contract (~\$5M annually) responsible for all tasks supporting DOE-ID office in preparation and review of environmental and safety projects.

Mr. Reny was the project safety analyst for Spent Fuel Project at Hanford responsible for safety design requirements and SAR preparation for Cold Vacuum Drying Facility.

TENERA, L. P., Senior Consultant, Idaho Falls, ID (1991-1993)

Senior Consultant providing PRAs, IPE/IPEEE, Human Factors, Project Management, and DOE Nuclear Facilities Safety Analysis Reports

Mr. Reny performed various analyses and modeling tasks in development of PRAs, IPEs, and IPEEEs for Dresden, Quad Cities, Wolf Creek and other nuclear power plants. Tasks included data analysis, systems analyses, event tree and fault trees, seismic and fire PRAs, HRAs, Level 2 and Level 3 modeling and assessments. He also prepared PSAR for Pit 9 Project safety design requirements for bid and proposal preparation of project.

EG&G Idaho, Inc., Idaho National Engineering Laboratory, Sr. Eng Specialist, Idaho Falls, ID (1987-1991)

Senior Engineering Specialist providing Task Management, PRA, Risk Management/Decision Analysis, Reliability/Availability/Maintainability Assessment, Accident Analysis, and Software Development for commercial nuclear power plants and DOE facilities.

Mr. Reny applied PRA models in risk management/decision analyses, publication of NUREG report and testimony in support of NRC Generic Safety Issues resolution.

Principal Investigator with project responsibility for Air Force RAM analyses on over 22 Air Force bases. Authored and implemented RAM analysis guidelines to be used for Air Force facilities emergency power and utilities systems.

Mr. Reny also served as safety engineer for PREPP experimental TRU waste incinerator at INEL responsible for preparation of facility design requirements and SAR.

Rockwell International, Senior Engineer, Anaheim, CA (1985-1987)

Senior Reliability Engineer for Naval Shipboard Weapons Systems RAM Engineering, Reliability Testing, and MIL Standard Programs for the development of naval shipboard

systems, guidance control systems for missile programs, and advance avionics for aircraft.

Program Reliability Engineer responsible for development and implementation of reliability programs in conjunction with development and procurement of naval electronics equipment. Responsibilities included program management, planning, methodology, and direction. Analytical responsibilities included performing reliability modeling, predictions, reliability testing and growth analysis, failure reporting, failure analysis, and corrective action, and EEE parts program.

PLG Inc., Engineering Analyst, Irvine, CA (1981-1985)

Mr. Reny served as Engineering Analyst performing Probabilistic Risk Assessment/ Probabilistic Safety Assessment, and Reliability/ Availability/ Maintainability Assessment. He also performed various level 1 and 2 internal event, seismic and fire PRA analyses and modeling.

Mr. Reny performed PRA tasks, systems analysis, fault tree and event sequence modeling for TMI Unit 1 and Sequoyah nuclear power plants. He performed plant visits, data collection and systems walkdowns. He developed and demonstrated risk assessment methods and tools for EPRI and NRC NUREG applications.

Mr. Reny performed RAM analyses and design decision input for procurement and design of a coal fired power plant, geothermal power plant, and various I&C systems designs.

EDUCATION

B.S., Applied Physics, University of California, Irvine 1982

Certificate of Completion

John Reddington

**Training on Near Term Task Force
Recommendation 2.3
- Plant Seismic Walkdowns**

June 27, 2012

Date

R.P. Kassawara

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity



Certificate of Achievement

This is to Certify that

John E. Reddington

*has Completed the Trial SQUG A46 Walkdown
Screening and Seismic Evaluation Training Course
Held November 20-25, 1987*

Richard G. Starck^{II}

Richard G. Starck^{II}, MPR Associates, Inc.
Training Coordinator

R. P. Kassawara

Robert P. Kassawara, EPRI
Program Manager



Certificate of Achievement

This is to Certify that

Farzin R. Beigi

has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held May 3-7, 1993



David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager

Certificate of Completion

Farzin Beigi

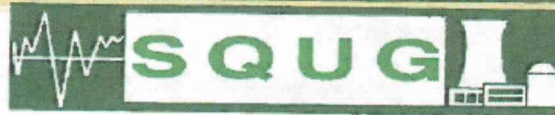
**Training on Near Term Task Force
Recommendation 2.3
- Plant Seismic Walkdowns**

June 13, 2012

Date

R. P. Kassawara

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity



Certificate of Achievement

This is to Certify that

Eddie M. Guerra

*has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course*

June 11-15, 2012

Glen Allen, Virginia



A handwritten signature in black ink, appearing to read "Paul D. Baughman".

Paul D. Baughman, ARES Corporation
SQUG Instructor

A handwritten signature in black ink, appearing to read "Divakar Bhargava".

Divakar Bhargava, Dominion Generation
SQUG Chairman

Certificate of Completion

Eddie Guerra

**Training on Near Term Task Force
Recommendation 2.3
Plant Seismic Walkdowns**



Nish Vaidya

Nish R. Vaidya
VP Advanced Eng Projects

July 6, 2012

Certificate of Completion

Brian Lucarelli

**Training on Near Term Task Force
Recommendation 2.3
Plant Seismic Walkdowns**



Nish Vaidya

Nish R. Vaidya
VP Advanced Eng Projects

July 6, 2012



Presents this
Certificate of Achievement
To Certify That

Mohammed F. Alvi, P.E.

*has Completed the SQUG Walkdown Screening
and Seismic Evaluation Training Course
Held November 4th – 9th, 1992*



David A. Freed, MPR Associates
SQUG Training Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager

Certificate of Completion

Mohammed Alvi

**Training on Near Term Task Force
Recommendation 2.3
- Plant Seismic Walkdowns**

June 27, 2012

Date

R.P. Kassawara

Robert K. Kassawara
EPRI Manager,
Structural Reliability & Integrity



Certificate of Achievement

This is to Certify that

Mohammed F. Alvi

has Completed the SQUG Training Course for

*Demonstrating Seismic Adequacy of New and Replacement Equipment
and Subcomponents Using GIP and STER Methods*

Held September 19-21, 1994

Patrick Butler, MPR Associates
Course Coordinator

Neil P. Smith, Commonwealth Edison
SQUG Chairman

Robert P. Kassawara, EPRI
SQUG Program Manager

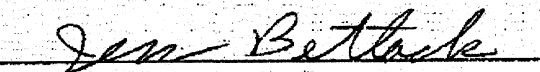


Certificate of Achievement

This is to Certify that

Mohammed Alvi

has Completed the
SQUG Relay Evaluation Training Course
Held August 25-27, 1992


Jerry O. Betlack, MPR Associates

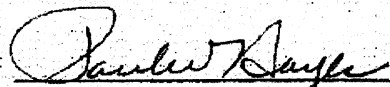


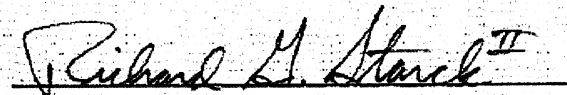
Certificate of Achievement

This is to Certify that

Mohammed Alvi

has Completed the
SQUG Equipment Selection Training Course
Held August 25-27, 1992


Paul W. Hayes, MPR Associates.


Richard G. Starck II, MPR Associates