United States Nuclear Regulatory Commission Official Hearing Exhibit
In the Matter of: Entergy Nuclear Operations, Inc.
(Indian Point Nuclear Generating Units 2 and 3)
ASLBP #: 07-858-03-LR-BD01
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Other:

NRC000032
Submitted: March 29, 2012

Roy K. Mathew

Statement of Professional Qualifications

Current Position:

Team Leader — Electrical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission

Education:

B.S. Electrical Engineering, University of Kerala, India

Summary:

Mr. Mathew has 30 years of experience in the nuclear power industry, including 22 years at the NRC. Through his educational experience, training, and years of work experience in the nuclear power industry, Mr. Mathew has acquired extensive knowledge and experience in several engineering disciplines, particularly in electrical engineering (including nuclear reactor theory, principles and practices); reactor design, construction, testing, startup and operations; regulation of the nuclear power industry; maintenance; inspection; and licensing. In the course of his NRC career, Mr. Mathew has working both in the NRC's Region I Office, where he worked as a Qualified Reactor Engineer performing various inspections, and NRC Headquarters where he has worked as an Operations Engineer in the Special Inspections Branch and Inspection Program Branch (IIPB) conducting various engineering and design inspections, as a Team Leader, as a Senior Reactor Systems Engineer, and as a Senior Electrical Engineer in the Division of Engineering (DE) and Division of License Renewal (DLR).

As a Team Leader in DE and DLR, Mr. Mathew has been responsible for various significant reviews and programs, including: developing Interim Staff Guidance for License Renewal programs; performing safety reviews for license renewal applications; leading NRC audit teams conducting license renewal safety reviews at several facilities; reviewing operating experience issues and issuing appropriate generic communications; and supporting review of license amendment requests. He has an extensive knowledge of NRC regulations and guidance documents, as well as industry codes and standards.

Mr. Mathew was the Acting Chief of Electrical Engineering Branch, Division of Engineering, Nuclear Reactor Regulation. His Branch was responsible for the following:

reviews of design and operation of offsite power grid systems with regard to interrelationships between the nuclear unit, the utility grid, and interconnecting grids; reviews and evaluations of functional performance requirements, design, and operation of onsite power systems and the interface between the offsite and onsite power systems under the full range of normal operation, transient and accident conditions; reviews of environmental qualification of electrical equipment important to safety.

Experience:

U.S. Nuclear Regulatory Commission, 1988-Present

2005-Present Electrical Engineering Branch, Division of Engineering, Office of Nuclear Reactor Regulation

Reviewed and approved several staff safety evaluations for license amendment requests and license renewal applications.

Responsible for reviewing operating experience in the electrical area annually and issuing a summary report and appropriate generic communications.

Reviewed large power transformer failures in the industry for the last several years and issued an Information Notice 2009-010, "Transformer Failures - Recent Operating Experience," to inform the licensees to review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems.

Led audit teams and conducted safety review audits consisting of nine technical reviewers including contractors for preparing the safety evaluation inputs for the license renewal applications submitted by the applicants for Oyster Creek, Fitzpatrick, Vogtle, and Shearon Harris power plants. Conducted public exit briefing for staff's safety audits for Oyster Creek. Participated in the staff presentations at the ACRS sub-committee and full committee meetings on license renewal applications. Developed interim staff guidance for certain aging management programs and prepared safety review audit guidance.

Provided inputs and participated in International Atomic Energy Agency (IAEA) technical meetings on Electric Grid Reliability and Interface with Nuclear Power Plants on August 4-6, 2009. Participated in the

development of an IAEA Safety Guide for Electrical Power Systems Important to Safety on August 3-7, 2009, at IAEA Headquarters, Vienna, Austria.

Reviewed and issued summary report for Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures That Disable Accident Mitigation Systems or Cause Plant Transients," and participated in public workshops and meetings to discuss the results of the cable performance and degradation issues and proposed NRC actions with the industry.

Led the NRC team in addressing the cable submergence issue with the industry through the Regulatory Issue Resolution Protocol.

Coordinating the effort for publishing a Regulatory Guide that provides guidance for monitoring the performance of cables during their installed life.

1993-2005 Operations Engineer, USNRC Headquarters

Developed and monitored implementation of Reactor Safety Strategic Performance Area inspection procedures such as Surveillance Testing; Maintenance Effectiveness; Inservice Testing; Heat Sink Operability; Equipment Alignment; Maintenance Risk Assessment and Risk Management; Temporary Modification; Evaluation of Changes, Tests, or Experiments; Permanent Plant Modifications; and Safety System Design and Performance Capability.

Responsible for updating various Inspection Manual Chapters (IMC), and providing policy direction to NEC regional staff. Performed annual assessment of inspection program and provided inspection program assessment inputs to the annual Reactor Oversight Process (ROP) Commission paper. Developed and issued Significance Determination Process (IMC 0609, Appendix K) and technical basis document for assessing significance of performance issues associated with licensees' implementation of maintenance rule (10 CFR 50.65 (a)(4)). In addition, prepared and provided the required training for implementing the Significance Determination Process.

Developed policy and program guidance for providing inspection credit for IAEA's Operational Safety Review Team (OSART) inspections. Provided several briefings to international agency representatives regarding the NRC's inspection oversight and inspection practices.

Coordinated and provided responses to several IAEA Committee on Nuclear Regulatory Activities (CNRA) Working Group on Inspection Practices (WGIP) questionnaires and requests. Participated in and represented NRC at the CNRA/ WGIP seminar in Veracruz, Mexico.

As a Project Manager, responsible for the review, upkeep and maintenance of various technical guidance documents such as Part 9900 for 10 CFRs, Technical Specifications, Codes and Standards, and Regulatory Guides.

As a Technical Lead, interfaced with several NRR technical branches and issued Temporary Instructions (TIs) to verify implementation of NRC Orders, Bulletins, and Generic Letters. TI issued include: Performance Indicator Data Collection, Follow up of Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles, Reactor Pressure Vessel Lower Head Penetration Nozzles, Reactor Containment Sump Blockage, Offsite Power System Operational Readiness, and Pressurizer Penetration Nozzles and Steam Space Piping Connections. Coordinated with NRR technical branches to resolve policy and program issues associated with Generic Safety Issues. Resolved several high priority Davis-Besse lessons learned action items pertaining to barrier integrity, boric acid corrosion, surveillance, RCS leakage monitoring, and inservice inspections. Developed a statistical tool to aid inspectors in independently determining whether an adverse trend exists with licensees' RCS unidentified leakage rate data obtained during steady state power operation and action level criteria to assess licensee actions in response to increasing levels of unidentified RCS leakage that could indicate RCPB degradation. Lead IIPB technical reviewer for 10 CFR 50.69 rule making effort and Risk Management Technical Specifications Activities.

As Reactor Oversight Program (ROP) Inspection Report Audit Team Leader: Established procedure for auditing inspection reports to ensure that inspection reports are written in accordance with NRR program

documents. Conducted annual audits of inspection reports, and managed several audit team members to complete the audits in calendar years 2001, 2002, and 2003. The results of the audits were communicated to the regional management and also captured in the annual ROP self-assessment Commission paper.

As Region III Coordinator, resolved regional questions on program implementation, performed periodic site visits to monitor implementation of the ROP, and observed regional assessment and planning meetings and provided feedback to the Regional management. Solicited NRC staff and licensee management feedback on program effectiveness and incorporated those comments in ROP initial implementation program Commission paper and applicable ROP program documents. Resolved several ROP pilot and initial implementation issues.

As Technical Assistant, Coordinated resolution of technical issues, prepared presentation materials for NRR Executive Team (ET), monitored Davis-Besse lessons learned action items, provided project management support, coordinated research activities, coordinated NRR action items with Executive Director of Operations (EDO's) office, and provided status to ET regarding the resolution of significant NRR action items. Developed various report inputs such as monthly congressional report, plan of the week, EDO daily, two-week look ahead items, Research user-needs, and monthly ET Significant Items. Provided responses to intra-government inquiries.

Worked as a Team Leader for several Architect Engineering (AE) inspections for BWR and PWR plants to review design and licensing bases issues. Supervised 6-8 contractor engineers and conducted several public exit meetings. Identified numerous complex design and licensing bases issues during these inspections.

Responsible for Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) review of Advanced Boiling Water Reactor (ABWR) and CE System 80+ electrical/ system design. Team leader for station blackout team inspections at Palo Verde Stations (Units 1, 2, and 3) and Beaver Valley. Worked as a group lead for integrated design inspection (IDI), operational readiness assessment team inspection (ORAT) and led Engineering and Maintenance team inspections at numerous operating plants. Identified several design and licensing bases issues.

Participated/developed IPAP inspections to review licensees' performance issues. Responsible for developing inspection procedures to implement inspection requirements for station black out (SBO), anticipated transient without scram (ATWS), safety parameter display (SPDS) and Regulatory Guide 1.97 instruments. Responsible for publishing a final information notice to identify all significant electrical issues for Electrical Distribution Functional Inspections. Conducted Fundamentals of Inspections training course, provided presentations for the Atomic Energy Control Board of Canada regarding NRC Electrical Inspections, and participated as a panel member for the Regulatory Information Conference for AE inspections.

1988-1993: Reactor Engineer, USNRC Region 1

Worked as a team leader for the Electrical Distribution System Functional Inspection (EDSFI) team inspections at various plants. Participated in many EDSFI and safety system functional inspection (SSFI) inspections. Responsible for writing the engineering/technical support areas for the Systematic Assessment of Licensee Performance (SALP) of several licensees. Performed several motor operated valve inspections for the implementation of NRC Inspection and Enforcement Bulletin 85-03 "Motor-Operated Valve Common Mode Failures During Plant Transients Due To Improper Switch Settings" that resulted in identifying many safety significant concerns. Responded to plant events to address concerns in electrical and plant systems including Augmented Inspection Teams (AITs) at Pilgrim, Susquehanna, and Salem. Conducted engineering inspections to assess the licensee performance in the engineering/technical support area for SALP data. Conducted a team inspection at Nine Mile Unit 1 to resolve Regulatory Guide 1.97 "Instrumentation For Light-Water-Cooled Nuclear Power Plants To Assess Plant And Environs Conditions During And Following An Accident" restart issues. Participated in the special I&C inspection at Indian Point 3 to review the design basis, set points, logic control systems and maintenance of instruments. Assumed lead responsibility for engineering, fire protection and environmental qualification inspections at sites including Calvert Cliffs and Main Yankee.

1987-1988 Field Engineer/Design Engineer, Bechtel Construction, Inc. (Limerick Nuclear Generating Station)

Responsible for implementing design modifications to safety related equipment to ensure compliance with regulatory requirements and safety analysis commitments. Performed design changes to Nuclear Steam Supply System (NSSS) elementary, schematic and connection drawings and prepared design specifications for control room and remote shutdown panels for Limerick Unit 2. Coordinated with General Electric and the utility to resolve engineering design conflicts. Performed design reviews and implemented electrical separation commitments in accordance with Institute of Electrical and Electronics Engineers (IEEE) standards and the Final Safety Analysis Report (FSAR) for all safety related equipment at Limerick 2.

1981-1987 Field Engineer/Design Engineer, Bechtel Construction, Inc. (Palo Verde Nuclear Generating Station)

Responsible for the design changes, installation and inspection of cables, transformers, switchgears, and electrical terminations for nuclear steam supply systems, and safety related systems. Reviewed design drawings and specifications for instrumentation systems and provided technical support to resolve construction problems for instrument installations. Coordinated implementation of Three Mile Island Task Action items and human factor study modifications for the control room per NRC requirements. Performed design review and implementation of design changes and modifications for reactor coolant systems, safety injection systems and 4.16kV Class 1E power systems. Performed design review to verify electrical protection and coordination, load growth and electrical system stability analysis for Palo Verde 3. As Start-up Group Supervisor, completed startup modifications on electrical and nuclear steam supply systems for Palo Verde Unit 3. Responsible for the installation and pre-operational testing of major electrical equipment at Palo Verde 3. Prepared several surveillance, maintenance and operating procedures for safety-related systems. Provided support for startup testing of 500kV switchyard protective equipment, transformers, and relays and also onsite major components like MCC, load centers, and 125Vdc Class 1E systems.