

LESSONS LEARNED FROM PAST AND PRESENT CONSTRUCTION

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NEW PLANT QA TASK FORCE

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PURPOSE

- **Perform A Review Of Past And Present Construction Problems To Ensure That The Nuclear Industry Has Taken Sufficient Action To Reduce the Probability of Recurrence.**

SCOPE

- **Review Pertinent Documents And Develop A Template That Will Identify The Issues From Past And Present Construction Of Nuclear Plants And Then Analyze The Issues To Determine If Sufficient Action Has Been Taken To Minimize The Chance Of Recurrence**
- **The New Plant QA Task Force Performed The Review And Analyses**

DOCUMENTS REVIEWED

- **Review Team Selected A Representative Sampling And Key Documents For Review**
- **Documents Included**
 - **NUREG – 1055, Improving Quality And The Assurance Of Quality In The Design And Construction Of Nuclear Power Plants**
 - **Information Notice 2007-04, Construction Experience Related To The Assurance Of Quality In The Construction Of Nuclear Facilities**

DOCUMENTS REVIEWED (continued)

- INPO Document- Important Findings,
Construction Project Evaluations**
- INPO Document – Results Of Self-Identified
Construction Project Evaluation Program**
- NRC Inspection Report No. 70-3013/2006-
001 - Louisiana Energy Services**

DOCUMENTS REVIEWED (continued)

- STUK Investigation Report – Management Of The Safety Requirements In Subcontracting During Okiluoto #1 Nuclear Power Plant Construction Phase**
- Huadian Datong Pipe Rupture Event**

METHOD OF REVIEW

- **10CFR50 Appendix B Eighteen Criteria Were Used To Categorize And Catalog The Issues Identified**
- **Issues Were Selected Based On Review Of Documents And Conclusions In The Reports**

RESULTS

- **Over 270 Total Items Identified – Some Items Were Placed In Multiple Appendix B Criteria, Resulting In Fewer Total Items**
- **Almost Every Appendix B Criterion Had At Least One Issue**
- **Five Areas Were Identified As The Most Significant**

Including:

- **Quality Assurance**
- **Corrective Action Program**
- **Nuclear Construction Project Problems**
- **Design Problems**
- **Training, Knowledge, And Experience Problems**

QUALITY ASSURANCE

- **Establishment And Execution Of Quality Assurance Program Organization – Examples Include:**
 - **Lack Of Management Commitment And Understanding Of The Quality Program**
 - **Independent Role Of Quality Management Was Problematic**
 - **Oversight Of Contractors Was Problematic**
- **Establishment Of A Quality Assurance Program – Examples Include:**
 - **Adequate Controls Were Not Established For The Quality Assurance Program**

QUALITY ASSURANCE (continued)

- **Inadequate Scope, Implementation, Clarity Of The Quality Assurance Program**
- **Quality Assurance/Quality Control Department Problems – Examples Include:**
 - **Quality Control Not Implemented Properly, Not Independent**
 - **Quality Assurance/Quality Control Didn't Always Identify The Problems**
 - **Quality Assurance/Quality Control Of Vendors Was Insufficient And Deficient**

CORRECTIVE ACTION PROGRAM

- **Lack Of An Effective Program**
- **Ineffective Problem Identification And Reporting**
- **Root Causes Not Well Done**
- **Corrective Actions Not Effective And Not Timely**
- **Lack Of A Good Safety Culture, Resulting In Allegations**

NUCLEAR CONSTRUCTION PROJECT PROBLEMS

- **Project Management Problems – Examples Include;**
 - **Inadequate Oversight By The Owner And Contractor Project Management Of The Following; Construction And Installation Process, Planning, Scheduling, And Procurement**
- **Project Control Problems – Examples Include;**
 - **Quality Of Construction Procedures**
 - **Establishment And Communication Of Roles And Responsibilities**
- **Project Scheduling Problems – Examples Include;**
 - **Lack Of Integrated Scheduling Of Major Activities**
 - **QC Not Integrated Into The Schedule**
 - **Unrealistic And Aggressive Schedules**

NUCLEAR CONSTRUCTION PROJECT PROBLEMS (continued)

- **Project Contract Problems – Examples Include;**
 - **Insufficient QA Requirements In Construction Contracts**
 - **Critical Aspects Of The Procurement Process Were Not Consistently Addressed**
- **Construction Problems – Examples Include**
 - **Inexperience Of Contractors In Building Nuclear Plants**
 - **Poor Quality Of Construction/Workmanship**
 - **Quality Of Construction Procedures**

DESIGN PROBLEMS

- **Design Not Far Enough Along When Construction Started**
- **Control Of Changes**
- **Lack Of Rigorous Design Control Procedures**
- **Inadequate Detail In Design Criteria, Specifications, And Drawings**

TRAINING, KNOWLEDGE, AND EXPERIENCE PROBLEMS

- **Inadequate Training In Selected Areas**
- **Management Not Involved In Establishing Training For Non-craft And Supervision**
- **Knowledge And Experience In ASME Codes And Nuclear Standards**
- **Inadequate Training For Subcontractors And Manufacturers On Special Construction Requirements For Nuclear Plants**

PROPOSED RECOMMENDATIONS

- **Provide Training On Lessons Learned**
 - **Specific Training For Management Personnel**
 - Training For Groups For Their Respective Areas**
 - **Training Of Personnel Working On The Construction Project On Problem Identification, Reporting, And General Awareness Of The Lessons Learned**
- **Each Applicant Needs To Assess Its Programs Against The Lessons Learned To Ensure The Issues Have Been Adequately Addressed**

PROPOSED RECOMMENDATIONS (continued)

- **Applicant Needs To Ensure That The Lessons Learned Have Been Adequately Addressed In Contractors' Programs**
- **New Plant QA Task Force To Review QA Lessons Learned Against The QA Program Implementation And Ensure That Lessons Learned Are Incorporated**

QUESTIONS AND COMMENTS

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QA OVERSIGHT ROLE IN ITAAC

WORK IN PROGRESS

OUR VISION

1. Vendor oversight of components as they are fabricated and tested as required by QAPD.
2. Oversight during the system start up and testing.
3. Oversight during system walk down and turnover process.
4. Oversight of installation of components as required by QAPD.
5. Oversight of vendors and sub-tier vendors.
6. Ensuring the construction process has factored in ITAACs.
7. Process to ensure that there is configuration control over completed ITAACs. Evaluating the need to do further surveillances.
8. It is planned that licensee will perform an independent review of all ITAACs.
9. QA will document reviews of ITAAC through the normal oversight process.
10. There is not a QA Sign off at every step.
11. There is not a QA certification of ITAAC closure.