

PII Company Background

Performance Improvement International (PII), LLC was founded by Dr. Chong Chiu in 1987 with the mission to help clients achieve event free operations through root cause analysis and problem solving in the nuclear industry. PII is based in Oceanside, CA. PII's history, industry endorsement, and track record are stated in PII's WEBSITE, www.piionline.com.

In the past PII has solved more than 5,000 complex cases without recurrence. PII's has helped more than 80% of US nuclear utilities to set up their root cause programs and train their root cause engineers. Moreover, PII has trained many NRC and DOE staff, including Mr. Luis Reyes, about rigorous PII's O&P root cause investigation methodology. In fact, PII has trained and mentored more than 50 senior root cause engineers at Crystal River-3 (1996-2001) with PII's rigorous root cause methodology.

Unique Qualification

PII's root cause team for the required service is uniquely qualified for the job. The unique qualification includes the following facts:

- (1) PII's root cause methodology has been well received by NRC, INPO, US Nuclear Utilities, and Crystal River-3 management.
- (2) PII's root cause team will be led by Dr. Chong Chiu, who is well respected by the NRC and in the nuclear industry.
- (3) PII's root cause team includes expertise in every aspect of containment delamination issue (concrete failure mode analysis, testing result analysis, materials, containment structure analysis, construction performance analysis, concrete composition analysis, and severe accident/containment integrity analysis).
- (4) PII's root cause team is knowledgeable of and very sensitive to nuclear safety regulations regarding containment integrity, nuclear safety operability issues, and public perceptions of containment integrity in the nuclear industry. The team includes members with utility operating reactor operational and licensing experience.
- (5) PII already has constructed a comprehensive and integrated failure mode chart (as part of a PII's previous project dealing with a similar containment issue at a NRC

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licensed facility) related to concrete separation and voiding issues. PII's failure mode chart is known by NRC staff in Region II.

- (6) PII has recent root cause experience in containment failures in a nuclear facility. PII team has just performed a comprehensive root cause analysis for containment separation failures at the MOX facility – licensed by Region II, NRC. PII's root cause report for that case was well received by the NRC.

Methodology

PII will perform the root cause work with PII's proven root cause methodology that has been well known to US NRC (including all Region II management) and Crystal River-3 root cause engineers. The methodology involves a structured approach to development of all possible failures modes, and disciplined failure mode/scenario evidence proofing matrix analysis. In addition to PII's root cause methods, PII may perform special testing and/or utilization of appropriate analytical techniques as needed.

PII's root cause work will be performed under Crystal River-3's Appendix B program as a common practice accepted in the nuclear industry.

PII Team Members

Leader – Dr. Chong Chiu, Marci Cooper

Subject Matter Experts – Calvin McCall, Professor Luke Snell, Professor Bruce Suprenant, Joseph Amon

Material Experts – Dr. Mostafa Mostofa, Dr. Patrick Berbon

Structural Experts – Professor Dave Derth, Hans Heric

Root Cause Investigation and Testing – Dr. Jason Chao, Andy Hon