

Vendor Challenges for New Reactor Construction

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Topics

- STP Experience
 - Latent Supplier Quality Issues
 - Select Experience in Large Component Fabrication
 - Vendor Audit Issues
 - Commercial Grade Dedication
 - Part 21
- Lessons Learned

Latent Vendor Quality Issues

- Diesel Generator connecting rod failure
 - Poor work practices during original fabrication in late 1970's results in catastrophic engine failure in 2003
- Reactor Vessel Bottom Mounted Instrument penetration leak
 - Poor work practices in late 1970's result in 5 month outage in 2003

Large Component Fabrication

- Asymmetric generator rotor slots machined mirror image
 - Poor work practices result in substantial delay
- Loss of turbine blades shortly after generator rotor replacement
 - Insufficient analytical methods result in plant outage
- Generator Rotor damage during fabrication
 - Poor machinist work practice result in machine tool damage to journal surface during final operations on rewind generator rotor

Large Component Fabrication

- Replacement Steam Generators
 - Worker practices
 - Unqualified processes
 - Unapproved tools
- LP Turbine fabrication
 - Use of many sub-suppliers
 - Work practices
 - Software QA

Commercial Grade Dedication

- Many US and foreign vendors are not practiced at implementing commercial grade dedication programs
 - Need for early and ongoing dialog and feedback on the dedication process and documentation
 - Need to consider life of plant maintenance and replacements, documentation of critical characteristics, acceptance criteria and inspection & testing methods
 - 10CFR 50 App B programs should be established where practical

Part 21

- Many US and foreign vendors have not dealt with 10 CFR Part 21
 - Posting and reporting
 - Evaluation of defects

Lessons Learned

- Fabricators often do not appreciate life of plant affects or service demands
- Corrective Action Programs must be robust
 - Expectations for access to and approval of disposition of non-conformances must be established
- Expectations and communications protocol must be established as part of contract
- Oversight is appropriate for risk significant components (safety, cost and schedule)

Lessons Learned

- Purchasers need to be involved and engaged with suppliers to ensure you get what you need and expect
- Operating experience needs to be considered
- Logistics, planning and budgeting need to provide adequate resources
- Oversight personnel need experience in manufacturing processes

Lessons Learned

- Vendor oversight mindset is focused on QA/QC
 - Periodic audits and hold point inspections
- Culture and communications are significant impediments in foreign shops
- Oversight philosophy needs to be supported from the top level executives to work

Lessons Learned

- Even when experienced in nuclear work some foreign vendors may not completely understand or correctly implement US regulations
 - Different enforcement of regulations in the home country
 - Different relationship with the regulator