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URA Update...

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News In Brief:

CPW Deliveries ... PWR and BWR versions of URA's Core Physics Workstation (CPW) were delivered to two different utility companies in 2004. Both CPW deliveries provided graphical user interfaces for the engineers to their SOA SIMULATE-3 core models. The CPW's reload design and operations support features aid the engineers in performing the in-house technical evaluations and supporting operations. Both CPW installations were WINDOWS 2003 servers with the engineer's interface on the local PC.

Multi-year Fuel Management ... URA has started the second year of providing fuel management services for the Cooper Nuclear Station. The scope of work includes core physics, fuel management, vendor oversight, fuel economics activities and computer code installation support. The support being provided by URA entails engineering analysis and reviews of Cooper reload designs and operations utilizing NPPD's in-house version of the Studsvik SIMULATE-3 code.

NUPIC Based Audit ... An audit of URA's QA Program was conducted in 2004 by a two utility team. The team utilized the NUPIC checklists and audit approach and focused on recent safety related projects that URA has completed. The audit team concluded that "URA's QA Program is effective in meeting (the requirements of) 10CFR50 Appendix B and 10CFR Part 21 for providing consulting engineering services and software development". As a result of the audit, URA was requalified on the utility's Approved Supplier List with no restrictions until May 2007.

RASCAL ... URA has recently submitted a proposal to the NRC to provide support for the enhancements of the technical assessment tools used during a radiological emergency situation by the NRC Operations Center.

Reload Process Assessment ... URA completed an assignment as a Review Team Member in a performance improvement initiative for a multi-plant utility client. The review focused on the core design and reload analysis process in place. URA has recently performed similar reviews for other utility clients.

Software Customization ... URA continues to provide software assistance to various clients for code development, enhancements, testing and documentation.

Technical Procedures ... URA is currently providing assistance to several clients in revising existing procedures or drafting new procedures for core analysis/fuel management related activities.

Transition Cores ... URA is currently providing a BWR client with transition core CPR correlation assistance. Nodal calculations are being run to parameterize CPR for legacy fuel.

Vendor Oversight ... URA recently completed an assignment as a Review Team Member for an Owner's Acceptance Review conducted at GNF for a revised core loading pattern. URA has performed similar reviews for both PWR and BWR reloads for various clients.

For further information, please call Rod Grow (301-294-0866) or Don Hines (301-294-1330).

Today's Fuel Management and Reload Design

With the continuing consolidation among electric utilities and the updating of fuel suppliers' methodologies, the need for independent fuel management and reload design oversight has increased. Both the consolidation of product lines and analysis methodologies complicates utility evaluation of alternative fuel utilization strategies along with the reload design and safety analysis process. URA specializes in helping our utility clients deal with these problems.

- Reload Design Process Assessments
- Independent Analysis of Industry Issues
- Independent Fuel Management Plans
- Vendor Technical Evaluation and Assessment of the Reload Core
- Methodology Independent Reload Design Graphical User Interfaces (GUIs)

A periodic assessment of the **reload design process** identifies strengths, weaknesses, inefficiencies, methodology enhancements and relevant changes in industry practices. This is beneficial for any utility involved in the reload design whether it is performed by in-house staff, by the fuel vendor or some combination of the two. URA's process assessment can identify potential enhancements, cost reductions and technical improvements. We have a long history of providing Program Plans to develop new capability and providing assessments of existing reload design processes. Our familiarity with all US fuel vendor reload design and safety evaluation methodologies plus hands-on experience with BWR and PWR fuel designs provides a solid foundation from which to work. The ability to analyze and understand **emerging industry issues** is essential to our understanding of effective fuel management.

In either the case of a fuel vendor performing all reload design activities or the utility sharing the design responsibilities while using the vendor's methodology, a periodic **independent multi-cycle fuel management evaluation** should be performed. The best choice for feed enrichments, split batches and burnable poison designs must be evaluated on a multi-cycle basis. The evaluation should consider fuel utilization, design margin, risk minimization to fuel issues and overall fuel economics. Independent evaluations should be performed every few years by both an independent methodology and an independent organization. URA has the experience and methodology via its Core Physics Workstation utilizing state-of-the-art physics methods to provide independent multi-cycle evaluations.

Our Services Include:

Management Support:
Organizational Assessments
Technical Assessments
Vendor Oversight
Staff Augmentation
Engineering & Admin Procedures
Economic Evaluations

Engineering Analysis:
Fuel Management
Reload Analysis
Safety Analysis
Core Monitoring Support
Simulator Support

Software Development:
Code Development
Code Enhancements
GUI's
Core Physics Workstations
Custom Software
Records Management
Migration to New Platforms
Testing and Documentation

Vendor technical oversight is an essential practice in today's environment. The tradeoffs between efficient designs and safety margins, along with the cause and effect relationships between fuel design and core performance need to be well understood. When a fuel vendor provides the analysis of record for a plant, the utility needs to assure itself that the work being done is of the highest quality and contains no significant errors and meets all design requirements.

URA performs independent technical evaluations and assessments of the critical aspects of the core design and the reload safety analysis at the fuel vendor's facility during the time the Reload Licensing Report is to be transmitted to the utility. This work focuses on assessing the vendor's technical performance for a specific cycle reload, documenting the assessment for control of the reload design process, and evaluating whether the cycle reload design could be improved. The scope of work includes preparation for the technical assessments, conduct of on-site inspection at the vendor's facility, and preparation of a report to include an assessment of the reload design conformance by the vendor. These inspections are technical and performance based, with adherence to reload design procedures and methods examined. Safety related and other design parameters are examined and assessed as well.

Reload design process improvement and the ability to examine many loading patterns quickly is the motivation behind a reload design GUI. A Graphical User Interface (GUIs) can be independent of the analysis code methodology. By automating the process on a functional basis, recognizing generic inputs and outputs, and using a widely used programming tool, URA's Core Physics Workstation (CPW) has set the standard. CPW resides on a PC workstation and interacts with a core 3D simulation code located on either the same PC or across the network on a Unix or PC server. URA has implemented and delivered CPWs in both PC and PC/Unix environments which utilize fuel vendor and third party nodal codes. The motivation behind the CPW is reload process improvement measured by reduced engineering manhours, faster turnaround time, and fewer errors in the reload design process.

For further information, please call Rod Grow (301-294-0866) or Don Hines (301-294-1330).

Staff Augmentation

In a pinch and need qualified manpower to get the project done? URA's Staff Augmentation Services can supply a variety of qualified personnel to meet your project needs for either short or long term assignments. We have engineers, training instructors, programmers and administrative assistants. Simply stated, if your organization has a manpower need we can fill it.

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