

TRACWORKS® Fuel Data Management System

Background

The **TRACWORKS**® fuel data management system is a source of comprehensive, current and integrated fuel- and component-related information for a nuclear plant's operators, engineers and administrators. The **TRACWORKS** system provides life-cycle tracking, data management and reporting for all fuel assemblies or bundles and components for both pressurized water reactor (PWR) and boiling water reactor (BWR) units.

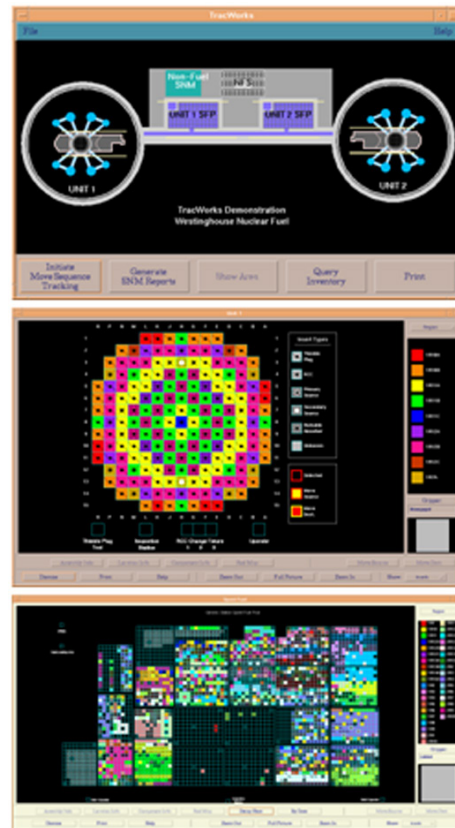
The **TRACWORKS** system eliminates the need for each of a plant's organizations to individually manage the various fuel assembly data sets as separate entities; e.g., special nuclear materials (SNM) data, inventory information and refueling campaign information; and then integrate the various pieces by hand for individual needs. **TRACWORKS** usage provides unified and consistent information, with common data sources, histories and pedigrees, reducing the potential for inconsistencies and errors.

Description

TRACWORKS software streamlines tracking, data management and regulatory reporting for the entire life cycle of fuel assemblies/bundles and core components. It collects, maintains and provides information about:

- Assembly/bundle and component locations and movements during the refueling process and operation.
- Assembly/bundle burnup and isotopic inventory (both in-core and out-of-core).
- Fuel rod burnup and isotopics for fuel that has been removed from its original assembly/bundle.

- Fuel assembly/bundle and component inspection results.
- Manufacturing data.



TRACWORKS provides graphical displays of fuel storage throughout the plant

The **TRACWORKS** system has seven modules:

Baseline Modules

1. Inventory management – provides inventory management for assembly/bundle and core components from delivery to final disposal.
2. Fuel properties tracking – provides up-to-date information about individual fuel assemblies/bundles, including isotopic histories and burnup histories.
3. Reporting – creates documents for regulatory requirements with options for both U.S. Nuclear Regulatory Commission (NRC) and International Atomic Energy Agency reports.

Additional Modules

4. Fuel-movement planning/move-sequence tracking.
5. Real-time movement monitoring.
6. Decay heat monitoring including time to boil calculations.
7. Core component lifetime monitoring.

Available services include: continuing hardware procurement services, support of the initial historical data load, network management services, upgrades and maintenance.

The **TRACWORKS** system can be integrated with the Westinghouse ALPHA/PHOENIX/ANC (APA) core design system and the BEACON™ core monitoring system. The APA-developed final core-loading-plan information is used to make sure that the reload move sequence provides the proper incore fuel and component arrangement. The BEACON core monitor provides the burnup and isotopic information during core operation for current inventory and depletion information, move-sequence generation, burnup-credit-compliance monitoring and SNM reporting. Burnup and isotopic information provided by virtually any of the existing industry-standard tools (both PWR and BWR) is also natively supported.

In addition, **TRACWORKS** links to the Westinghouse SHUFFLEWORKS®, CASKWORKS® and PoolWorks™ products. ShuffleWorks supports fuel move planning by automating the generation of core off-load and on-load sequences. It also supports intranet monitoring/broadcasting of fuel moves as they happen. CaskWorks

supports qualification and selection of assemblies for cask loading to ensure cask-loading requirements are met while maximizing the number of assemblies eligible for off-loading from the pool. PoolWorks supports long-term pool inventory simulation and management. All of these capabilities are complementary to TRACWORKS so these links enhance the user experience for those who have purchased one or more of the aforementioned products.

Benefits

The **TRACWORKS** system provides an exceptional level of protection against costly, time-consuming errors in assembly/bundle selection and placement. It can also help reduce the time needed to perform both routine and specialized plant operating, maintenance and administrative activities. The use of the **TRACWORKS** system by a utility can:

- Significantly reduce the probability of fuel-selection errors during refueling (e.g., selecting the wrong assembly/bundle or attempting to place a spent assembly/bundle in an occupied storage location), thereby reducing the time required to resolve errors and also reducing the possibility of U.S. NRC involvement.
- Reduce the effort in generating and checking the fuel shuffle by several man-weeks (versus preparing the shuffle by hand); and the shuffle itself can be optimized to potentially minimize critical-path refueling time.
- Virtually eliminate the effort required to generate SNM reports for the U.S. NRC.
- Reduce the administrative controls required, even for very complex burnup credit racks, by automating the controls, thereby reducing required effort, improving reliability, and providing support for whatever controls might be required to account for absorber degradation.
- Increase the availability of the fuel rod and fuel assembly/bundle manufacturing data, significantly reducing the time required on-site for an audit of the manufacturing plant.
- Provide a single, universally available controlled access source of the various fuel assembly data.

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