

# Fuel Identification System

## Background

With Westinghouse's fuel identification system (FIDS), core mapping operations can be done in less than two hours.

Core mapping is a visual inspection of the top of the loaded reactor core, which is performed following all fuel and fuel component movement activities. The purpose of the process is two-fold:

- It provides positive verification of the core loading pattern (CLP) by comparing the viewed fuel assembly serial numbers and the appropriate presence or absence of components to the approved CLP, and provides a recording of the verification.
- It facilitates the examination of the fuel assembly gaps to provide an acceptable distribution prior to the installation of the upper internals package.

The ROS FIDS dramatically improves readability of fuel assembly serial numbers, thereby improving fuel quality, and saving time and dosage.

other water level measurements in nuclear applications, such as in vessels and sumps.

A unique feature of the Westinghouse SFPIS solution is the wireless transmission of signal, offering plants the flexibility to install transmitters in desired accessible indicator location(s). Westinghouse is currently the only SFPIS design offering wireless technology. Westinghouse also offers a wired solution and both wireless and wired options satisfy NRC Order



## Description

The ROS FIDS is an advanced array of integrated imaging and control components. It produces vastly superior images in less time than any conventional camera system. Through the use of controlled lighting and custom software, this advanced system produces high-definition images despite monochromatic fuel assemblies, thermal distortion and suspended particles. To render an image, FIDS uses two stop-motion strobes positioned 90 degrees apart and aimed at oblique angles with respect to the target; the purpose of which is to create shadows across the edges of the engraved serial numbers. A total of eight “snapshots,” each under slightly different lighting conditions, are captured and integrated into one crystal-clear image.

## Benefits

- Reduced radiation exposure
- Enhanced inspection quality
- Permanent digital video record

## Deliverables

Westinghouse provides all equipment, personnel and procedures to deploy, use and recover the FIDS. Westinghouse personnel will operate the FIDS so that the CLP and acceptable fuel assembly gaps can be verified in accordance with site procedures. Westinghouse will also provide a recording of the map.