

FIDS

A Dramatic Reduction in Core Mapping Time

*Core mapping
operations in less
than two hours?*

*It can be done.**

FIDS (Fuel Identification System) is an improved imaging system developed by ROS. It's an advanced array of integrated imaging and control components with a custom computer interface. It produces superior visual data in less time.



At a glance

Features

- Enhanced-image viewing software.
- Ability to digitally save images for viewing at another time and place.
- ROS produced CD-ROM graphically illustrating the mapped core.
- Voice overlay.
- Random access to individual images stored as digital information

Benefits

- Dramatically improves readability of fuel assembly serial numbers, thereby reducing amount of time required to perform core mapping procedures.
- Saved information can later be readily copied or transferred to another storage medium (floppy or CD-ROM), or sent over the internet to a remote location.
- Random access of individual fuel assembly recorded during the actual outage.
- Operator can narrate core mapping while system is in use.



Engineered

Precision Control and Real-Time Image Processing

Recent field operations, conducted within an actual containment area during critical path time, showed FIDS was able to map an entire reactor core faster and more accurately than before.

The versatility of FIDS makes it well suited to assist with other refueling tasks such as foreign object search and recovery (FOSAR), and for close-up inspection in high radiation areas when equipped with a RAD hardened camera.

Lights, Camera and Action-Proven ROS Components

For over 25 years ROS has provided the highest quality systems for remote viewing in severe environments. The FIDS underwater imaging array is an integrated assembly using ROS components with a tradition of excellence.

The pan and tilt, incandescent light and RAD hardened strobes are field proven and dependable underwater components. They give you excellent performance and precise control when linked to our specially designed controller unit. Adjusting camera orientation and lighting is intuitive and responsive. The radiation tolerant CCD camera, or optional RAD hardened camera, provide quality images when core mapping, performing inspections or locating foreign objects.

Controlled Lighting

This advanced system produces high definition images despite thermal distortion, radiation effects, suspended particles or corrosion.

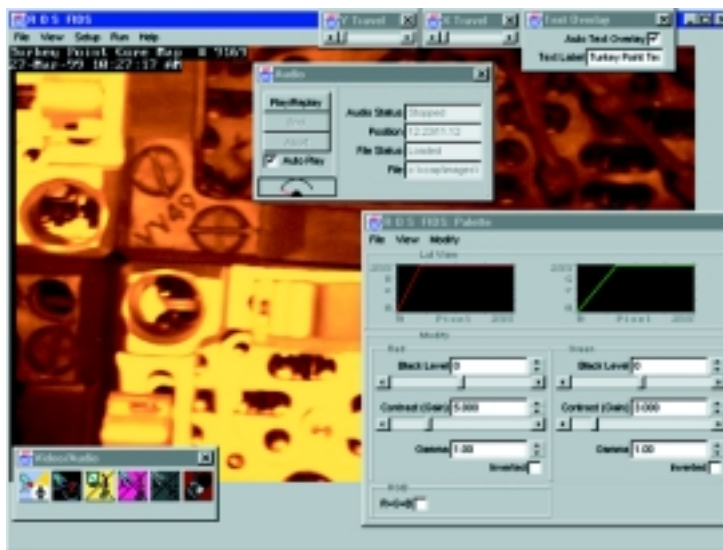
To create an image, FIDS uses controlled illumination from its stop motion strobes to take multiple video exposures that are captured with a frame grabber.



* Based on actual core mapping operations performed during critical path in containment at Turkey Point NGS (Florida Power & Light) on March 27, 1999.

FIDS Interface

The FIDS Graphical User Interface gives you the ability to make important image adjustments such as colorization, contrast and gamma. It also controls audio and text overlays.



Each exposure is taken using different lighting conditions to provide increased shadow detail and enhanced dimension for engraved serial numbers on fuel bundles and objects.

Advanced Image Processing

The individual exposures are digitized, formatted and electronically composited into a single image using an interfaced computer running proprietary software developed by ROS.

The software provides real time image processing with edge enhancement and operator

selected colorizing. This process produces incredibly detailed images that allow you to read fuel assembly serial numbers quickly and accurately.

The composited images are displayed on an SVGA computer monitor in near real-time. The system's computer also provides extensive voice annotation features which allow the user to add up to 30 seconds of voice comments. With the addition of a date, time and text overlay you now have comprehensive image documentation in a digital format.

The system also makes use of an SVGA to NTSC converter. Processed images displayed on the computer monitor can then be viewed on a regular television monitor, as well as continuously recorded on a VCR.

Storage and Data Retrieval Options

Digital images, along with their accompanying voice and text information, are stored on the computer's hard drive. After an inspection is completed the entire set of data can be saved to a CD using the CD-ROM writer included in the system.

ROS can also format that data as an HTML file written to a CD. The entire core mapping procedure can then be read from the CD, e-mailed, distributed via network or posted on



the internet. Using any standard 3.0+ web browser, individual images can be called up directly and viewed in any random order.

Components at a glance

Camera	CCD color camera – ROS CE-X, 12:1 zoom, radiation tolerance to 10E-4. RAD hardened camera (optional) – Radiation tolerance to 10E-7. Features an iris, focus and is available in all stainless steel.
Lights	Incandescent – Mini Versabeam for continuous illumination adjustment Optimizes background illumination for hard to read areas. Strobes – Two RAD hardened ROS strobes mounted at different angles create shadows and edge definition.
Pan & Tilt	Fine control for positioning camera and lights, and helps overcome maneuvering limitations of the bridge crane. Also features X-Y feedback.
Computer	Captures, digitizes, formats and processes images using ROS software. Stores images, date and time, text overlays and voice annotation. Writes data to CD-ROM and converts images to NTSC signal for VCR recording.
VCR	Continuously records overall operation.
Packaging	Single shockmounted box houses computer, CD-ROM writer, UPS, remote switchbox, SVGA to NTSC converter, LCD display and VCR.

Specifications subject to change without notice



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