

## N168. Advanced Technologies Applied To Work Management

Commonwealth Edison's ALARA Program concentrates on four major areas - management controls, work practices, source term reduction, and technological advancements. Advanced technologies in the areas of work planning, work performance, and work monitoring have been a factor in reducing dose at Commonwealth Edison's six plants.

### Work Planning

The following advanced technologies allow pre-job planning, resulting in a more efficient process:

- Computer-Aided Drawing System - Assists in producing scale drawings of plant equipment in two or three dimensional formats.
- Videomapping - Over 100,000 still photos of plant areas with radiation field information are stored on a laser-disc for reference.
- Robotics - Cameras and lasers are mounted on robots for surveillance and measurement operations.

### Work Performance

Robotics and advanced tooling are major factors in controlling occupational exposures. Robots have been used for radioactive waste tank cleaning as well as retrieving and processing radioactive CRD drive and suction filters for shipment. Advanced tooling applications include:

- Wetlift 2000 - for underwater disassembly of reactor vessel internals.
- Automatic Flange Cleaners - for cleaning the vessel head and vessel flanges.
- Automatic Welding - to remotely weld piping in high radiation areas.
- Automatic Non-Destructive Examination Equipment - for inspecting reactor vessel beltline welds using the General Electric Remote Inspection System.
- Control Rod Drive (CRD) Tooling Enhancements - including: using an NES semi-automatic CRD removal and installation tool, barcoding CRD flanges for identification, and tagging CRDs to identify those needing to be exchanged or inspected.

### Work Monitoring

Remote cameras and electronic dosimetry help to monitor work in radiation areas. Cameras enable supervisors and radiation protection technicians to observe work closely without entering the radiation area. Electronic dosimetry serves as a secondary dosimetry to thermo-luminescent dosimeters (TLDs). This allows real-time dose monitoring from a remote location.

*Taken from "Advanced Technologies Applied to Work Management," L.R. Aldrich, Nuclear Plant Journal, pp. 82-86, May-June 1992. For details, contact Lary R. Aldrich, Commonwealth Edison Co., Nuclear Services Radiation Protection, 125 S. Clark St., Rm. 1237E, Chicago, IL 60603. (312) 294-3353.*