Washington River Protection Solutions
Easing Compliance with the PI System

Washington River Protection Solutions (WRPS), a contractor for DOE, manages the Hanford Site Tank Farms, home of the largest volume of radioactive and chemical waste in the United States. The site is under close regulatory scrutiny and must comply with strict environmental regulations. To improve its reporting capabilities and compliance efforts, WRPS needed better visibility into operations across the facilities. It chose the OSIsoft PI System™ to upgrade and integrate its legacy systems into a central automated repository, resulting in more reliable data, easier access and reporting for better-informed decision making.

“We can bring all the different control systems together, get them all talking and start bringing the data together and package it as information.”

– Robert Lane, Washington River Protection Solutions

Situation

WRPS is the DOE contractor responsible for safely managing 56 million gallons of toxic radioactive waste at the Hanford Site in Washington, just a few miles from the Columbia River. Hanford produced plutonium for nuclear weapons during WWII and the Cold War and was converted into a waste storage site in 1991. A total 177 underground storage tanks are grouped into 18 “tank farms” spread over a large geographic area. The site is subject to strict environmental regulations, with federal and state mandates that oversee the site’s operation.

To ensure that it was operating in compliance with regulations and to provide data about its performance and facilities to regulators, each of the site’s tank farms had its own custom-built tools for recording and archiving data. “They’re scattered and isolated,” said Robert Lane, Software Engineer and Computer Analyst at WRPS. “Each has its own control system, its own database and its own support personnel.”

Furthermore, monitoring the facility’s operations was mostly a manual process. Field readings were collected with handwritten reports, then manually transcribed into the control systems, often days or weeks later. “I spent half my time trying to cleanse data that somebody else put in,” Lane said. As a result, compliance reporting was a time-intensive job. Generating a single report or accessing information required retrieving data from multiple databases with different interfaces and schemas.

The time it took to generate a report meant the information may have already been out of date, making it harder for the staff responsible for waste treatment and site maintenance to do their jobs, as well. “There is a lot of information stored in the form of paper records over the years,” said Lane. “The data is there, but if you wanted to use it, you had to go down to the archive center, dig through the paper and try to interpret somebody’s notes on a page that was scanned in as an image.”

WRPS recognized it needed significant upgrades to its control systems and databases in order to continue efficiently and safely operating the facility. WRPS also recognized the company data should be packaged as reliable information with ease of access to support timely and efficient decision making. “I spent a year researching and performing alternatives analysis and the solution I found was the PI System,” said Lane.

Solution

WRPS chose the PI System to bring all of the legacy control and information systems into a consolidated central enterprise system. PI Interfaces allow each of the different legacy data storage systems, whatever its architecture or format, to feed seamlessly into one OSIsoft database. In some cases, automated sensor readings have replaced handwritten field reports, while other data is now collected and logged directly into the PI System using the PI Manual Logger™. “All the
process data comes into PI System, whatever format it’s in. We can get it into a central repository, then we can use the tools to analyze it,” Lane said.

During initial installation, WRPS had OSIsoft perform an on-site training class to train its users and give the engineers a preview of the new system. One of the engineers who came was only willing to commit to staying for the morning of the first day. “The lunch break came up, he calls his boss and says ‘I’ll be here for three days’. He stayed for the entire thing. At the end he was dancing! It’s that much of a change,” Lane said.

Benefits
With the PI System in place, information access, reporting and demonstrating compliance with environmental regulations is now much easier. System data is more reliable since automated interfaces and electronic rounds for manual data reduce errors and provide real-time data validation. And, because data are entered directly into the PI System, there’s no backlog of data waiting to be transcribed.

Having access to more accurate, more current information takes the potential guesswork out and drastically reduces the time spent searching for data and information. “Now the data is in a place where you can retrieve it,” said Lane. “It doesn’t take a month to get the data or a day to download it — it’s just there.”

Having a consolidated data repository makes for better-informed decision making. Less time searching for and interpreting data translates into more time for analysis. Also facility managers now have visibility into operations over all the storage tanks instead of isolated views of individual systems.

“When we had only five or six operators who could access a particular system, there was very limited data access. Now we have the PI System available on every computer on site. Decision makers have the data — they’re not waiting for reports,” said Lane. Operations such as transferring waste from aging single-shell tanks into safer double-shelled tanks can now be planned with a full understanding of current system performance as well as long term trends and historic data.

Using the PI System has also helped WRPS realize huge gains in IT productivity. On top of the significant time savings on information access, reporting, compliance and planning, developer costs are down. Systems engineers can now spend their time building interfaces to support the consolidated repository, rather than maintaining their own obsolete, isolated, systems.

Business Challenge
- Highly visible federal site with strict environmental regulations.
- Control systems scattered throughout the site required manual collection of field readings. This data collection was paper based and needed to be manually transcribed into the control system.
- Isolated data systems with multiple interfaces and schemas.
- Most data analysis required manually comparing and collating information across systems and across paper reports so access to data was limited.

Solution
- PI System deployed to consolidate data from isolated, custom-developed, solutions into one system.
- PI Interfaces automatically collect hi-fidelity data from WPRS’ legacy systems.
- For manual data, digital data collection using PI Manual Logger has replaced handwritten field reports.
- The PI System architecture is leveraging firewalls and native security to isolate and protect the control systems.

Customer Results
- Data quality and accuracy have improved.
- Data access is no longer constrained by database size restrictions, report processing times or retrieval delays - WPRS now has ubiquitous data access.
- Decision-makers have increased visibility (both historical and real-time) into operations.
- Compliance verification is easier.
- Reduced time per development/ upgrade lifecycle and increased scalability.