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Acquisition and Implementation of a Comprehensive Environmental Permits Linking Tool at Savannah River Site-20234
SRNS-STI-2019-00691

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ABSTRACT

Historically, the Savannah River Nuclear Solutions LLC (SRNS) tracked environmental regulatory commitments and the requirements from hundreds of permits at the Savannah River Site (SRS) using several separate methods, making integrated compliance assurance cumbersome and labor-intensive. When SRNS experienced an increase in environmental issues in 2017, SRNS management and U.S. Department of Energy – Savannah River (USDOE-SR) management decided a single, proactive approach was needed to capture environmental permit information (including regulations, Consent Orders, DOE Orders, and any other state or federally issued statement of requirements), track the tasks necessary to ensure compliance with these requirements, and thereby mitigate the risk of noncompliance. SRNS developed a list of mandatory objectives that the tool must meet to function as a Comprehensive Environmental Permits Linking Tool (CEPLT). A key requirement was the ability to map Site permits to their governed locations and display the associated requirements at the compliance point (e.g., outfall, stack, waste unit, etc.). Several options included modifying existing onsite resources, building a custom onsite solution, purchasing an off-the-shelf solution, and contracting an offsite developer to build a custom solution. SRNS concluded an off-the-shelf solution with configuration and customization options would provide the flexibility to fit the unique needs of Savannah River Site (SRS) while taking advantage of industry-tested software and providing a reduced deployment timeline. SRNS chose Gensuite® [a], a cloud-based solution that offers numerous à la carte applications in the environmental, health, and safety arenas, as the best candidate. SRNS selected three (3) integrated applications (Compliance Calendar, Permit Manager, and Mapper) to function as the CEPLT. The Compliance Calendar module allows for creation and tracking of regulatory commitment tasks assigned to responsible environmental professionals. Permit Manager organizes permits and other requirement documents, linking the commitments in each to Compliance Calendar tasks and/or implementing procedures. Mapper provides GIS capability for mapping the data from the other two modules to their physical onsite locations. The CEPLT was configured to allow for other SRS Site Tenants to eventually utilize the applications. Additionally, USDOE-SR uses the CEPLT to provide an overview of contractor environmental compliance activities and to organize DOE-specific documents and tasks. The CEPLT fulfilled the requirement of meeting current compliance needs as well as providing the ability to grow as new organizations are incorporated and functionality is expanded. SRNS now uses the CEPLT to more effectively manage permit requirements, improve knowledge transfer, and increase the Site's overall protection of the environment, the Site worker, and the public. Possible future uses of the system include integration of mobile applications for timely communication of potential non-compliant conditions and DOE complex-wide deployment allowing for enhanced DOE site and Head Quarters oversight. Implementation of CEPLT will result in cost savings, both in terms of dollars and man-hours.

Footnote:

[a] Gensuite® is a registered trademark of Gensuite LLC.

INTRODUCTION

For many years, the SRNS Environmental Compliance department tracked environmental regulatory milestones using several methods that were not linked together, making compliance assurance cumbersome and labor-intensive. (Figure 1) When SRNS experienced an increase in environmental issues in 2017, SRNS management and DOE-SR decided a single tool was needed to manage environmental permits (including regulations, Consent Orders, DOE Orders, and any other state or federally issued statement of requirements) and the tasks that must be performed to ensure compliance with the requirements. It was also agreed that this tool would include a mapping function that would depict these items in conjunction with their physical location on the Site.

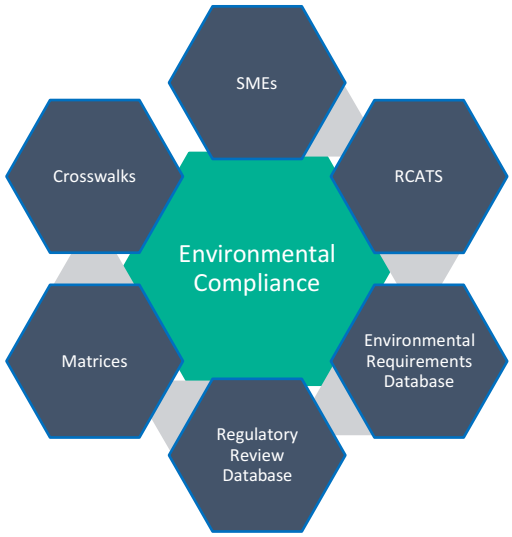

Figure 1 - Previous Systems in Place to Manage Environmental Compliance at SRNS

Moving to the new system involved inputting over 170 permits, laws, consent orders, and DOE Orders into the Permit Manager which is currently in progress, in addition to thousands of tasks into Compliance Calendar.

Background

Beginning in 2011, the Savannah River Site's environmental regulatory milestones were tracked in an Excel spreadsheet (Regulatory Commitment Action Tracking System [RCATS]) that was accessible only to managers, Subject Matter Expert (SME) leads, and the system administrator. Milestones were separated based on the responsible organization within the Environmental Compliance department, and completion dates were entered into the system by a single administrator to maintain data integrity. Over the next few years, Environmental Compliance has been managed using the following systems:

- Environmental Compliance Subject Matter Expert/Environmental Compliance Authority "Tribal knowledge"
- Regulatory Commitments Action Tracking System (RCATS) – Excel workbook

- Site Tracking, Analysis, & Reporting (STAR) – Some milestones were tracked in STAR and not RCATS, some were tracked in both.
- Environmental Requirements Database – FileMaker Database
- Regulatory Review Database – FileMaker Database
- Environmental Regulations Matrices – Excel spreadsheet for each regulation/permit
- Environmental Regulations Crosswalks – Excel spreadsheet cross-walking matrices to implementing methods (procedures, RCATS, etc.).

DISCUSSION

System Selection

In FY18, SRNS began the search for an acceptable solution to integrate the data management platforms. Several options were considered (i.e., modifying existing onsite resources, building a custom onsite solution, purchasing an off-the-shelf solution, and contracting an offsite developer to build a custom solution) that would meet the following objectives:

1. Develop a tool to unify environmental permit management and compliance, referred to as the Comprehensive Environmental Permits Linking Tool (CEPLT).
2. Develop a CEPLT for mapping Site permits to their governed locations and displaying the associated requirements at the compliance point.
3. Enable the CEPLT to be implemented Site-wide to include other Site tenants.

Following a lengthy evaluation, SRNS recommended Gensuite® to provide an off-the-shelf solution with configuration options that provide the flexibility required for the unique compliance needs of SRNS.

The three modules that were procured for use at SRS for Environmental Compliance management are described below:

Compliance Calendar - Create and track regulatory commitments (Tasks) and assign to a Responsible Person (RP). System must generate Task notifications and reminders (i.e., emails) and have summary report generation capabilities.

Permit Manager - Organize permits, regulations, and other environmental requirement documents (e.g., Consent Orders, DOE Orders, etc.) and link requirements to Compliance Calendar Tasks and/or implementing procedures.

Mapper- Provide GIS-capability for mapping Permit Manager and Compliance Calendar data to associated Site location (i.e., compliance points).

System Launch

A crucial first step in launch was developing the SRS business structure, on which all future data management operations would be based. The structure segregates Tasks and permit requirements to the correct organization and provides additional filtering functionality for status reporting.

Information security was also an important consideration because Gensuite® is a cloud-based system managed by an international company using programmers from around the globe.

Consequently, to comply with Site security requirements, Gensuite® partitioned a continental United States (CONUS)-only solution accessible only by CONUS Gensuite® employees.

SRNS required alterations to a few of the standard Gensuite® options in order to fully meet their needs. Items that Gensuite® modified for SRNS are shown below:

- **Drop-down Menus:** Various fields (e.g., task categories, media, agency type) within Permit Manager and Compliance Calendar have configurable lists. SRNS evaluated the types of permits/regulations and associated tasks that will be stored in these applications and configured the field options to align with SRNS business practices while considering future expansion to other SRS tenants.
- **Task Priority Levels:** RCATS allowed for milestones to be assigned a priority level of 1 to 3, defined as follows:
  - Priority Level 1 – Items that can result in noncompliance/notice of violation with DOE/State/Federal environmental requirements (e.g., permit requirements, outfall discharge monitoring report submittals, air emission report submittals, etc.)
  - Priority Level 2 – Items that could impact facility schedules and/or DOE performance review determinations OR items that are in support of a Priority Level 1 task but would not result in a noncompliance if not completed on time (e.g., Pre-Compliance Evaluation Inspection, validation and verification of radiological air effluent data, etc.)
  - Priority Level 3 – Tasks that have been identified as Best Management Practices or "ticklers" to provide environmental professionals a means of consolidating and tracking their commitments (e.g., Environment Compliance website updates, periodic document and training material reviews, etc.)

    The Compliance Calendar module did not contain an analogous field. Gensuite® created a custom field named 'Priority Level' to allow SRNS to capture this information. The priority level definitions utilized in RCATS were transferred to Gensuite®.
- **Mapper:** Typical use for Gensuite®'s Mapper application at other facilities centers around the health and safety arenas and provides general site information and statistics for multi- site companies. Gensuite® adapted the Mapper application for SRNS to link regulatory requirements (Permit Manager) and tasks (Compliance Calendar) to compliance points overlaid on Google Earth maps and satellite photographs. Key features included in the customization scope include:
  - Greater than 120 compliance points have been input to Mapper.
  - Identification of Compliance Points (e.g., outfalls, stacks, etc.) with flags/pin points on SRS map.
  - Flag/pin point expandable to list of Compliance Calendar Tasks and Permit Manager Requirements.
  - Color-coding on flag represents Task status (i.e., green indicates no past due tasks; red indicates an open, past due task).
  - Ability to turn Compliance Calendar flags 'on' and 'off' to prevent overcrowding from lower priority requirements (e.g., ticklers).
  - Date filter option allows User to specify date range of Tasks to be displayed on map.

System Testing/Gap Analysis

A formalized test plan was developed to assess system fulfillment of the Functional Requirements. The plan included a review of the general application, Permit Manager, and Compliance Calendar

applications. A Compliance Calendar Operational Test was conducted to confirm operating functionality under various circumstances versus the matrix evaluation, which focused on set-up and capability (i.e., did the system perform as expected given varying criteria?).

The Mapper application Functional Requirements were initially compared to Gensuite® Proof of Concept documentation. Due to customization requirements, the Mapper application required longer development and launch timelines. The functionality of the Mapper requirements was fully evaluated after the application was launched live.

Training

Gensuite® employees conducted on-site training at SRS to provide the initial users/administrators an overview of the system. These SRS employees later trained the users in the different departments and sub departments on the basic functions of the system. Additionally, Gensuite® provides training options built into the system that are available to all users, including:

- FAQs,
- Video tutorials for common application functions and questions,
- A "5-Step Guide" to Getting Started (downloadable guide),
- A "Self-Starter" Training Course (self-guided online course),
- Overviews of the applications and sample outputs.

Finally, users can request help from the SRNS Business Administrator, who can either respond to the request directly or escalate the request to Gensuite® for final resolution if further assistance is required.

Current Status and Path Forward

The Permit Manager, Compliance Calendar, and Mapper applications are active, and data input is being completed as described in the Implementation Schedule established to meet DOE-SR Performance Based Incentives (PBIs). SRNS Environmental Compliance Authorities (ECAs) and SMEs have been assigned system access levels commensurate with each individual's need to input and/or modify data (i.e., Administrators have read and write access to all tasks, individual users typically have "read only" access with the ability to close their own tasks.). Homepage information and appearance are customizable by the SRNS Administrators and can be modified as needed to broadcast announcements, notify users of any system changes/outages, etc.

As of the end of CY19, all Tasks (Priority Levels 1, 2, and 3) were transferred from RCATS to the **Compliance Calendar**, for a total of approximately 6,500 reminders in the system. Peer reviews by the SME and/or ECA ensured data transfer is accurate and complete. It is expected that by mid-2020, with the inclusion of two more site tenants, the total number of commitments being tracked will reach or exceed 7,000.

Future system upgrades available from Gensuite® include mobile inspection tools and waste tracker, as well as non-environmental applications such as lockout/tagout, incident reporting, and industrial

hygiene tracking. (Figure 2)

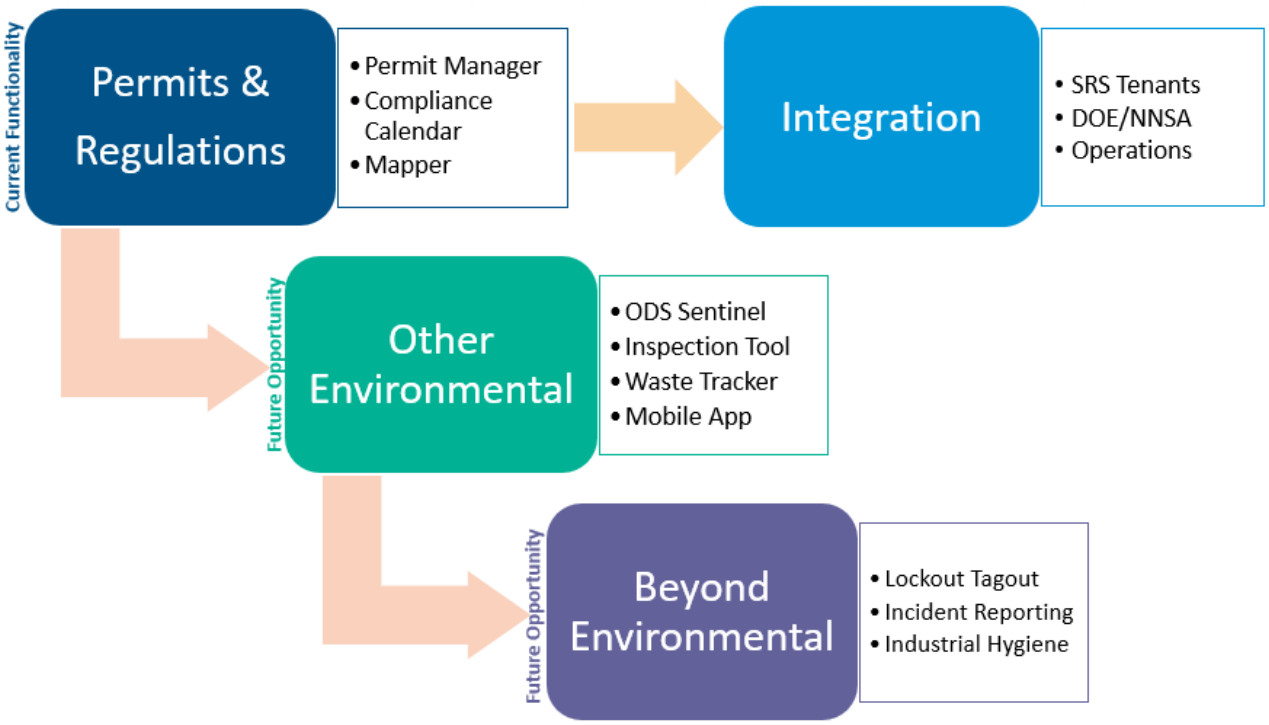

Figure 2 – Current Functionality and Future Opportunities Using Gensuite®

RESULTS

Achievements

Because SRNS previously used multiple systems managed by various personnel to manage environmental requirements, the possibility existed for important milestones and commitments to get lost in the shuffle. Implementing a CEPLT has integrated these systems, resulting in the following improvements:

- Compliance assurance - The most obvious problem addressed by using Gensuite® is the integration of all environmental requirements into a single system. Permits are linked to tasks (and vice versa), helping to ensure more robust compliance assurance.
- Notifications – Prior to the implementation of Gensuite®, the RCATS data administrator would query the system during the final week of each month to determine the milestones that were due in the upcoming month and send a mass email to the individuals with upcoming tasks. An additional query was conducted at the beginning of each month to determine if any "long lead time" tasks (items due several months away and/or that require considerably more preparation than some other tasks) needed reminders issued.

  Gensuite® uses an automatic email notification system. The administrator can customize notifications, specifying how often and when the recipient will receive notices, if the Responsible Person's manager will receive all notices or only overdue notices, and if additional individuals (such as SMEs) should also receive notices.
- Cost savings – Due to the significant consolidation of effort, both throughout the year and especially at the beginning of a new FY, implementation of Gensuite® to track environmental commitments results in a cost avoidance for the first year of implementation of approximately $80K. For subsequent years, an annual cost avoidance of approximately $117K is being realized.
- Personal accountability – Under RCATS, all data entry was performed by the data administrator. If a due date drew near, it was the administrator's responsibility to notify the person responsible for completing the task of the impending deadline. Similarly, when employees completed tasks, they notified the data administrator of the completion date to be entered.

  Gensuite® allows each person responsible for a task to have the ability (and obligation) to close it on or before the due date. If this is not done, the system notifies not only the responsible employee, but also that employee's manager of a missed deadline.
- Knowledge transfer – SRS is a 60-year old facility, and many current employees have worked at the Site for a substantial time. Such a demographic results in an increasing attrition rate. Many of the environmental professionals have a wealth of institutional knowledge about their area of expertise. Previously, only a small portion of this information was captured from year to year in RCATS.

  Gensuite® enables the person responsible for a task to add "In Progress Notes" to document situations during task completion, drop in a web link for reference, or attach a supporting document (although it is not an official document repository). Additionally, in the event of an

employee absence (extended vacation, illness, etc.), tasks can easily be reassigned, transferring notifications and the responsibility for completion to another individual and at the same time making it clear what is expected of them in their reassigned role.

- No data rollover – Not all environmental requirements have the same repetition frequency. Consequently, the RCATS data had to be reviewed by SMEs and ECAs at the end of every fiscal year to verify that the items rolled into the upcoming FY and to identify any items that needed to be added. Once all input was received, a new workbook (four sheets of commitments and two sheets of calculations) was created annually. This was not only time-consuming, but it also allowed for the possibility of requirements being missed (some items repeat only every three to five years, making the old system an unwieldy and potentially unreliable way to deal with these items).

  In Gensuite®, the task's frequency is specified upon task creation. The frequency that reminder notifications are sent to the Responsible Person is specified for each task. Additionally, several tasks have "rolling due dates," meaning the next due date is a specified time after the current completion. This is easily accommodated in Gensuite® using the "Once Only – Repeat Upon Closure" feature and specifying a repetition frequency.

Lessons Learned

During system selection, testing, launch, and training, unexpected scenarios were encountered. Some of these include:

- Review system users periodically.
- Despite extensive testing of hypothetical scenarios, unexpected issues still arose once the system went live. Thanks to an open line of communication with Gensuite® personnel, these issues were generally solved in a timely manner. However, it was discovered that using the CONUS-only solution resulted in coding problems (i.e., broken links) that could only be worked through during system launch.
- The size and scope of activities at SRS are difficult to explain on conference calls. Although Gensuite® personnel made a Site visit for employee training, it could have been helpful to have them conduct a Site visit prior to beginning system set-up to allow them to understand the specifics of the installation.

CONCLUSIONS

SRNS assessed the launch and implementation of three Gensuite® modules (Permit Manager, Compliance Calendar, and Mapper) against the following objectives:

1. Develop a tool to unify environmental permit management and compliance, hereafter referred to as the Comprehensive Environmental Permits Linking Tool (CEPLT).

   Result: *Objective achieved*. Implementation of Permit Manager and Compliance Calendar allow for easy turnover of information between changing personnel, quick access to and notification of upcoming and past due regulatory commitments, and resource planning for long lead time requirements.

2. Develop a CEPLT for mapping Site permits to their governed locations and displaying the associated requirements at the compliance point.

   Result: *Objective achieved*. Compliance points (e.g., outfalls, stacks, emission sources, etc.) are geolocated with flags in the Mapper application. New compliance points may be added as needed. Pop-up windows display associated regulatory requirements (linked to Permit Manager) and regulatory commitments (linked to Compliance Calendar). This visual representation will allow ECAs and responsible facility personnel to quickly identify compliance points in their area of responsibility.

3. Enable the CEPLT to be implemented Site-wide to include other Site tenants and management.

   Result: *Achievable and ongoing*. SRNS developed the Site Business Structure set-up to incorporate multiple site tenants. Additionally, USDOE-SR is compiling the regulatory requirements and commitments under their responsibility and can view all Site compliance points and associated requirements/commitments. Other tenants (i.e., Savannah River Tritium Enterprise) are interested in using the system for commitment tracking and are in the process of integrating their requirements into the system. Site management has been briefed on the system and looks forward to incorporating it into the tools available to them to track the health of Site systems.