Lean Government

EPA Region 7 Spill Prevention, Control, and Countermeasure Lean Mini-Kaizen Event Case Study

Summary

EPA Region 7 conducted a one-day Lean "mini-kaizen" event in January 2012 to improve the efficiency of the Spill Prevention, Control, and Countermeasure (SPCC) rule inspection and compliance process. The SPCC rule includes requirements for oil spill prevention, preparedness, and response to avoid damage to navigable waterways and shorelines. EPA inspectors in each region are required to conduct thorough and nationally consistent inspections of facilities to ensure compliance with the rule.

The event's objective was to clarify the SPCC inspection process and to improve process efficiency by eliminating non-value added steps. The team sought to accomplish this objective by clarifying staff roles, identifying unnecessary process steps, eliminating redundant work, and streamlining the entire inspection, compliance, and enforcement process through the creation of standard operating procedures (SOPs).

While most kaizen events are conducted over a four- or five-day period, the team for this event took a different approach by condensing the kaizen process into a one-day event combined with additional prep and follow-up work. Process managers and the event facilitator began creating a current state map of the existing process prior to the event, whereas most kaizen teams map out the current process during the event. This pre-work by process manager and the facilitator allowed the team to focus the event time on refining the map of the current process, identifying process changes to implement, and determining action items.

Results

Participants in the Lean event identified improvements that will increase the efficiency and consistency of the inspection process. Although the team did not quantitatively track the time saved from the project due to the compressed nature of the event, the team was able to identify several qualitative results of the event:

- **Report completion and compliance determination efficiency improvements:** Before the event, the goal of completing reports in 30 days and determining compliance in 30 days was not being met; the new process introduces efficiency improvements that moved the process closer to the 30-day target.
- **Reduced process complexity:** The new process has fewer review loops than the original process, eliminates redundant database entries (including combining three steps into one data-entry step), reduces the number of handoffs between individuals, and is defined with much greater detail.
- **Reduced resource use:** The new process requires fewer draft reports to be printed, as reports can be created and signed electronically, saving paper.
- **Improved tracking:** The team developed a checklist that will ride along with reports throughout the inspection and compliance process and that will allow the team to measure the time taken to complete the process in the future.

Scope of the Lean Project

Project Scope: The compliance inspection process, beginning with the development of a list of inspection targets for the year, the completion of on-site facility inspections, and ending with the completion and filing of a report to the compliance officer who recommends for or against an enforcement action.

Goals of the Lean Event:

The goals of the event included:

- Increase efficiency and reduce the process time by creating a well-defined, standardized approach to the inspection and compliance processes.
- Reduce the number of days an inspection report is in review prior to the creation of a compliance determination.
- Reduce the number of days a file is in the compliance/enforcement process before the facility is brought back into compliance.
- Clarify and refine staff roles and responsibilities to increase effectiveness of staff.
- Reduce the frequency of database entry by collecting information on the number of inspections completed, the number of facilities out of compliance, and the number of facilities brought back into compliance.
- Streamline the inspection, compliance, and enforcement process, and then document the process steps in a standardized operating procedure (SOP).

Process Changes and Improvements

Before the kaizen event, process managers and the event facilitator began creating a current state map; managers documented the steps in the process in writing, and then the facilitator took those steps and created a process-flow map to display on the wall. During the event, team participants were then able to clarify the steps in the current process, identify ways to improve efficiency, and document those improvements in SOPs. The changes that the team identified include the following:

- The team reduced the number of review loops that an inspector must perform. In the future state process, the inspection team leaders will not perform repeated review loops of inspection reports, with one exception for new inspectors (i.e., inspectors in training) who will still perform the repeated loops. (Since the event, the Branch has specifically defined the process for inspectors in training; it includes reviewing reports, discussion of completeness and accuracy, and feedback loops. This additional feedback in the beginning for new inspectors allows for more consistency and accuracy in the process, as well as additional training.)
- The team also identified and eliminated rework when multiple individuals make separate entries into the database, and then combined three data-entry steps into one.
- The Storage Tank and Oil Pollution (STOP) Branch online shared internal drive will be reorganized and cleaned up, and tracking and targeting databases will be moved to the STOP database.
- The team developed a checklist that will ride with the report file through the inspection and compliance processes; staff can use the checklist as a guide through the new process, and use it to record the time taken by each step to analyze progress in the future.

Figure 1: "Current State" Process Map (Developed Prior to the Event)

Implementation

During the event, the team identified ten steps to implement the improvements identified during the event. One person was assigned as the point person for all follow-up items, so that simplified assignments. The action items were:

1. Identify and clarify roles for all participants in the process to ensure understanding of who is responsible for each step in the new process.
2. Review the draft SPCC standard operating procedure that the team created during the event for any necessary changes and additions in order to ensure that the SOP reflects the new process.
3. Review the STOP shared internal drive and its SPCC files for usability and structure.
4. Combine the SPCC tracking and target databases and Excel files into the STOP database to remove and/or replace Excel files.
5. Review the data-entry requirements of the headquarters oil database to determine what compliance and enforcement information is required and when the information should be entered).
6. The branch database managers for the HQ Oil Database, STOP database, and ICIS Database will provide a demonstration of their respective databases to their colleagues to ensure awareness and understanding among staff.
7. Determine whether the STOP database has a field for entry of the date a facility came into compliance. If this is not currently a field, determine whether such a field could be added to the STOP database.
8. Develop a checklist or other visual control of the new process flow and make it available to staff.
9. Conduct a follow-up discussion with all participants to review the new process flow and discuss implementation of the new process. The group will create a plan to ensure that the process is followed on a day-to-day basis.
10. Conduct follow-up discussions with all participants at periodic intervals (30, 60, 90, 180, and 360-day follow-up meetings) to review success and challenges in implementation of the new process.

As of August 2012, all of the 10 items above have been completed. Region 7 has implemented the new SPCC process, and the Branch planned to reconvene at a regular Branch meeting to review the implementation activities and results. In the future, the team will analyze and work to improve the efficiency of the SPCC compliance and enforcement process, as well as the entire underground storage tank (UST) process, including inspections, compliance, and enforcement. In the long term, Region 7 would like to conduct a Lean kaizen exercise on the UST process as well, given that the UST and SPCC staff work in the same branch.

Lessons Learned

As a mini-kaizen event, this Lean project represented a different approach to process-improvement efforts. Holding the event in just one day required the facilitator and process managers to think creatively to enable the event team to succeed in accomplishing everything in the allotted time. The Lean event facilitator and other participants in the event shared the following lessons learned from the event.

Advantages/Benefits

- Using internal facilitation saved resources that would have been necessary to hire an external contractor, which helped enable the event to take place and helped the Region enhance its internal capacity to support process-improvement efforts.
- Internal Lean facilitators allow Lean events to be conducted faster and more cheaply. They are also more knowledgeable about the culture and environment in the agency, so can adapt the Lean tools to fit the particular needs of the team.
- Conducting a mini-kaizen event instead of a full event (e.g., 4-5 days) enabled the team to improve the efficiency of the process without needing to dedicate the staff time and resources that would be needed for a longer event. (As with any Lean event, this event also requires continued staff involvement to ensure success during implementation.)

Success Strategies and Tactics

- A helpful strategy that the process managers and the facilitator adopted was to meet prior to the event to document the process and create a process map. This step allowed the team to efficiently use its time to improve the process during the event.
- Another tactic that leaders adopted to cope with the condensed schedule was to assign extra pre-work to team members, requiring that they come to the event prepared with a list of suggestions to improve the process. This pre-work by team leaders and by team participants is a recommended good practice for effectively running events on a condensed schedule.
- Conducting pre-work to outline and develop a map of the "current state" (including an advance half-day meeting) was very helpful in enabling the event to take place in a reduced time frame. Due to the pre-work, the team was able to limit the scope of the one-day event to focus on analysis and creation of the "future state" of the process that could be used for immediate implementation. The scope of the event was sufficiently limited to allow the team to successfully review and discuss the current process, design a new process, and develop a list of follow-up actions in one day. (However, despite the limited scope, some of the event goals, such as role clarification, were not completed during the event and have been addressed through follow-up work instead.)
- Along with the pre-work, Branch team members conducted considerable follow-up on the action items identified during the event. This follow-up work on implementation action items, along with the completed future state process map, was essential for making the new process a reality and helping the Branch achieve its performance gains.
- Since the project team was small and consisted entirely of staff from within the Branch, the team was able to work quickly and accomplish a good deal in a short amount of time. UST staff in the Branch attended along with SPCC staff, and they offered ideas based on their experience with a similar inspections and enforcement process. (Many Lean events also involve outside perspectives, such as stakeholders or customers, who bring new ideas and help question why processes work as they do, although this would have increased the team size.)

Tradeoffs and Lessons

- Some, but not all, Lean activities are accomplishable with a mini-kaizen event. To be successful, a mini-kaizen event requires management and facilitator knowledge of the process at hand to know what is doable in a limited timeframe, as well as experience with Lean tools and techniques to accomplish the goals in the given timeframe.
- Opting for a mini-kaizen event requires that more pre- and post-event activities will need be completed by the team. The team for this SPCC event and its management was fully supportive of the process improvement ideas, and this was key to the overall success of the event and the follow-up work.
- Even given the pre-work, participants were unable to measure the time saved at each step of the process, and therefore lack some quantitative metrics to measure the success of the event and its implementation. Following the event, the team did develop detailed qualitative metrics to evaluate implementation of the newly defined process going forward.
- The event lacked time to develop and give a report-out presentation, as usually happens during Lean events, so there wasn't communication of the results from the event at that time. However, the team reported to senior management about the efforts and results following the event.
- Based on the experience of this event, it may be advisable to allow a minimum of three days for successful events. Future short kaizen events would benefit from allowing sufficient time for implementation planning and recording the expected results from the event.

For More Information:

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United States Environmental Protection Agency
Office of Policy (1807T)
October 2012
EPA-100-F-12-003