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SHORT LINE SAFETY INSTITUTE: EARLY OUTCOMES AFTER A SAFETY CULTURE ASSESSMENT

SUMMARY

The Short Line Safety Institute (SLSI) began in 2014 as a pilot project supported by the Federal Railroad Administration (FRA) Office of Research, Development and Technology (RD&T).

In 2016, as a newly incorporated nonprofit organization, SLSI began the industry-wide implementation of its Safety Culture Assessments (SCA), a diagnostic appraisal of the safety culture at a participating railroad at a specific point in time. The original conception of the SLSI SCA model included post-Assessment processes; those aspects were developed in 2018.

Post-Assessment actions are an integral part of fostering a stronger safety culture in the short line and regional railroad industry. In support of SLSI's mission, such actions provide mechanisms for understanding the extent to which an assessed railroad made changes based on the SCA process.

The research reported here, conducted by the U.S. Department of Transportation (DOT) Volpe Center (Volpe), provides insight into (a) what changes assessed railroads have implemented based on their SCA, and (b) what further technical assistance those railroads may need to strengthen their safety culture.

Participating railroads reported the following changes that created or improved indicators of a strong safety culture: safety committees, safety action plans, job-safety briefing protocols, and other safety communications with employees.

Technical assistance needs included: ready-to-use resources for craft employees (e.g., safety tips or one-page briefs), training opportunities (e.g., hazmat or management leadership training), and reports to the industry on the status of safety culture in the industry based on SLSI work thus far.

BACKGROUND

FRA RD&T has been a collaborating supporter of the SLSI's development and vision to build a stronger, sustainable safety culture on short line and regional railroads. The concept for the SLSI emerged from the American Short Line and Regional Railroad Association's formal response to the 2013 Lac Megantic incident.

Since the Pilot Project (2014–2015), SLSI has been conducting voluntary, non-punitive, confidential assessments of the safety culture at participating short line and regional railroads (i.e., Class II and Class III railroads). The industry consists of 603 short lines and regionals with approximately 18,000 employees, serves nearly 10,000 customers, and represents 29 percent of U.S. freight rail track across 49 states.

SLSI defines *safety culture* as "the shared values, actions, and behaviors that demonstrate a commitment to safety *over* competing goals and demands," language derived from the DOT Safety Council safety culture definition (FRA, 2017). The SLSI SCA process uses the most

robust model in the U.S. rail industry, based on a review of published literature (FRA, 2019).

The SCA model uses teams of paired Assessors and a multi-method, data-focused, site-customized, in-depth process that involves a survey, observation, interview, and document inventory. An FRA Technical Report, "Ten Core Elements of a Strong Safety Culture" (FRA, 2017), serves as the theoretical framework to operationalize the SLSI definition of safety culture.

At the end of a typical 5- to 8-day onsite portion of the SCA (more or less time, depending on the specific site), the railroad receives a final report presenting the findings in relation to the "Ten Core Elements" report. Findings reveal the strengths and gaps in the railroad's safety culture. The SCA report includes an Opportunities for Improvement section—suggested changes that, if implemented, may strengthen the railroad's safety culture.

SLSI has applied its SCA model to more than 70 Class II and Class III railroads that employ approximately 6,300 employees.

OBJECTIVES

Since 2014, FRA RD&T and SLSI have commissioned Volpe to conduct an independent, third-party program evaluation to inform the SLSI's research-based practices and to improve its ongoing program development efforts.

Volpe conducted a follow-up review with assessed railroads to understand the extent to which and ways those railroads had implemented changes based on an SCA conducted in 2016 or 2017 (i.e., after the Pilot Project and before any formal SLSI follow-up activities).

Volpe also engaged with railroads to determine which types of technical assistance SLSI could provide to support the railroads in strengthening their safety culture. The following evaluation questions guided Volpe's activities:

- *To what extent has the safety culture changed at assessed railroads since participating in a SCA?*
- *In what ways have the railroads changed their safety practices in effort to strengthen their safety culture since participating in a SCA?*
- *In what ways should the SLSI design and implement a Post-Assessment Follow-up Process to understand and assist in safety culture change at assessed railroads?*

METHODS

Volpe's review involved a scan of all feedback documents collected from the assessed railroads and conducted individual or paired, semi-structured discussions with a sample of their representatives (i.e., SCA point-of-contact and/or a senior leader).

Three key criteria framed the sample of 27 railroads: (a) 2016–2017 assessed railroad, (b) no prior formal SLSI follow-up contact, and (c) complete contact information provided by SLSI. All known contacts were invited and reminded to participate; 24 representatives from 17 railroads across 14 States participated during the allotted one-month period.

In December 2018, Volpe conducted 30- to 45-minute telephone discussions with participants. Participants represented positions such as presidents, general managers, vice presidents of operations, and safety managers from large to small railroads. Thematic analysis of the discussions took place in early 2019. The results herein are reported at the railroad level.

RESULTS

Participating railroads reported making a change or taking multiple actions, based on their SCA, that created or improved the following indicators of a strong safety culture:

- Safety committee (29 percent)
- Safety action plan (35 percent)
- Job safety briefing protocol (47 percent)
- Other safety communications with field employees (53 percent)

Other changes of note included safety personnel changes, prioritizing safety *over* competing demands in decision-making, creating a safety slogan, and developing incident tracking systems.

Regarding potential SLSI technical assistance, participants discussed the following needs:

- Ready-to-use resources (e.g., safety tips or one-page postings)
- Training opportunities (e.g., hazmat or management leadership training)
- Reports on the status of safety culture in the industry based on the SLSI's work thus far

Railroads positively responded to the idea of an SLSI post-SCA process. Most (77 percent) expressed value in potential activities, ranging from an Assessor check-in call after a month, offering technical assistance support in implementing safety culture changes, to a follow-up SCA after 2 years to gauge a railroad's safety culture change since its first SCA.

Across documents and discussions, most railroads expressed appreciation for the SCA process and described a high level of respect for the Assessors' extensive railroad experience, knowledge, and communication skills. Some recommended adding Assessors with experience beyond train and engine (T&E), particularly mechanical and track. Most noted that the SCA was well-organized, on-time as scheduled, and posed little strain on daily operations. These accolades reinforce the intentional SCA design elements and Assessor training areas as implemented by SLSI.

A few railroads expressed negative perceptions of the SCA process, stating that an inadequate number of field observations were conducted. Respondents emphasized that field observations are critical to a thorough SCA.

Also, some railroads saw the SCA as more oriented to T&E operations because other crafts, including mechanical, track, or yardmaster, seemed under-sampled in the interviews. Thus, they believed that the SCA did not validly represent the strength of the safety culture at their railroad in relation to their craft.

Many railroads indicated they had communicated either the whole SCA Report or selections from it during safety meetings, on-shift briefings, crew-room postings, and one-on-one meetings.

A railroad that shares its SCA Report demonstrates a preliminary positive outcome for the SLSI's aim to strengthen the safety culture at assessed railroads. Such railroad leadership actions reflect the "Ten Core Elements," particularly its emphasis on communication and mutual trust.

Those railroads that had communicated their SCA Report to some degree described receiving positive employee responses, affirming that management was taking steps to address their safety culture. This is also a positive outcome for the SLSI because throughout an SCA, Assessors encourage railroads to include employees in pre-, on-site, and post-assessment activities.

CONCLUSIONS

Post-SCA actions described in documents and/or in discussions are evidence of preliminary safety culture change indicators at railroads assessed in 2016-2017.

Railroads described the SCA process as highly valuable, and subsequently, almost all took actions to strengthen safety culture based on their SCA Report.

Almost all railroads indicated openness to and welcoming of an SLSI Assessor following up with a telephone call within a couple months, and many were interested in a full follow-up SCA after a couple years to document their safety culture change over time.

FUTURE ACTION

SLSI is maintaining its focus on continuous improvement through independent, third-party program evaluation.

Future program evaluation work will continue to examine the fidelity of the SCA model when implemented in the field.

The other results in this report will be used to inform SLSI's development of follow-up and technical assistance activities for assessed railroads and other educational efforts for the short line and regional railroad industry at-large.

REFERENCES

Federal Railroad Administration. (2019). Short Line Safety Institute: The Most Robust Model for Assessing Safety Culture in the U.S. Railroad Industry [RR 19-15]. Washington, DC: U.S. Department of Transportation.

Federal Railroad Administration. (2017). Safety Culture: A Significant Influence on Safety in Transportation [DOT/FRA/ORD-17/09]. Washington, DC: U.S. Department of Transportation.

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