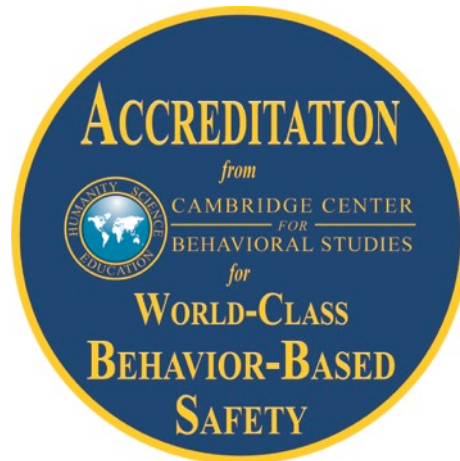


**Cambridge Center for Behavioral Studies
Behavioral Safety Accreditation
Application Review**

Program: Eastman Chemical
Acetate Fibers Division
Behavioral Safety Program

Date of Review: June 15, 2015

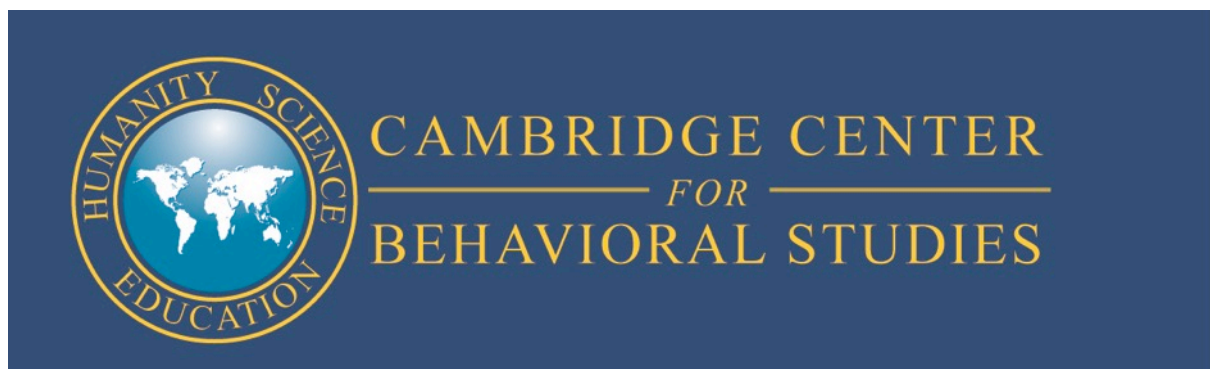


**Behavioral Safety Accreditation Commission
Cambridge Center for Behavioral Studies
P.O. Box 7067
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Reviewers: Timothy D. Ludwig, Ph.D. (Review Chairperson)

Angela Lebbon, Ph.D.

**Commission on Behavioral Safety Accreditation,
Cambridge Center for Behavioral Studies (CCBS)**



OVERVIEW

In 2003, Eastman Chemical's Acetate Fibers Division (AFD) was the first to apply for CCBS' Accreditation of its behavioral safety programming. Dr. Dwight Harshbarger and Dr. Bill Hopkins conducted a site visit. In 2004, Eastman Chemical was awarded Accreditation. In 2006 and 2009, Acetate Fibers was Re-Accredited by the Commission after documenting sustained excellence in updated applications and further site reviews. In May 2015, Eastman Chemical AFD submitted an application for Re-Accreditation after an interval of 5 years. This report reviews Eastman AFD's behavioral safety program in its present form and presents the decision of the Commission.

The Cambridge Center for Behavioral studies has, since 2003, been proud to publicly recognize Eastman Chemical, Acetate Fibers Divisions (AFD) as a best-in-practice application of behavioral science for injury prevention. During the Re-Accreditation process reviewers noted that AFD had maintained excellence in their behavioral safety program even with the retirement of key personnel responsible for the growth and success of the original program. Reviewers gained further insight into the strengths that make AFD's behavioral safety program world-class and worthy of Accreditation. Specific evidence of strengths from the current review includes the following.

Strengths:

- Eastman AFD's historical sustained OSHA recordable injury rate below 0.8 for over 15 years (except for 2007 @ 1.23) corresponding to various manifestations of behavioral safety programs starting when injury rates were over 7.5. Further evidence of excellence is suggested by injury rates below 0.2 over the past three years (0.0 in 2014).
- Eastman AFD's Crew Team Scorecard consisting of behavioral safety process indicators is a weighted set of 21 measures scoring the quality of observations submitted and participation in other parts of AFD's safety management systems. Crew teams work toward attaining 6-month goals and nominal awards (e.g., 1hr off with pay or a lunch). Scorecards seem to be reinforcing high rates of observation of around 4000 per year, near miss reporting of around 400 incidents per year, and identification of at-risk behaviors around 1200 per year.
- Around the Re-Accreditation in 2009, three key individuals, who were responsible for the implementation and growth of AFD's behavioral safety program, retired. Re-Accreditation reviews from then expressed the concern that AFD needed a "bench" to replace these champions. In the intervening years since, upper level leadership transitioned and shifted focus to production-related initiatives and joint ventures. Regardless, the experienced workforce, crew teams, and departmental safety professionals maintained the program's integrity and impact. Since then the Division has assigned a new AFD behavioral safety manager, who has been implementing an action plan to enhance the program.
- A strength noted in the 2009 review was a new mentoring program that shaped new hires in the safe execution of their job tasks and identification of hazards in the workplace. Mentoring was critical due to the aging workforce in AFD and the resulting turnover expected. Providing new hires opportunities to practice observations and feedback and enter observations in the Events Log database has enhanced this mentoring program. The mentoring program has a 1-yr probation period

wherein conducting safety observations is part of the learning process and is “technically mandatory but interpreted as needed” during this period. AFD has adopted a delayed training program for new hires to ensure training in behavioral safety is not conducted simultaneously with the dense onboarding training. That is, the first 5-6 weeks upon hire is hands-on training on machine operations and safety as needed between mentor and new hire, then the formally safety training process begins. Additionally, a new training system has targeted onboarding new managers and technical staff through instruction and interactions of crew teams to shadow the behavioral safety process.

- AFD has successfully migrated to a voluntary observation system from the mandatory system of the past. Their new strategy is to use the Crew Team Scorecards to provide managers the data to encourage observations. In turn, operators have continued a high participation rate even though they indicate they do not feel pressure to turn in observations. This is a testament to the relative ease of turning in observations. AFD removed the mandatory two observations per month per person because they noticed a heavy focus on discussing the frequency of the observations, instead of discussing quality of observations, and safety in general. Management believed it was not in the best interest of safety to repeatedly discuss obtaining these minimum observations, nor the time it took to follow up with each employee. It was estimated by employees and management that a high percentage of employees were conducting at least one observation per month; the percentage of employees differed based on division and were estimated to range between 50% - 70%.

- The infrastructure supporting AFD’s behavioral safety program ensures that data from observations are reviewed and acted upon. As a starting point workers intervene with peers when giving feedback on the spot, then crew teams review observation data and act on behavioral issues. Larger issues (typically around hazardous conditions) get escalated to the Health and Safety Leadership team who then can escalate even larger issues to corporate teams. An Event Tracker log follows actions coming out of observations and other safety management systems making them visible to all involved. This infrastructure and associated processes assures that mitigation actions are acted upon so employees can recognize their role in making the workplace and its people safer through their active engagement.

- AFD encourages the engagement of its workers in Task Safety Audits and in investigating critical near misses resulting in high rates of participation and actionable mitigation interventions. Targets for Task Safety Audits come from observational data to gain a clearer understanding of the behaviors and context surrounding potential risk. Using near miss and observational data to direct other safety management system activities strengthens the engagement in and impact of the behavioral safety program. Management views reporting and discussing near-misses as a “gift” while employees view it as “positive because they are able to protect and/or save a life”. According to employee interviews, near-misses are not viewed as embarrassing or incompetence of the employees.

- The safety culture at AFD is strong as exemplified in consistent and positive comments generated from its workforce. It is evident to the reviewers that the workforce feels ownership over the behavioral safety process and are engaged with the safety process/discussions on conditions and behaviors that need improvement. Workers are actively giving each other safety-related feedback informally (without logging the observation/feedback in Event Tracker) in addition to entering observations. Most importantly, workers describe an atmosphere of caring for one another. Furthermore, employees communicated that the response of management to condition-concerns has been fast and consistent, so much so that they are running out of conditions to fix and their primary focus is starting to shift to the behaviors.

The leadership meeting revealed that they support the safety process through the follow steps:

- 1) recognition of employee successes
- 2) coaching from the top-down
- 3) communication of leadership safety expectations
- 4) training all new managers on the BBS process and its components
- 5) transparent safety communication – management uses a hierarchy of risk-to-cost when making safety-related decisions; this risk-to-cost is communicated with employees so it is clear why management is immediately responding to some safety suggestions, while waiting to address other suggestions.

The Commission on Behavioral Safety Accreditation recognizes that its Accredited companies are leaders in the application of behavioral science in industry. These companies are in an excellent position to enhance our understanding of applied behavioral science while innovating new tools and processes within behavioral safety. Therefore, the Commission challenges its Accredited companies with recommendations with the aim of fostering evidence-based practices in behavioral safety.

WEBSITE NOTE: Specific Recommendations made to this Accredited Behavioral Safety program have been removed from the website version of this review.

Accreditation Decision

The Cambridge Center for Behavioral Studies' Commission on Behavioral Safety Accreditation considered Eastman Chemical AFD's application for Re-Accreditation and accompanying review. Based on data reflecting the exemplary safety performance of the company, and supported by observations during our visit to sample projects, Dr. Ludwig and Dr. Lebbon made a recommendation to the Commission that Eastman Chemical AFD be Re-Accredited for a period of three years. This recommendation was (approved on July 8, 2015; unanimous).

The Cambridge Center for Behavioral Studies Accredits Eastman Chemical Acetate Fibers Division's Behavioral Safety program for three years (July 2015 – June 2018).



CCBS 2015 Eastman AFD Review

SAMPLING METHODOLOGY OF AFD's BEHAVIORAL SAFETY PROGRAM REVIEW

Eastman Chemical Acetate Fibers Division produces fiber grade cellulose acetate, acetate tow, and acetate yard. Its workforce of approximately 500 people work at the Eastman Chemical Company site in Kingsport, TN working around chemical and textile operations.

The Re-Accreditation review team worked with the AFD Behavioral Safety team in an attempt to sample multiple facets of their safety programs to evaluate the behavioral integrity and ongoing impact of their Behavioral Safety program on the reduction of injuries. This was accomplished through a variety of means: a) written application for Re-Accreditation, b) data review, c) interviews with accountable parties, and d) witnessing processes in action.

The Application for Re-Accreditation was submitted to the CCBS in May 2015, reviewing changes to AFD since the initial Accreditation and enhancements to its behavioral safety program. This application also updated safety performance data and provided examples of more recent behavioral safety implementations.

The following table outlines the review itinerary. This itinerary allowed the reviewers to interview stakeholders including leaders, safety coordinators, and employees. In an attempt to review a representative sample of employees reviewers were given a census sheet of employees on-site during the review. Reviewers then randomly chose 15 employees from the list for interviews. Additionally, reviewers were given a tour of the facilities where they randomly pulled aside employees in the plant to ask them questions about AFD's behavioral safety program and have them demonstrate the process.

Review Itinerary

Monday, June 12th, 2015

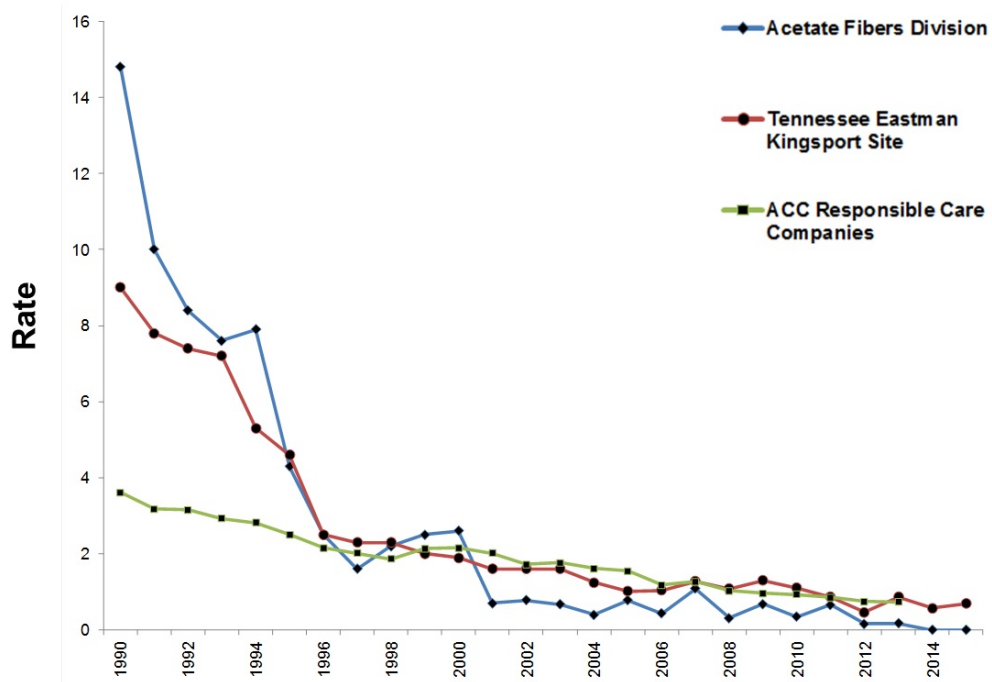
8:00 am	Meet with Coordinator Team and Breakfast
9:30 am	Meet with PBBS Employee Team
10:30 am	Break
10:45 am	Focus Groups (2)
11:45 am	Break
12:00 pm	Meet with Top Leadership and Lunch
1:00 pm	Acetate Fibers tour (to include interviews with employees)
3:30 pm	Note Gathering Time
4:00 pm	Close out session for Preliminary Results

BEHAVIORAL SAFETY REVIEW AND RECOMMENDATIONS

Safety Performance

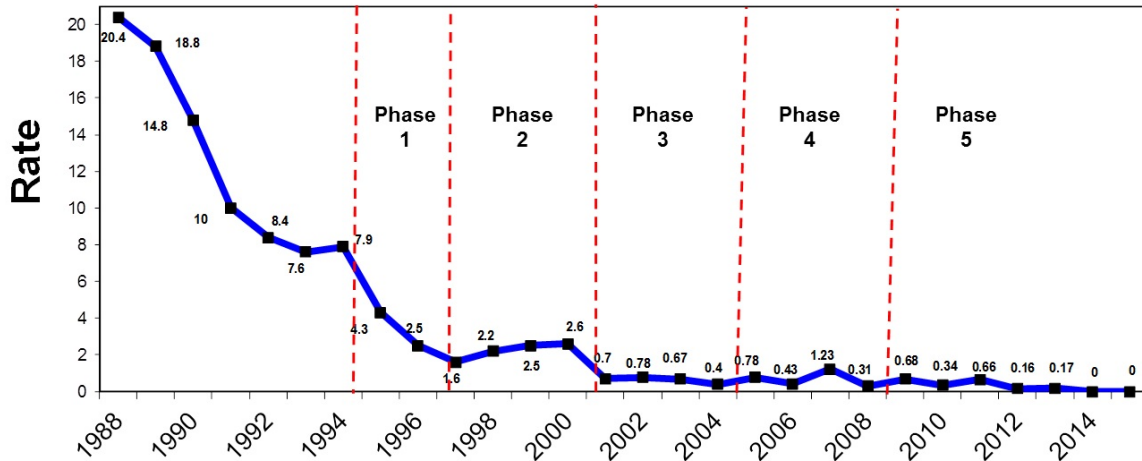
Eastman AFD's historically sustained an OSHA recordable injury rate below 0.8 for over 15 years (except for 2007 @ 1.23) corresponding to various manifestations of behavioral safety programs, which were initially conceived when injury rates were over 7.5. Further evidence of excellence is suggested by injury rates below 0.2 over the past three years (0.0 in 2014). Comparisons show an injury rate below that of company and industry standards.

OSHA Recordable Rate Comparison



Another demonstration of their safety performance over the years, which includes process changes after CCBS-S recommendations:

Acetate Fibers Division OSHA Recordable Rate



- Phase 1- Began Implementation of Initial PBBS Process
- Phase 2- Completed Implementation of Initial PBBS Process
- Phase 3- Began Division Reorganization
- Phase 4- Enhanced PBBS Accreditation
- Phase 5- Next Generation PBBS

Leadership Transition

AFD’s Accreditation lagged beyond the normal 3-year period (this Accreditation review occurred 5.5 years after the previous review in 2009) due to rapid turnover in numerous leadership positions at many levels and other onboarding initiatives. Since there was not a BBS training system in place new leaders only became aware of the BBS process through employees who communicated and championed the process. In the last couple of years, new leadership saw reversed this trend and assigned BBS training and maintenance as a job responsibility. All levels of leadership now take an active role in discussing the BBS process and safety-related issues, and are involved in learning more about BBS to better their current process. Lastly, leadership has developed BBS training as part of their on-boarding process for new leaders.

Observation and Feedback Process

AFD’s behavioral safety process generates a lot of observations and a high rate of employee participation. It is easy to use and is widely advertised. Most employees interviewed claimed that over 70% of employees participate by entering an observation. Although this claim was not confirmed by the reviewers, it implies a highly engaged workforce well practiced on a process that has been in place for over 15 years. Many describe observations as “just part of the job now”.

The design of the observation entry screen within AFD promotes a ‘one-off’ observation, where the individual sees something that concerns them and puts a single observation in the system. Although this is functional for increasing the numbers of observations due to the low response cost involved, it could be limiting the effectiveness in shaping worker behaviors and trending data for targeted intervention. Crew Teams are left with a list of multiple observations with little consistency in the information and details recorded to trend the data and make good decisions. Thus, they tend to focus their energy on individual observations instead of trends.

A challenge for AFD’s behavioral safety process is recording observations with actionable content (i.e., a “significant” observation). Currently recorded observations tend to focus more on hazardous conditions than behaviors. Similarly, most observations recorded contain only a couple words. Reviewers saw predominately “good job” feedback and “thank you” responses, which are of little prescriptive value. Employees communicated that at times they conduct observations and then log the observation at a later time, which may be a factor contributing to non-descriptive feedback.

In addition to AFD’s behavioral safety process, Eastman Chemical Company deploys Task Safety Audits, which are “targeted observations” in which a formal planned observation is conducted around a specific area of risk (e.g., housekeeping, slip, trips, and falls). Observations from AFD’s behavioral safety process, along with near miss reports and the like, can direct targeted observations in Task Safety Audits. The Task Safety Audits employ cross-functional teams that include local workers. These temporary teams view a task being performed and conduct a thorough observation of the behaviors that could potentially result in risk. Further, work crews have adopted “virtual” Task Safety Audits in which they “huddle,” review and discuss a task, and identify better ways to do the task to avoid risks.

Task Safety Audits record multiple behaviors allowing for better trending and broader feedback conversations with workers that are more likely to reinforce safe behaviors. More importantly, the observer has more time to consider risks that otherwise may not be obvious when passing by. This allow for substantially more learning and feedback opportunities. Spending more time on an observation may help the observer discover risks that have been “normalized”, those that are so common that no one considers them a risk.

The Task Safety Audits along with the AFD behavioral safety process identify around 1000 at-risk behaviors per year. For every 10 behavioral safety observations there is one Task Safety Audit. This seems to be an effective ratio; however, we encourage more Virtual TSA’s with a documentation option.

Data Analysis, Problem Solving, and Mitigation Actions

Observations, along with near miss and other reporting data, are followed up with a systematic and effective process involving different teams depending on the level of escalation. Employee Crew Teams will do the first review of the data and will act to mitigate any immediate and actionable issues they discover from the data. Crew Teams are being trained to do the “why” problem solving analysis with incoming data. Most Crew Team actions revolve around awareness activities like bringing up issues in safety meetings although they do initiate some immediate changes (e.g., move a rubber curtain creating a trip hazard) or submit work orders when necessary.

Issues that need to be escalated go to the Health and Safety Leadership Team (HSL) comprised of safety coordinators who review observation and other data weekly. Most of the actions that the HSL team deals with are hazards. Significant reports, often critical near misses or process safety issues, get elevated further to corporate teams.

This escalation process has been successful in assuring that emergent safety issues are dealt with at the right level and few, if any issues fall through the cracks. An intranet-based Event Log tracks issues and actions through this system. Any employee can go to their account and see the status of their issue. This visible action-item tracking serves a motivating function for employee reporting because they see how their participation results in positive changes.

Observations can lead to more intensive Task Safety Audits where teams gather more significant information about risks and hazards leading to more effective actions.

Process Participation and Feedback Scoreboards

Each Crew Team has a Scoreboard Matrix (see example below) consisting of various safety categories and corresponding point system. Scoreboards are maintained by the Team Manager and reviewed each month. Each team works toward obtaining bi-annual goals. If a team reaches 7000 points within a 6-month period, the team receives the goal they selected (either a provided lunch or 1 hr paid time off). Employees communicated that the scoreboard is used largely to track safety parts of the safety process, instead of chasing the goal for the nominal reward. It was reported that at times teams do not reach their bi-annual goals.

Management communicated these Scorecards were “driving” the safety process because employees, team managers, and safety coordinators familiar with the Scoreboard continued to refer to this measurement system even if upper management didn’t understand (because of minimal behavioral safety training) the purpose of the safety process or the scoreboard. This is critical during management transitions due to retirement and attention to other priorities.

The last couple of years involved updating the Scoreboard to include reporting and addressing near misses and safety audits. Also, some teams included off-the-job accidents and near misses on their Scoreboards to share experiences and encourage safety outside the workplace. Employees reported that these off-the-job safety discussions were beneficial and involved learning safety tips that they apply while home with family.

ACETATE Fibers Division													
CREW HSE SCOREBOARD													
Category	Points	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Scoreboard updated	35												
Plan NUT meeting	25												
# of Observations with Feedback	10												
# of Significant Observations	25												
Observation Problems Solved	100												
New ARBs identified and shared with all crews	50												

celebrating the number and types of at-risk behaviors identified both alerting workers to hazards and risk and at the same time reinforcing observation behaviors themselves.

The *Shared Stories* could be made more graphic with pictures and drawings that are more accessible to workers.

Behavioral Safety Training System

New employees receive brief training on behavioral safety upon hire, followed by hands-on training on machine operations and safety. This hands-on training occurs between a mentor and the new employee for the first 5-6 weeks. New employees are then exposed to the delayed behavioral safety training program to ensure no other training is occurring simultaneously, and that employees can focus solely on behavioral safety instead of feeling overwhelmed with the transition. Additionally, a new training system has targeted onboarding new managers and technical staff through instruction and interactions of crew teams to shadow the behavioral safety process.

Employees are trained (lecture and hands-on) to perform peer observations, which include commenting on barriers that lead to at-risk behavior. Employees receive training (through lecture) on the purpose of delivering feedback, the benefits, and tips for delivering and receiving positive and corrective feedback. Reviewers witnessed that feedback entered into Event Tracker by employees was non-descriptive (e.g., Good job – Thank you).

Employees have undergone refresher training with some very good modeling videos. The goal of this training was to increase the significance of the observation recording. However, metrics of significant observations and Operational Problem Solved have remained at “0” since the training. Structural changes to the recording screen (discussed above) may help. Also, the technique of training the crew coordinators and relying on them to teach others may have not been successful.

Process Safety

A common challenge the Cambridge Center offers its Accredited sites is to integrate behavioral safety processes and concepts into the important and growing field of process safety. While there is no formal integration of behavioral safety with process safety at this point, we recognize where behavioral science lies squarely at the heart of progress in Process Safety:

- Recognition that human behavior is an element of every process safety incident.
- The complexity of industry requires a focus on behavior beyond the operative into management, design, contracting, and other professions.
- Getting senior leaders to reinforce process safety behaviors (e.g., stop work) and managing the consequence chain by questioning and measuring the use of behavior management in process safety.
- The need for valid and viable leading indicators of process safety measures to include behavioral metrics.

Dissemination to Contractors, Joint Ventures, and Corporate Entities

Since its original accreditation, AFD has had the responsibility to demonstrate leadership in the development of strong safety cultures within Eastman Chemicals and among contractor services associated with AFD. Similarly, Eastman AFD has entered into Joint Ventures in China and Korea producing Acetate Fiber. We consider it the responsibility of each Accredited site to extend their influence outward to reduce injury beyond their shop floors.

For example, in 2015 AFD helped host a Safety Summit with Appalachian State University to promote learning in behavioral safety. Such activities should be continued and documented.

Safety Culture

Managers and employees interviewed suggest that the success of AFD's program is due to how it develops and nurtures a positive safety culture. Reviewers experienced individuals excited to talk about their safety initiatives, who took personal responsibility for its success, and felt that behavioral safety contributed to positive conversations around important issues. AFD seems to promote the active engagement of getting operative feedback instead of the typical master-servant role. Reviewers had the opportunity to confidentially speak with random employees at AFD. Reviewers came in contact with near unanimous statements relating to a positive and effective safety culture. Employees said they can report anything and they would be treated respectfully. They said on most occasions something is done immediately or a discussion is had, and when nothing is done they still feel heard. Some, but not all mentioned that they do observations and discuss their observations with fellow employees and management. All said AFD has been the best place they have worked. Reviewers had the pleasure of speaking to employees who spoke with passion about how fellow employees and management seemed to care about them personally and told us of personal stories of taking the safety lessons they learned at AFD and took them home. The quotes from these employees are too numerous for this report.