

Cambridge Center for Behavioral Studies Safety Accreditation Site Visit Report

To:

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**Marathon Petroleum Co. LLC
Illinois Refining Division
Robinson, IL**



From:

**Accreditation Commission
Cambridge Center for Behavioral Studies
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Cambridge Center for Behavioral Studies Safety Accreditation Site Visit Report

Site: Marathon Petroleum Company, Illinois Refining Division
100 Marathon Avenue
Robinson, IL 62454

Date of Visit: July 28, 2015

Reviewers: Dwight Harshbarger, PhD (Chairperson of Team) & Don Kernan
Commission on Behavioral Safety, Cambridge Center for Behavioral
Studies

Overview: Mistras Solutions, along with Marathon Petroleum Company, Illinois Refining Division, (hereafter IRD) uses a behavioral safety process as part of a comprehensive safety program at the Robinson IL refinery. The Marathon IRD workforce initiated this process in 1996 and it has earned accreditation and re-accreditation by the CCBS since 2005. The IRD program also extends to multiple contractors who have adopted the PBBS process with their workforces operating in the refinery. Mistras Solutions is one of those contractors. During the week of 7/27/15 to 8/1/15 the CCBS review team examined eleven (11) PBBS processes within the IRD. These included the Marathon refinery PBBS system and Mistras Solutions.

A critical feature of the IRD / contractors PBBS process is shared elements of the system used by all parties: all participating units seeking CCBS accreditation during this review use the same observation card format which flows into IRD reporting system. All observers are encouraged to make observations on any workers within the refinery (not just employees in their business unit), and all data stream to a central data-base allowing examination of interlocking elements of the IRD workforce and contractors. The CCBS review team interviewed managers and workers from units applying for re-accreditation or accreditation, including Mistras Solutions.

The review team critically assessed the elements of the PBBS system and its coordination during six (6) days on site. The review team scheduled focused interviews with managers of each unit's PBBS team and randomly selected workers to assess implementation of the PBBS system. The CCBS team examined outcomes achieved by each unit applying for accreditation as presented in their application to the CCBS. In many cases additional analyses were generated during the site review and these are added to the applications. Since all units' behavioral observation data are streamed through a central data-base, Tim Meier, CAP Coordinator (CAP = Contractor Advisory Panel) was present during portions of all the interviews to query the data-base and provide reports as requested by the CCBS reviewers. These queries often revealed how the various contractors, such as Mistras Solutions, and Marathon IRD personnel observed each other within the refinery operations. Thus input on each company seeking accreditation was gathered both during the focused interviews of each applicant's personnel and in the review of other applicant's observation data.

It is noteworthy that our reviews revealed the operation of the PBBS CAP (contractor advisory panel) that coordinates the PBBS program elements across 13 contractors (ten of which applied for CCBS accreditation during this review). The IRD system is essential for the continued development of the contractor workforce. Also noted was IRD's utilization of PEC Premier, a third-party safety auditor exclusive to the gas and petroleum industry. PEC reviews all current and potential contractors in order to maintain required quality standards.

Schedule of Events

Day/Date/Time	Meeting group	Location
Monday 7/27/2015 7:00 - Noon	Marathon IRD PBBS system. Interview PBBS Coordinator Eric Nickless	Safety Building Conference room
Monday 7/27/2015 1:00 - 4:30	SESCO Construction Co PBBS system. Interview PBBS Coordinator Nick Martin Safety Manager & Co-Owner Michele Brown	Safety Building Conference room
Tuesday 7/28/2015 7:00 am-Noon	Gribbins Insulation Co. PBBS system. Interview Trevor Atherton, Safety Manager	Safety Building Conference room
Tuesday 7/28/2015 1:00 - 4:30	Brand Energy & Infrastructure Services, Inc. PBBS system. Interview Aaron Ikemire, Safety Manager	Safety Building Conference room
Wednesday 7/29/2015 7:00am – Noon	SDR Coatings, Co. PBBS program. Interview Tanner Holt Safety Mgr	Safety Building Conference room
Wednesday 7/29/2015 1:00- 4:30	Freitag & Weinhardt PBBS program. Interview John Marts Safety Manager	Safety Building Conference room
Thursday 7/29/2015 7:00am – Noon	Bay Industrial Safety Services PBBS System. Interview Monica Piper, BBS Coordinator, Lisa McCord Office	Safety Building Conference room
Thursday 7/29/2015 1:00 – 4:30	Morris Construction Company PBBS System Chad Tislow Safety Manager	Safety Building Conference room
Friday 7/30/2015 7:00am – Noon	Stewart Security Patrol Inc PBBS system. Interview Debbie Parker Coordinator	Safety Building Conference room
Friday 7/30/2015 1:00 – 4:30	Mistras Inspection Company PBBS System Eric Martinovich Coordinator	Safety Building Conference room
Saturday 7am to Noon	Lytle Electric PBBS Program Eric Biernbaum Safety Manager	Safety Building Conference room

Summary

Mistras Solutions Accreditation Marathon Petroleum Company, Illinois Refinery Division

The CCBS review team assessed on-site operations to validate data and confirm that Mistras program descriptions as reported in the application are accurate. We find that the program operates as described. Further, the program meets the 3 basic criteria of the Commission on Behavioral Applications for PBBS Accreditation: 1) it is a behavioral program, 2) the PBBS program has had a visible impact on safety performance, and 3) the program has produced sustained positive performance over 3 or more years.

History: Mistras is a contractor founded in 1978 that specializes in providing non-destructive testing (NDT) services. Mistras strives to provide a positive work environment that values excellence in safety and quality. There are about 20 full time and 10 temporary employees on site at IRD. Mistras takes pride in its commitment to operating a workplace where all employees are free to raise issues, concerns and questions for the improvement of operation and the work environment.

Mistras uses ultrasonic, radiography, and other testing techniques, such as magnetic particle testing, liquid penetrant testing. Mistras Group is a leading global provider of technology-enabled asset protection solutions used to evaluate the structural integrity of critical energy, industrial and public infrastructure. These mission critical solutions enhance the ability of MISTRAS' customers to extend the useful life of their assets, increase productivity, minimize repair costs, manage risk, and avoid disasters. To access NDT work, Mistras makes extensive use of ladders, scaffolding, rope access, harnesses, and aerial lifts. Much of the work is done above ground.

In 2009, Mistras began its PBBS program, and that year Marathon Petroleum Company asked Mistras Solutions to join the Contractor Advisory Panel (CAP). Marathon handled all PBBS training, and one Mistras employee joined the CAPs group.

The PBBS training was passed on to Mistras Solutions to train employees to conduct observations and give feedback on safety performance. Mistras Solutions used the same form as Marathon, which allowed the data to be combined with that of other crafts and workgroups.

Evidence observed during the 2015 re-accreditation visit indicates that Mistras Solutions is continuing to execute the procedures described in their application for re-accreditation. Outcome data are extensive, verifiable and current and indicate a safety process that has resulted in sustained control of at risk behaviors and a low rate of incidents. The management systems (e.g., data collection, data entry, analysis, reporting) and training are responsive to the safety needs of the workforce and evidence of employee input into the system is abundant. The PBBS process is part of a comprehensive safety program that manages the safety of refinery employees and integrates well with the operations by other contractor workforces in the Robinson refinery.

The following were notable:

- Employees are familiar with the PBBS system of observation and feedback and how it is implemented and skilled in making observations while on ropes and scaffolding above ground.
- The recruitment and training systems sustain worker participation in the PBBS system as turnover occurs within the workforce.
- The PBBS operations by Mistras employees are coordinated in an effective manner via CAP.
 - Clear communications among the managers of Marathon's IRD safety program and contractors are evident as they share data and refinements during formal (BBS CAP meetings) and informal channels.
- The PBBS program is promoted among employees; there is a noticeable enthusiasm for the PBBS program, and pride in Mistras safe performance at IRD.

The PBBS program is well supported by management systems and integrated with routine and turnaround operations. The program is a coherent and coordinated effort to sustain critical safety practices across a diverse workforce. Mistras has an effective observation system tailored to track important behaviors. The system includes completed observations and timely feedback delivered to those observed; at-risk behaviors are identified and actions taken to identify barriers to safety; safe behaviors are reinforced; the data are entered in a timely way into an excellent data-base, and generate useful and timely reports; summary feedback is provided to the workforce.

The incidence rates of critical safety events indicate an effective safety system that demonstrates sustained effectiveness.

Strengths:

- Mistras Solutions uses a well-established behavioral observation protocol to monitor safety practices. Observers consistently enter their data into the IRD data-base. Observers turn in their data cards for data entry. These data provide feedback to maintain safety and as needed correct at-risk behaviors. Observations focus on important risks in the refinery environment. Evidence shows that observations and immediate feedback meetings are being conducted. There are specific measurable goals for employee participation and PBBS data are current across work units throughout IRD. Employees interviewed were knowledgeable of the observation cards.
- Observation data are examined systematically. Reports are distributed to key audiences.
- Employees interviewed were well-versed in conducting the process. Evidence of integration with other safety management systems was apparent. Training in the process is ongoing and extensive. Participation in the observation process is tracked and efforts are made to increase participation and improve the quality of

observations. We saw no evidence of incentives used in a way that might suppress reporting.

- Mistras Solutions began PBBS in 2009 and have systematically refined and extended their process. They promote safety within the larger IRD and Mistras communities and actively share and develop their PBBS process. Evidence is abundant that they demonstrate sustained commitment to maintaining the safe operation of the refinery.
- According to statements in interviews, employees offer suggestions for improvements and control of hazards during feedback interactions. These suggestions are communicated to supervisors and management for corrective action. Examination of the comments on observation forms confirmed this.
- The observation data are entered in an excellent data-base for tracking progress. Data are entered in a timely fashion enabling rapid analysis and reporting.
- The safety (PBBS) oversight procedures seem planned and routine such that follow-up actions are coordinated within and across work units.
- Mistras Solutions has a small on-site workforce that shares a strong commitment to workplace safety and the PBBS program.

Concerns:

LIFE CRITICAL SAFETY RULES

- Life Critical Safety Rules were instituted 8 years ago from a corporate initiative and focused on behaviors that could result in a fatality. We were pleased to learn that PBBS observations were exempt from the policy and moreover; today this is no longer a concern.

INCENTIVES

- In 2012 incentives appeared as a concern at IRD. In 2015 incidental prizes and/or gift cards are appropriately used as rewards for high frequency observers and excellent observations.
- Newly designed hard-hat stickers have proved to be highly desired tokens or rewards for agreeing to be observed.
- Such incentives are no longer a concern.

OBSERVATION RATES OF 'AT-RISK' BEHAVIORS

- High rates of safe performance observations continue. The program demonstrates a robust observation environment. Observation rates are high and injury rates are low.

SIGNIFICANT CHANGES SINCE 2012

- The PBBS observation checklist has been modified by IRD and all contractors in order to create more focused pinpoints. As observers discovered more potential at-risk behaviors, more detailed descriptions of safety practices have been added to the back of the card. Observation pinpoints of practices always scored as 'safe' and thus no longer needed have been retired.
- On the observation cards, one barrier was listed as "personal choice" under "causes" on the checklist. This barrier has been removed.
- Economic challenges (5% pay reduction for all contractors in 2012) have negatively impacted contractor morale.

Specific concerns for Mistras Solutions:

- **The reviewers are pleased to note that there are no specific concerns for Mistras Solutions**

General Recommendations:

- The PBBS program is a properly designed, well-run behavior-based safety system. Impressive improvements in safety behavior and corresponding decrease in injuries and illnesses are noted in comparison to pre-PBBS data. **It is highly recommended that the current operations be supported so that they continue. The Mistras Solutions PBBS processes are integrated with the Marathon Petroleum Company IRD safety program and these linkages should continue.**
- Continue employee leadership of safety teams (e.g., Area Safety Coordinators) by having them routinely summarize and report PBBS observations and comments from their work team at tool-box meetings or other on-the-job meetings. **Develop at least one front-line PBBS champion. The champion(s) would assist CAP PBBS coordinator with increasing quality observations from within the work group and present data during toolbox and safety meetings.** This will further emphasize and reinforce employee ownership of the program and will help generate higher quality (more detail and constructive suggestions) during implementation of the PBBS process.
- **Alterations to the Mistras Solutions PBBS systems (new target behaviors, extension to craft work) should continue to be done in consultation with the PBBS CAP team so that integration does not complicate existing behavioral data systems at the refinery.** Mistras Solutions employees can and do provide valuable input to the Marathon safety program and contribute in important ways to sustaining the safety of the entire Marathon IRD workforce. They serve as a source of innovation that improves the current system.
- Recognized metrics now guide the Mistras Solutions PBBS systems. These include measures of workers' implementation (% of workers trained, % of workers observing, density of observation across work hours, etc.) and effectiveness (incidence rates, counts of recommendations for improvements, etc.). **In preparation for 2018 re-**

accreditation, insure that the following data are kept on a monthly basis and are included for the years 2015-2018:

- **Incident rates: onsite TRIR and DART for contractor-IRD and BLS**
 - **Observations: percent of employees making observations, number of observations**
 - **Number of employees**
 - **At-risk behaviors: number of ARBs identified by category**
- **Use small incentive programs to encourage individuals to conduct observations. Highlight the safety improvements prompted by the observations and feedback so that workers see the utility of their observations beyond their personal behavior change.**
 - **Reduce the use of “right – wrong” terminology regarding behavioral observations, and replace those terms with “safe – unsafe” or “safe – at-risk” as used in observation forms.**
 - **The right-wrong terms are not used judgmentally; rather they refer to correct or incorrect, safe or unsafe behavior. Language is important and needs to be consistent with and grounded in a behavioral orientation.**
 - The Mistras team showed that PBBS observations may offer an additional organized method to detect variation in the refinery related to process safety management (PSM). Contractor eyes are on various features of the refinery especially during turnarounds. **We recommend consideration of adding a section to the PBBS SHORT SHOT form for employees to record any unusual variations (etc. leaks, spills, corrosion, vibration, etc.) as a way to collect such observations.** We temper this recommendation with the advice that this be done in collaboration of the BBS CAP team and the engineers responsible for PSM as the logistics for collecting and analyzing such data may complicate existent systems.

Specific Recommendations:

- Consider the development of small tokens and ways of recognizing exemplary performance in making observations and giving feedback.
- In the next round of accreditation, 2018, include the data outlined above, giving particular attention to the percent of observations that are at-risk.

Conclusion:

It was a pleasure to review the performance of the Mistras Solutions PBBS program. Our observations confirm that the programs are effectively managing critical behaviors and helping sustain the outstanding safety record of this refinery. Our recommendation to the CCBS is for accreditation of the Mistras Solutions PBBS program at the IRD site in Robinson, IL. This accreditation will be for a period of three (3) years, 2015 – 2018.

This recommendation was (approved unanimously on August 21, 2015

Respectfully Submitted,

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