

# TOLEDO Refineryline

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## Steam system improvements ongoing

Increased reliability, flexibility, generation capability on the docket

In its current configuration, the Toledo refinery relies on waste heat rather than a dedicated boiler to generate steam. This practice limits the steam system's flexibility and leaves the refinery open to steam-related process issues. While planning efforts to add a package boiler that will increase the steam system's flexibility and generation capabilities continue, TRC Operations and Maintenance recently collaborated on a significant repair at Plant 2 that has restored the system's balance and made it more efficient after months of operational challenges.

Earlier this year, a control issue that resulted in elevated steam header pressures was discovered in the 170# steam system, which runs turbines and provides heat to systems throughout the refinery. Bringing the system back under control required frequent venting of the 170# steam system to the atmosphere for pressure control purposes. This meant running the carbon monoxide

(CO) boilers at the FCC harder to overcome the pressure loss.

The root of the control issue was found to be a leaking block valve at the Plant 2 letdown station that was designed to isolate the 6" 170# line from the 450# line. This increased the pressure in the 170# line. The high-velocity flow through the leaking valve was causing significant vibration in the line, making the standard Stopple leak repair method unworkable.

"Starting in early summer, several standard approaches to reducing the line vibration were attempted without success, such as tie downs or adding weight to the line. We then installed dynamic absorbers, which reduced the resonant vibration frequencies and significantly reduced the overall vibration level," explained Reliability Superintendent **Rod Oliver**. "While the vibration level was still too high for a Stopple repair, it was reduced enough

that we were able to consider installing a Plidco Shear+Plug, which by its design and welding requirements was less susceptible to cracking during installation."

The Shear+Plug was successfully installed by TRC welders, pipefitters and boilermakers, and the leaking block valve was isolated by **(continued on page 2)**



A crew at work on the steam system at the Plant 2 letdown station



## Steam system improvements

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installing a knife gate behind the faulty valve.

"After the Shear+Plug was installed on the leaking bypass valve, the 170# steam system was returned to the operating pressures it was designed to accommodate and placed back on automatic pressure control," said 2/4/8 Operations Area Manager **Bob Kasprzak**. "This improved the steam system balance and significantly reduced the amount of steam venting to the atmosphere." These performance improvements are saving the refinery an estimated \$21,000 per day in steam generation costs.

"This was the first time that we have actually put a Plidco Shear+Plug to work at the refinery," revealed Maintenance Execution Superintendent **Kevin Peters**. "We've discussed the possibility of

doing so before, and may put one to work on one of our saturation gas machines."

According to Peters, some 300 hours of direct hands-on work went into the Shear+Plug installation.

"Solving this problem required persistence and excellent execution by TRC Maintenance & Reliability personnel," Oliver noted. "It also required the willingness of business and technical leaders in the company to utilize equipment that was new to our facility. It was a great effort all around."

The package boiler that will be introduced to the refinery next year will be placed on a concrete pad in the courtyard of the Plant 9-1 area. This site offers water treatment facilities and boiler feed water pumps, as well as an ideal location in the process to introduce steam. ■

## Safety work orders receiving top priority

### Operations, Maintenance and JHSC working together

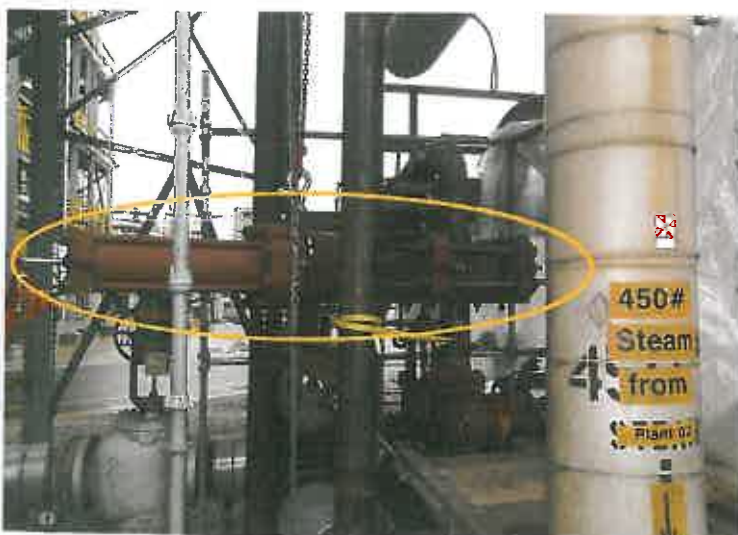
During the first several meetings of the Toledo Refining Company Joint Health & Safety Committee (JHSC) beginning in March, members identified a variety of safety issues that merited discussion and resolution. Health, Safety and Environmental Manager **Neal Sahni** noted. "I was impressed with the passion and intensity these members displayed in bringing these safety issues to the table for discussion." Sahni also serves as the co-chair of the JHSC along with Plant 3 Zone Operator **Matt Velker**.

"One significant area of concern was the contentious atmosphere surrounding the completion of safety work orders," Sahni stated. "The JHSC completed a thorough review and revitalization of the safety work orders process. This combined with the commitment of Maintenance and Operations, including the USW Safety Representatives from these areas, to identify and address issues has allowed the refinery to make significant progress in resolving lingering safety work orders."

The TRC Maintenance department endeavors to complete every work order in a safe and timely manner. In order to ensure that the refinery continues to conduct safe, reliable, environmentally friendly operations, safety work orders are fast-tracked for completion.

"We employ a structured workflow for all work orders, including safety work orders," commented Maintenance Execution Supervisor **Jeff Socie**. Socie also serves as the Maintenance management representative on the Joint Health & Safety Committee (JHSC). "Operations management follows certain guidelines when filling out a work order that includes safety considerations; safety work orders are designated as 'Priority 1 or 2' depending on the urgency of the repair."

"All safety work orders are tracked by the JHSC, and Maintenance has committed to completing them within 20 days, versus the 45-day window for standard work orders. If they aren't completed in 30 days, then we investigate," said Pipefitter **Tim Marshall**, a member of the Five-Person (continued on back)



The Plant 2 letdown station with the Plidco Shear+Plug in place