

BY STEPHANIE MARIE CHIZIK
PHOTOS COURTESY OF CONTAINMENT SPECIALTIES, INC.

What do you get when you take a major pipeline company and add in two deteriorating storage tanks and a mandatory shut-down during restoration? You get a tight deadline, a fast fix, and the need for a knowledgeable coatings contractor.

Well, that's exactly what happened when a multinational pipeline operator realized it needed to replace two tanks located at the end of a compression system. The tanks, which hold liquid wastes post-compression, including hydrogen sulfide (H₂S), were at one of the pipeline company's Texas sites. The pipeline operator had originally wanted to go with a coatings system with about an eight-hour cure time. And although that doesn't sound like such a long waiting period, the company quickly learned that it would have become a serious problem.

For this client, an eight-hour cure time meant that the coatings would be curing at night, which in Texas means dew. Moisture prohibits the coatings from curing, and that would mean everything would need to be scraped off and re-coated the following morning. Then the eight-hour cure time would start again, keeping the coatings forever failing and futile.

The 16,800-gallon (63,594.9 L) tanks and all equipment associated with the earlier stages of the process — producing wells, associated pipelines, and their compressors — would need to be shut off for the duration of the re-coating and curing. For the pipeline company, the conclusion was that an eight-hour cure time (where the coatings could never properly cure) wouldn't work. Knowing this was not a viable solution, Curtis Kennedy III of Containment Specialties, Inc. approached the company with another option.

“It's all about returning all of their wells back to production,” Kennedy said. “They can lose money doing this. If the wells aren't producing, they aren't getting paid.”



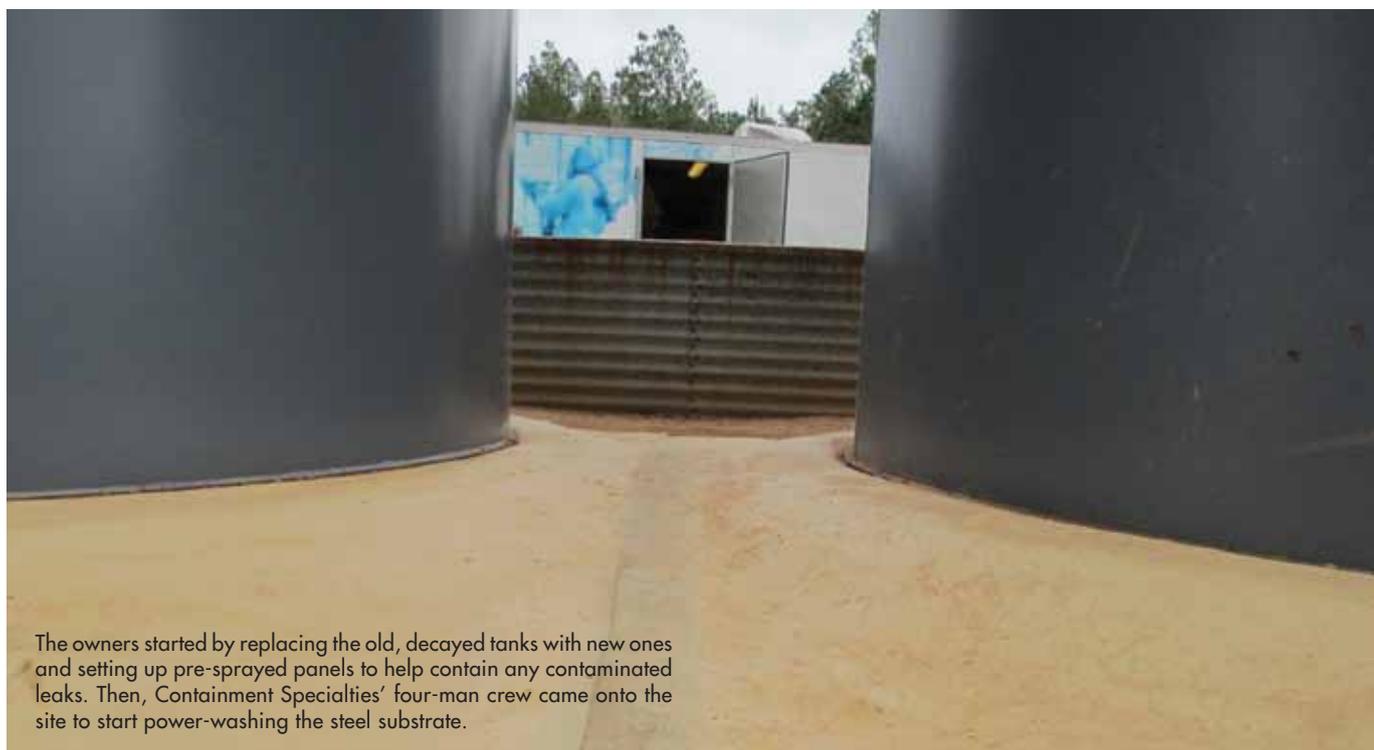


BIG CHANGES



ABOVE ▲ Containment Specialties, Inc. of Louisiana approached the owners of a multi-national pipeline operator in Texas after hearing about issues with a prolonged cure time. They knew just how to create a secondary containment on the 16,800-gallon (63,594.9-L) tanks and save the owners money.

FOR TEXAS TANKS



The owners started by replacing the old, decayed tanks with new ones and setting up pre-sprayed panels to help contain any contaminated leaks. Then, Containment Specialties' four-man crew came onto the site to start power-washing the steel substrate.

"The cure time on our product is about a 20-second gel time, and in five minutes, you can walk on it," Kennedy explained. "So we're much faster on the return to service compared to what the previous company could do for them." Their time-saving product: VersaFlex (VF) 380.

Containment Specialties, which started spraying polyurea products in 2008 in agricultural environments, recently switched over to industrial applications. But this job wasn't all about the coatings. Not only did the pipeline company's engineering department want to re-coat the corroded tanks, they also felt that the condition of the tanks was bad enough that

they needed to start over.

The job of these two 20-foot-tall (6.1 m) tanks is to collect and hold any liquids that are removed from the natural gas at the compression stations. All gas must go through a refining process where it is compressed and where liquids that include waste, such as H₂S, are removed. Although some of the discarded H₂S gas goes into the tanks to solubilize, most of it falls out of the tank and drops to a flare to be burned. Therefore, with 20 percent concentrations of H₂S in the liquid (where breathing a mere 1 percent, or over 1,000 ppm will cause instantaneous death), H₂S was a serious concern for the Containment Specialties' crew and a serious cause for corrosion on the tanks.

Since the old system didn't have a secondary containment to control any leaks, any contaminated liquid being held in the tanks (and that wasn't removed from the vacuum trucks) could have leached directly into the ground. It was obvious, then, that the pipeline company needed to replace the old, subpar system completely. Containment Specialties' solution was something much more environmentally friendly and safe.

The pipeline company started the process by removing the decaying tanks. They then installed two pre-sprayed liners supplied by Containment Specialties. The pipeline company put the liners directly on top of the bare ground and then put encasing rings on top. (The rings are used to hold pea gravel for the tanks to sit on to help them avoid sitting in water and rusting.) Finally, they placed two new tanks on top of the rings to complete the first few steps in keeping the contaminated masses from leaching into the dirt.

"We're a dealer, distributor, and installer for Sioux steel containment systems," Kennedy explained of his Louisiana-



ABOVE ▲ Because the three-foot-tall (0.9 m) steel wall surrounding the tanks was in fair condition, it did not need to be replaced during this round of rehab. The wall, which enclosed the 40'-long by 24'-wide (12.2 m by 7.3 m) area, would help to create the necessary containment.

JOB AT A GLANCE

PROJECT:

To coat the containment system around two new 16,800-gallon (63,594.9 l) tanks at a multi-national pipeline company. The contractor used VF380 to inhibit the H₂S-laden masses from leaching into the ground.

COATINGS CONTRACTOR:

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SIZE OF CONTRACTOR:

4 people

PRIME CLIENT:

Multi-national pipeline operator at a Texas location

SUBSTRATE:

Steel wall and fabric liner

CONDITION OF SUBSTRATE:

Steel wall was in fair condition; fabric liner was new

SIZE OF JOB:

1,600 sq. ft. (148.6 m²)

DURATION:

2 days

SIZE OF CREW:

4 crewmembers

UNUSUAL FACTORS/CHALLENGES:

- 20 percent concentrations of H₂S in the liquid (where breathing a mere 1 percent, or over 1,000 ppm, will cause instantaneous death)
- Needed to create a completely new containment while the refining process was shut down
- Site included three security gates

PROCESS:

- Client's mechanical crew removed old tanks, set up pre-sprayed panels, and installed new tanks
- Kennedy's crew power-washed the containment with 4,000 psi (27,579 kPa) with a zero-degree rotating nozzle to remove oxidation
- Crew removed large rocks and sloped the ground around the tank rings
- Sprayer used a Graco H25 proportioner with a 2,300 psi (15,857.9 kPa) compressor to apply one 60-mil (1,524-micron) pass of VF380 to the walls and liners

SAFETY CONSIDERATIONS:

- Kennedy held a JSA at the beginning of every day with new muster station locations
- All crewmembers wore individual H₂S monitors
- All crewmembers wore hard hats, safety glasses, and fire-retardant clothing at all times
- Anyone spraying wore a full-face respirator with organic vapor cartridges from 3M



ABOVE ▲ Once all substrates were power-washed to remove any oxidation, the crew came into work on the spray-application of the coatings. Using a Graco H25 proportioner with a 2,300 psi (15,857.9 kPa) compressor, they applied one pass of VF380 at 60 mils (1,524 microns) to the walls and liners.

based company. "There aren't many people that do the metal work and the liners. They either put the rings up or the liners." Having a turn-key company on site definitely proved helpful in the long run. It helped shorten the time needed to get the job done. And having the pipeline company do the prep work before Kennedy's four-man crew arrived on site helped lessen some of the H₂S contamination concerns...though not all.

Each crew member was H₂S certified and trained and wore individual H₂S monitors by RHI Technology Services throughout the job. Because the tanks weren't in service while the Containment Specialties' crew worked *in situ* (in position), H₂S techs weren't required on the job site. And because no gas flowed through the pipes or tanks during the job, the crew was only required to have a remote H₂S monitor. There was also no need for someone to guard



ABOVE ▲ "The cure time on our product is about a 20-second gel time, and in five minutes, you can walk on it," explained Curtis Kennedy III of Containment Specialties. That quick cure time meant that the tanks could return to service in no time at all.



To help avoid overspray, the team wrapped all valves and piping with visqueen before starting to spray. "Anything you don't want painted, you'd better cover," said Kennedy, "because that's the first place [the coating's] going to stick."

the site. The location was so secure that the crew had to go through three separate gates just to get to the tanks. What they did need, though, were daily safety meetings.

Kennedy made sure to have a job safety analysis (JSA) every day. One of the most important aspects of this meeting was to discuss where the muster stations were going to be located. The whole point of the muster stations was to get away from the H₂S

gases in case of an emergency, so the location of these stations depended on the way the wind was blowing that day. Find upwind and you'd find that day's muster station! Also, because of the flammable nature of working around natural gas and its byproducts, all crew members wore fire-retardant clothing at all times. They also wore hard hats and safety glasses, and the person spraying wore a full-face respirator with organic vapor cartridges from 3M.

Once on site, it took the coatings crew two days to complete the rest of their job. They started by pressure-washing the three-foot-tall (0.9 m) wall that was used to enclose the 40'-long by 24'-wide (12.2 m by 7.3 m) containment area. Using a washer at 4,000 pounds per square inch (psi) (27,579 kilopascals) with a zero-degree rotating nozzle, they removed any and all oxidation from the galvanized metal walls. Then they removed large rocks inside the containment and made sure the rings had a bit of a slope away from the tanks. Once everything on the ground



LEFT ◀ Working around natural gas and its by-products meant wearing fire-retardant clothing, hard hats, and safety glasses. All crew members also wore individual H₂S monitors, and the sprayer wore a full-face respirator with organic vapor cartridges from 3M.



ABOVE ▲ Since setup wasn't too involved on this site, the cleanup stage of the two-day job required basically only one step: Removing any used visqueen. Because the plural components of the coating mixed in the nozzle and not the gun, they didn't even need to clean those.

was even and the walls were clean, the crew added more liners to make a seamless containment around the tanks. The final prep step was to set up protective visqueen before spraying.

"Anything you don't want painted, you'd better cover," said Kennedy, "because that's the first place [the coating's] going to stick." To help avoid overspray, the team wrapped all valves and piping using tape to keep it in place. With the site prepared to spray, the crew headed home for a full night's rest. They knew the second and final day would be a full one.

The next morning, the Containment Specialties crew started on the process to create a monolithic containment. Using a Graco H25 proportioner that generates 2,300 psi (15,857.9 kPa) of fluid pressure, they sprayed the geotextile fabric liner with one 60-mil (1,524-micron) pass of VF380. The material, which uses a plural component, mixed in the chamber of a Fusion Air Purge .01 gun right before hitting the wall and liners.



ABOVE ▲ This job acted as a trial run for the tank owners to see how well the Containment Specialties crew and the VersaFlex products worked. If the client approves, as they expect, then the coatings company could be looking at working on all of the company's tanks.

VENDOR TEAM

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The 1600-square-foot (148.6 m²) job started and ended quickly. The coatings cured quickly, and the only cleanup required was to remove all of the visqueen from the surfaces. They didn't even need to clean their guns, since the A and B components of the coating mixed in the nozzle and not in the gun. The quick cure and cleanup proved to be crucial to the success of this pipeline company.

"It's all about returning all of their wells back to production," Kennedy said. "They can lose money doing this. If the wells aren't producing, they aren't getting paid." So the quicker the coatings crew got the tanks returned to service, the quicker the pipeline company was back to making a profit. Two weeks was too long. But two days? That's just the right amount of time to get the job done properly and get the tanks and, therefore, pipelines back in action.

Since the pipeline company is using this job as a trial run for Containment Specialties' services, if all goes well, Kennedy's crew could be looking at a much bigger project: spraying all of the company's new tanks. Although it may not have started out as a large project, Kennedy knows you have to put in time up front to see the bigger payoff in the long run. And as they say in Texas: You'd better go big or go home. **CP**