Near Miss Report
Company Contractor Damaged HP Line

Description of Incident:

While excavating approximately 10' deep to install a 20" line, a contractor working for our Company struck a 24" steel line which had 600 psig static pressure at the time of the hit. The impact resulted in a dent and scratches to the pipe which required the line to be taken out of service until the damaged section was replaced.

On this same project prior to the incident, the contractor had excavated safely near 10 different crossings that were properly marked. On each occasion, an inspector performed stand-by duties and the contractor used at least one spotter to "bar" the trench path to prevent powered excavating equipment from contacting the line. On the day of the incident, there were no temporary markings indicating the path of the line and the contractor excavated without notifying the inspector. After the incident, the operator claimed he did not know the line was there, assumed the area was clear, and excavated as if nothing was in his path.

The operator reported the incident to the inspector stating he had scratched the top of the pipe as he raked over it. Only the top 1/3 of the line was exposed, so the inspector was only able to see some scratches; not the dent. Since a corrosion technician was scheduled to be on site the following week, the inspector decided to wait to repair what he believed to be scratches to the coating. Unaware of the potential risk associated with the damaged pipe, the contractor crew completed installation of the 20" line, laying it under Line at the point it was damaged. When the corrosion tech arrived 10 days after the incident, he discovered the dent and immediately reported it to his supervisor. Engineering was notified and the ensuing inspection revealed a dent 5" x 6" long and .220 inches deep on the lower side of the pipe. This finding caused Engineering to declare an "immediate" unsafe condition and remove the line from service. The damaged section was cut out and replaced two days later.

According to Engineering calculations, the potential "impact radius" of a failure on this line was 400' which included dozens of Company and contractor employees in addition to one residence and multiple Company facilities. Both the hit that damaged the line and the subsequent failure to report it accurately in a timely manner were serious incidents.

Root Causes:

1. *Temporary markings not maintained*. The line had been marked on multiple occasions dating back to the Fall of when the same contractor exposed the line to determine depths for planning purposes. Maintaining marking stakes for extended periods of time was difficult due to the magnitude of the job and level of vehicle and equipment activity on the site.
2. *Contractor employees unaware of potential hazards*. After the incident, the operator claimed he didn't know the line was there and thought there was an inactive line in the vicinity.
3. *Contractor crew failed to notify inspector prior to excavating*. The contractor chose to excavate in an area not previously discussed with the inspector.

4. *Contractor crew failed to fully and accurately report the damage*. The operator hit Line while trenching 10' deep using a large excavator under the assumption there was nothing in his path. When the line was hit with such a strong force, the operator should have known he damaged more than just the coating. He failed to notify the inspector that there could have been more extensive damage to the lower side of the pipe.
5. *System of safety controls.* During 4 months of complex work activities with an average of 50 employees per day on the job site, there was only one minor injury that required first aid. This record was not achieved by chance, but resulted from diligent effort by Company and contractor personnel to focus attention on safety. However, despite the significant effort to promote safety on the job site, the excavation contractor chose to violate stand-by procedures, claimed to be unaware of a 600 psi transmission line on site, and failed to maintain marks indicating the location of buried facilities. They also didn't understand the importance of reporting requirements for damaged pipe or the potential consequences associated with immediate or long-term failure of a high pressure line. The pattern of deficiencies appears to indicate the system of safety controls used on the job did not adequately address some safety-related issues.

Additional Contributing Factors:

1. Multiple trenching and excavation deficiencies were observed on the job site.
2. Considering the scope and magnitude of the project, it appeared the job site may have been under-resourced in terms of inspectors.
3. Working sun-up to sun-down, 6 or 7 days a week for months at a time can lead to fatigue that affects decision-making and good judgment.
4. The inspector on the job did not attend the annual inspector school since he was assigned to a different construction project at the time.

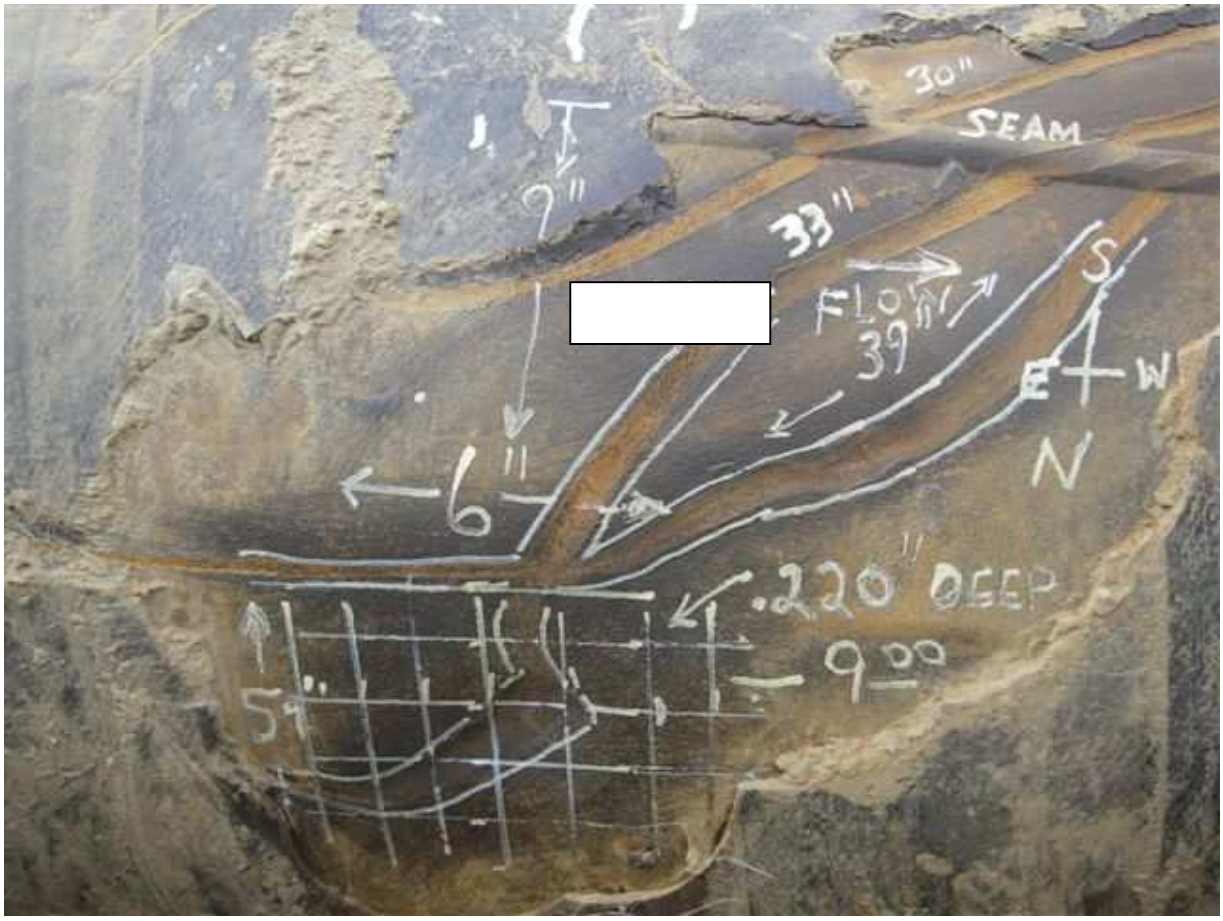
Recommended Action Items:

1. Add hazard recognition and assessment to the agenda of the daily morning planning meeting. While performing a daily walk-through of the job site at the beginning of the shift, the Project Manager and contractor supervisor should address potential hazards such as temporary markings of buried facilities, stand-by during excavations, condition of excavations that have been left open, vehicle/equipment traffic, etc. Specific action items should be assigned and clear lines of responsibility established for tasks such as maintaining temporary markings of buried facilities. Topics can be added or removed from the agenda as appropriate. To increase accountability, both a Company and contractor representative should "sign off" on a meeting summary document each day.
2. Conduct a brief, safety-related discussion with all employees at the beginning of each shift. Review potential hazards identified during the walk-through as well as incidents of injury, damage, or "near-miss" events to raise awareness and improve job site safety. High priority topics such as the location of buried high pressure facilities should be reviewed on a regular basis. Individuals who arrive after the kick-off meeting should receive a safety briefing upon arrival so they are aware of hazards that may affect them that day.

3. Incident response and reporting requirement should be reviewed with all employees. If a line is hit or other potentially hazardous situation occurs, personnel must know how to respond.
4. Operations should consider using more durable products for temporarily marking buried facilities.
5. Engineering and Operation should consider establishing procedures for responding to all metal-to-metal contacts between powered excavating equipment and our pipelines.
6. Consideration for trenching safety should be included in the design phase of projects. When soil conditions are known as well as proposed pipe depths and trench dimensions, designers should allow adequate space for benching, sloping and spoil placement to prevent potentially unsafe conditions from developing in the construction phase of the project.
7. During pre-bid and pre-construction meetings, Engineering should remind contractors they are expected to fully comply with OSHA regulations pertaining to excavation safety. Prior to bidding, contractors should be instructed to consider issues such as spoil placement, trench depth, soil classification, benching and sloping.
8. Company inspectors and supervisors should receive the full 3rd party excavation safety training as provided to other Company employees with special emphasis on deep excavations which are more common on larger pipeline jobs. Only trained individuals should inspect projects where contractors perform excavation work.
9. Engineering should ensure that inspectors who are not able to attend inspection school are provided "make-up" opportunities and understand updated procedures and training materials.
10. Management should re-evaluate allocation of construction supervisors and inspectors based on schedule demands, scope of the project, and nature of work being performed. When projects routinely require Company and contractor employees to work 12-plus hour days, 6 – 7 days per week, consideration for fatigue and other human factors should be addressed.
11. Contractor employees involved in the incident should be requalified on tasks such as excavation near a pipeline, stand-by requirements, and appropriate response to abnormal operating conditions.

Line 24", 600 psi. Damaged during construction


CAUTION : BURIED GAS LINE BELOW
Dent & Scratches


30"
SEAM
9"
33"
FLOW
39"
S
E
W
N
6"
.220" DEEP
9:00
5"