U.S. Department of Labor
MSHA
Mine Safety & Health Administration

Safety Alert

Electro-Hydraulic Lifts

Use qualified welders. Inspect welds and metal components. Train users.

Damaged or defective welds on aerial lifts have caused two fatalities in the mining industry since 2001.

- A mechanic died while being lowered in an electro-hydraulic aerial lift. A weld splice fractured on a recently repaired arm of the lift, causing the arm to strike the victim in the head (Figure 1). The weld failed because of poor weld quality from an improper repair.
- A welder died while being lowered in an electro-hydraulic aerial lift when the lift arm catastrophically fractured at a critical weld connecting the arm support to its lift cylinder (Figure 2). Undetected cracks existed in the weld and the surrounding metal prior to failure.

Figure 1: Failure of lift from improper welding

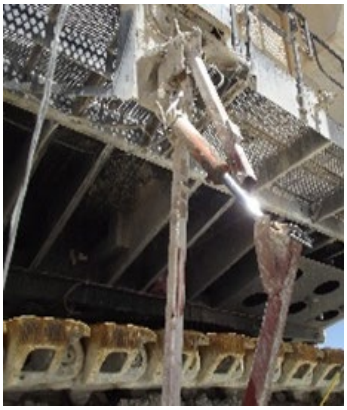

Figure 2: Failure of lift from undetected cracking

Best Practices to Prevent the Mechanical Failure of Welded Connections

Prevent accidents by following proper welding procedures and performing regular inspections for damages or defects.

- **Only qualified welders** should perform all welding.
- **Determine the service/fatigue life** of mechanical systems or parts by consulting with the manufacturer.
- **Inspect welds** following installation and repairs, and periodically during service life.
- **Train users in the proper operation of lifts** – including not exceeding their design capacity.
- **Routinely examine metal components** for signs of weakness, corrosion, fatigue cracks, bends, buckling, deflection, missing connectors, etc.
- **Use nondestructive test methods to detect cracks** that may be indistinguishable to the eye.
- **Take cracked mechanical components out of service immediately.** Small cracks can quickly grow and lead to catastrophic fracture.