SAFETY
ALERT

Measurement While Drilling (MWD) Lithium Thionyl Chloride Cell Battery Explosion ALERT 9-21

WHAT HAPPENED:

On the second attempt to lower a Measurement While Drilling (MWD) tool into the drill collar, there was an explosion. The explosion discharged a vent plug which shattered the Driller's Cabin glass, sending broken glass and chemicals into the cabin. The glass struck the Driller in the right side of the face and neck, knocking him from the Driller's podium onto the cabin floor. Multiple employees on the rig floor suffered minor injuries from the concussion and associated gas release.

CONTRIBUTING FACTORS:

1. There was an internal failure of one of the two lithium thionyl chloride cell batteries, causing it to explode.
2. While the exact cause of the explosion could not be determined, one of the below possibilities is the likely cause.
    a. The tool sustained an impact.
    b. Internal battery wiring failure. Inspections by the battery manufacturer found a defect to the internal wiring harness on batteries from the same manufacturing lot.
    c. An external electrical source.

LESSONS LEARNED:

1. Lithium batteries can present a risk of explosion.
2. Explosions of these types of batteries can happen due to several factors including but not limited to physical damage, heat, or short circuit.
3. Handling and emergency response procedures should be detailed, clear, studied and readily available to all personnel working with this equipment.
4. In the event of a compromised tool or battery, the area should be immediately evacuated, and emergency procedures should be followed.
5. To minimize the risk of injury, the absolute minimum number of personnel should be involved in handling activities.
6. Tools should be directly connected to a non-conductive material handling device.
7. Batteries should have an external wiring harness rather than an internal one.
8. Storage of these tools should be in designated area which must be a safe distance from all persons.