

Case Study

Emergency Blowout Response

APPLICATION

Emergency Blowout Response

TECHNOLOGY

Well Capping

LOCATION

Austin Chalk, TX, USA

CUSTOMER CHALLENGE

A frac stack was installed and tested prior to stage fracking operations. A single set of perforations had been stimulated. The shut-in well pressure was 9800 psi.

A BPV was set in the tubing hanger and the frac stack was tested to 12,500 psi. While pulling the BPV the well blew out at the back stem of the lower frac valve.

GUNNAR ENERGY SOLUTION

The immediate solution appeared to be to attempt to reset the BPV. The risk that the seals would be cut while setting the BPV was deemed acceptable as the BPV would restrict the flow even if the seals were cut. This was the actual case. The leak on the frac valve continued to blow.

One possible solution involved the following basic steps:

- Pump bridging material (HypoSeal) to seal the leak point
- Pull BPV
- Set plugs in the casing with wireline
- Change out the frac tree
- Remove the plugs

Pumping into the well to place the bridging material was considered difficult due to the presence of the BPV. Pulling the BPV would expose the leak to full wellbore pressure and significantly increase the flow. This could make setting the plugs with wireline difficult.

The ability for the bridging material to keep the leak sealed while rigging wireline and running plugs was unknown. If the flow resumed, personnel would be near the blowout.

Removing the leaking valve and capping the well with a new frac valve was recommended. Capping provided the following advantages:

- The shortest time required to re-establish control
- Lowest flow rate from the well due to the presence of the BPV

Safety measures were put in place for the intervention:

- The location was restricted to essential personnel.
- EMT personnel were present at the site.
- A firefighting water spread was rigged up for fire suppression.
- Two cranes were used: one to remove the leaking tree and one to cap the well with a single frac valve.
- The equipment needed for the operation was strategically placed to minimize impact from the blowout flow.

Removing the existing frac tree and capping the well took approximately one hour.

CUSTOMER VALUE

Leaking frac valves are not uncommon. Gunnar responded to this type of well control problem three times in the first half of 2020.

Different scenarios of this type of problem can be cured by different solutions. Capping and/or junk shots can be used to stop the flow. Junk shots usually require the well to be killed hydrostatically so that new valves can be installed.

If the well is static (no flow), a freeze job can be performed to act as a barrier so that competent surface pressure control equipment can be installed.

