

Sub-drill Reduction to Aid in Vibration Control



Project Summary

CURRENT PRACTICE

In July of 2016, at a granite quarry in the Southeast United States, current drill patterns were a 13x13 with 3' of sub-drill using a 5.75" blast hole. The average pounds per hole was 598. The seismograph, measuring vibration, is located within 700ft from the blast. SHA (Signature Hole Analysis) was being utilized to delay shots.

In the past, previous shots in this area (670ft) produced a PPV of 1.06 at 55.6 Htz. Knowing there were several shots left in this area to remove the bench the PPV was too high and a solution was needed to be reached to lower vibrations in the area.

Technology Applied

COMBINED APPROACH TO REDUCE VIBRATIONS

Dyno 42 was used to come up with a delay that produces the best simulated PPV and frequency. Titan XL 1000G at a final cup density of 1.10 was loaded in the blast hole along with Digishot electronic detonators. Sub-drill was reduced from 3' to 1'. The goal was to reduce the vibrations in the area.



Value Added

GREATLY REDUCED SEISMIC READINGS

Due to the change in the sub-drill and the products applied the seismic readings were greatly reduced from a 1.06 @ 55.6 htz to .57 @ 83.3 htz.

In the future, digging will be evaluated and continued sub-drill of 1' with the goal of no sub-drill.