

# State-of-the-art QC of Middle East Mega Crews

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## Abstract

Originating from the marine seismic industry, unconstrained blended vibroseis technique has been developed to increase the quality of the seismic image through higher trace densities, and thanks to blending / deblending methods, this is now achievable, for a successful implementation of this technique, it's essential to understand that the nature of the recorded seismic data has greatly changed compared to conventional seismic data:

1. Exponential increase in the seismic data volume.
2. In the recorder, seismic data has no meaning (continuous and none correlated).
3. After correlation, shot records are blended (mixed signal and noise from several consecutive source points).

The success of the blended acquisition technique relies on the success of subsequent deblending and to guarantee that, two golden rules need to be followed during the acquisition of seismic data (Tellier et.al. 2022)

Rule 1: Randomness in time and space, Rule 2: Sparseness in the frequency, wave number domain.

We will review our approach for addressing the unconstrained blended acquisition challenges and ensuring that the crews are run efficiently without compromising the seismic data quality.

### **Realtime QC in the recorder**

Online QC software, running on dedicated hardware in the recorder (HPC) is used to:

1. Continuously check the timing integrity of the recording system.
2. Quality control of and display of all vibrator attributes “including positioning”.
3. Monitor the recording parameters and SEG-D files integrity and correlate the data.
4. Realtime validation / rejection of the shot records against predefined criteria.

### **Seismic Data QC in the Camp**

Offline QC software, running in the camp is used to:

1. Correlate, chunk and condition the seismic data for QC assessment.
2. Generate and display various data QC products “e.g. mini cross-spread for geometry QC, signal and noise RMS maps etc.”
3. Link the seismic data (continuous Raw/Correlated) with shot information.
4. Process the seismic data up-to PSTM stack (TeraStack & TeraMig).