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Please fill in your manuscript title.	Remotely Managing Seismic Acquisition Attributes for High Productivity Land Surveys in Saudi Arabia	
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Abstract

Objectives/Scope:

Seismic data volumes are constantly growing in size and more data has been acquired in the past decade as the seismic industry has moved towards simultaneous shooting and finer sampling seismic acquisition. The seismic crews deploy high productivity acquisition mode in 24-hour operations, which results in more than 80,000 seismic records per day. This high data volume exceeds the capacity of traditional QC methods. To ensure high integrity of seismic data, more efficient and independent QC tools are therefore required to evaluate and validate the seismic attributes on daily basis.

Methods, Procedures, Process:

Our Remote QC approach makes use of seismic acquisition raw data files associated with each vibrator shot-point, receiver-channels, and recorders for all land seismic crews. The data is collected daily from all crews, uploaded through a satellite system and then uploaded to the Remote QC Center in the head office. The data is then processed through a set of independent, in-house developed QC tools. These tools calculate crew productivity, and source and receiver attributes. Finally, the results are analyzed by a data integrity team to monitor the quality and performance of land seismic crews.

Results, Observations, Conclusions:

The QC tools were designed to monitor the daily production target set for each crew. Moreover, the sources attributes such as harmonic distortion, phase and output force are also checked for each single vibrator against preset limits. Similarly, recorder raw files such as tilt, leakage and noise level are analyzed against contractual thresholds. Overall, the generated attributes help to measure quantitatively the crews' performance and monitor the quality of the data. More importantly, it allows early identification of equipment failure and hence enables immediate corrective action to be taken to maintain crew productivity. In addition, it helps to differentiate, investigate, and mitigate some recurring issues in operations or instruments related performance.

Novel/Additive Information:

Historically, seismic acquisition raw data files were processed and analyzed in the field by seismic contractors. In this case study, we will show how raw field datasets could be further independently processed, analyzed and validated against operators' specific technical requirements. Currently, these developed tools have an integrated database system for the purpose of comparisons across crew's performance and future research and development studies.