
Quality Control in Today's Recording Systems

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Over the last two decades the oil industry has seen a significant increase in the number of recording channels used for land 3D surveys. Not only has the lateral extent of the active recording spread increased, but the spatial sampling has also decreased, resulting in an even greater increase in the number of channels required. Modern seismic data recording systems are capable of recording many thousands of channels. To manually perform adequate quality control of the data acquisition would be extremely inefficient and, therefore, most modern systems have automated methods of testing and analysing performance. Beyond the usual instrument performance checks, quality control measurements of both the sources and the receivers can be generated and automatically logged into a database.

For example, ground viscosity and stiffness below vibrator baseplates can be estimated in addition to the measurement of ground force, phase and amplitude. Al-Ali et al, 2003 and Ley et al, 2003 have demonstrated the application of these measurements to estimate the spatial variations in near-surface velocities and hence improve the near-surface model for static corrections.

For the receivers, the quality of the sensor plants can be assessed from analysis of the measured tilt angles. This, together with the geographical coordinate information and the source quality measurements permits the calculation of the actual fold of the survey being recorded.

This paper will review improvements in quality control in modern recording systems and information that is available for use in data processing that unfortunately, in many cases, is not fully utilised.
