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(54) Title: TECHNIQUE FOR SIGNAL DETECTION USING ADAPTIVE FILTERING IN MUD PULSE TELEMETRY

(57) Abstract: A mud pulse telemetry adaptive noise canceler (ANC) is provided to provide information on down hole conditions during a Measurement-While-Drilling/Logging-While-Drilling (MWD/LWD) operation. The ANC employs two transducers, each receiving a succession of signals. A primary transducer, located down hole from both a mud pump and a desurger, receives a primary signal. A reference transducer, located near the mud pump and upstream of the desurger, receives a reference signal. The ANC linearly relates the reference signal to the primary signal by means of a recursive least squares algorithm and calculates weighting coefficients. The ANC uses the weighting coefficients to process a subsequent primary signal, thus enhancing transmission of MWD/LWD data.

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