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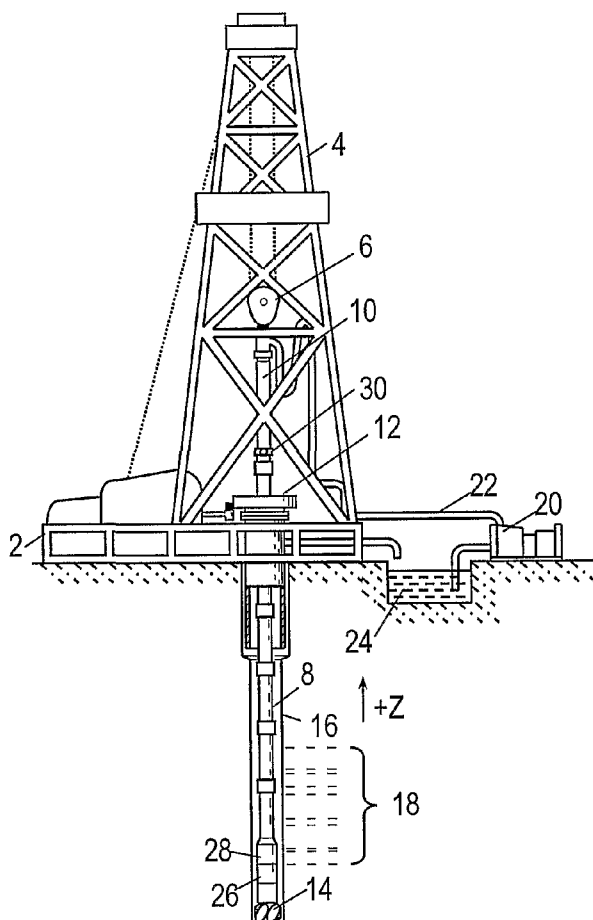
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(54) Title: WELL LOGGING WITH REDUCED USAGE OF RADIOISOTOPIC SOURCES



(57) Abstract: Logging systems and methods are disclosed to
reduce usage of radioisotopic sources. Some embodiments com-
prise collecting at least one output log of a training well bore from
measurements with a radioisotopic source; collecting at least one
input log of the training well bore from measurements by a non-
radioisotopic logging tool; training a neural network to predict
the output log from the at least one input log; collecting at least
one input log of a development well bore from measurements
by the non-radioisotopic logging tool; and processing the at least
one input log of the development well bore to synthesize at least
one output log of the development well bore. The output logs
may include formation density and neutron porosity logs.

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