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[Continued on next page]

(54) **Title:** A SIMULATION-TO-SEISMIC WORKFLOW CONSTRUED FROM CORE BASED ROCK TYPING AND ENHANCED BY ROCK REPLACEMENT MODELING

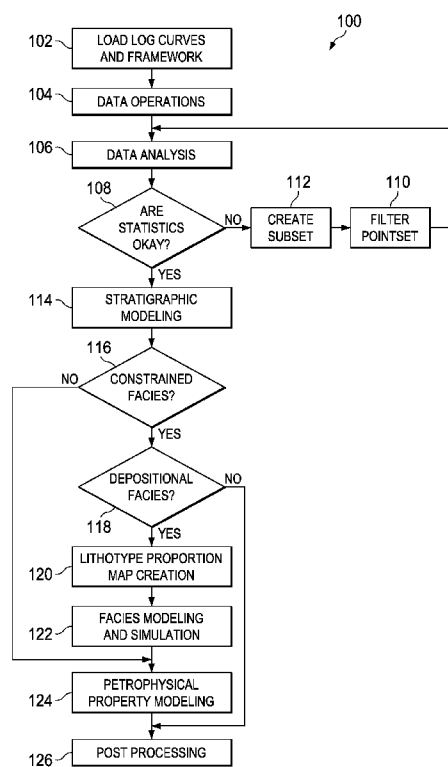


FIG. 1

(57) **Abstract:** The disclosed embodiments include a system and method for performing a simulation to seismic process. In one embodiment, the system is configured to perform operations comprising constructing a petrophysical realization and selecting a candidate model for fluid flow simulation using the petrophysical realization. Empirical petrofacies definitions is applied on the selected candidate model and assigning relative permeability at each node of the petrofacies definitions of the selected candidate model. The operations performs flow simulation on selected candidate model and performs analysis on the results of the simulation on selected candidate model to verify rock type flow units. The dynamic and static simulation results are synthesized such that the combined data yield a measurable rock property that may be compared to seismic properties and used to calibrate subsequent iterations of the static earth model. The continued iteration of the workflow may then be undertaken with the updated/refined earth model.



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