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Other: **Not yet advised**

(54) Title of the Invention: **fracture monitoring**
Abstract Title: **Fracture monitoring**

(57) This application relates to methods and apparatus for monitoring hydraulic fracturing during oil/gas well formation. A fibre optic cable (102) deployed down a well bore (106), which may be the well bore in which fracturing is performed, is interrogated to provide a distributed acoustic sensor. Data is sampled from at least one longitudinal sensing portion of the fibre and processed to provide at least fracturing characteristic. The fracturing characteristic may comprise the characteristics of high frequency transients indicative of fracturing events (606). The intensity, frequency, duration and signal evolution of the transients may be monitored to provide the fracturing characteristic. Additionally or alternatively the fracturing characteristic may comprise the longer term acoustic noise generated by fracture fluid flow to the fracture sites. The intensity and frequency of the noise may be analysed to determine the fracturing characteristic. The method allows real-time control of the fracturing process.

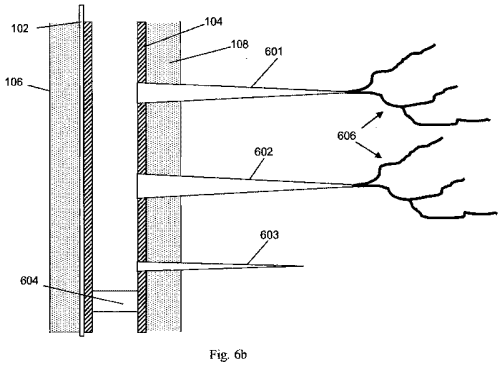

Fig. 6b

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