



US007819182B2

(12) **United States Patent**  
**Adamek**

(10) **Patent No.:** **US 7,819,182 B2**  
(45) **Date of Patent:** **Oct. 26, 2010**

(54) **STRESS, STRAIN AND FATIGUE MEASURING OF WELL PIPING**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(21) Appl. No.: **12/137,283**

(22) Filed: **Jun. 11, 2008**

(65) **Prior Publication Data**

US 2008/0314577 A1 Dec. 25, 2008

**Related U.S. Application Data**

(60) Provisional application No. 60/944,895, filed on Jun. 19, 2007.

(51) **Int. Cl.**

- E21B 43/00* (2006.01)
- E21B 47/09* (2006.01)
- E21B 19/22* (2006.01)
- E21B 33/035* (2006.01)

(52) **U.S. Cl.** ..... **166/66**; 166/250.01; 166/77.1; 166/368

(58) **Field of Classification Search** ..... 166/250.01, 166/66, 88.4, 208, 75.14  
See application file for complete search history.

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(57) **ABSTRACT**

A system for monitoring strain in a wellbore casing includes one or more gages that are affixed to an outer surface of the wellbore casing. Each gage includes one or more apertures. During operation, variations in the shape and spacing of the apertures are monitored and used to determine a level of strain in the wellbore casing.

**20 Claims, 3 Drawing Sheets**

