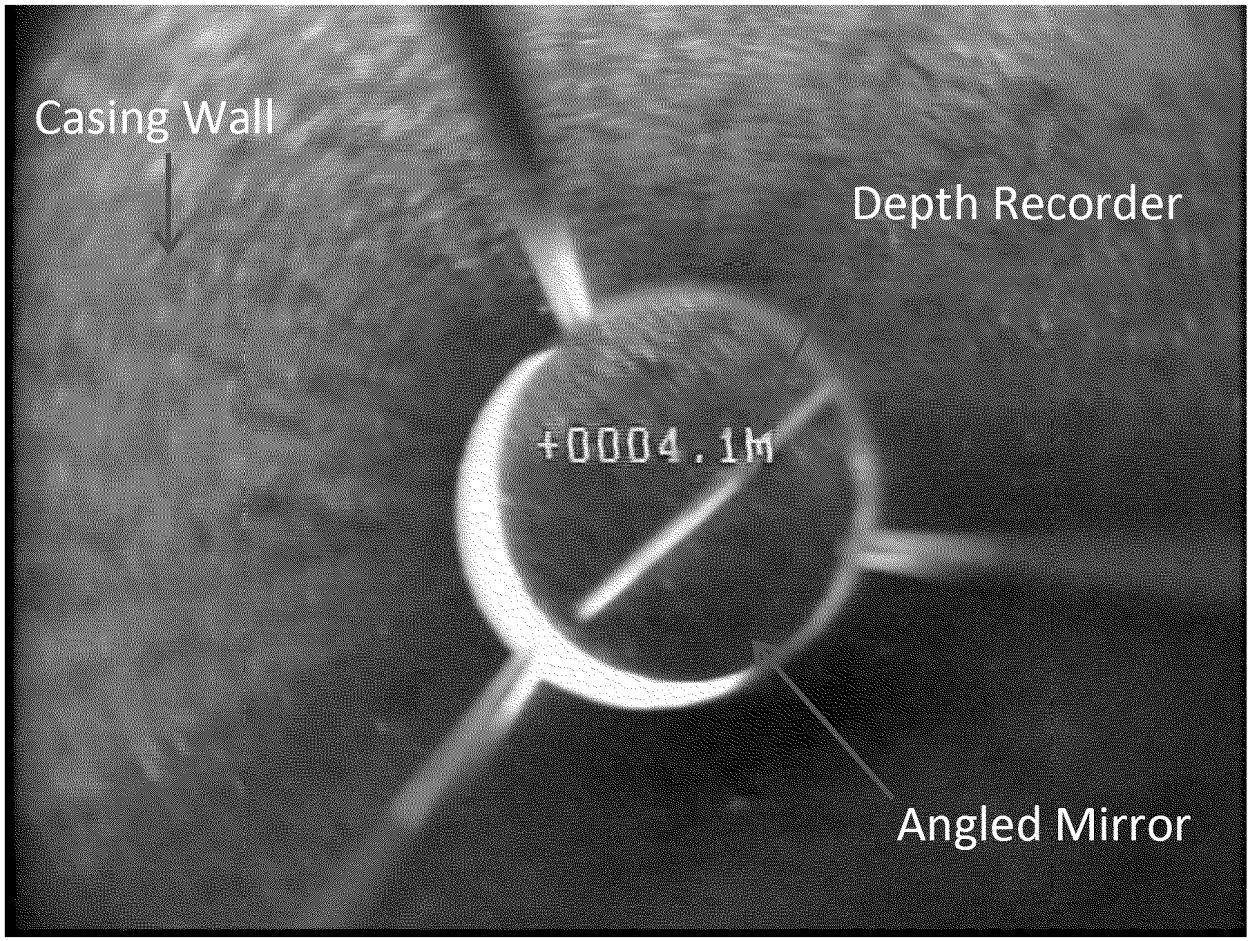
Down-hole Camera of EPA Pavillion Monitoring Well MW-02 Conducted on May 2, 2012 Prior to Redevelopment by the USGS

Down-Hole Camera

GeoVISION™ Borehole Camera System Nano Camera

- Stainless Steel
- Records in color
- Depth to 2000-ft
- ¾-inch diameter
- Suitable for up to 24-inch diameter borehole as set up



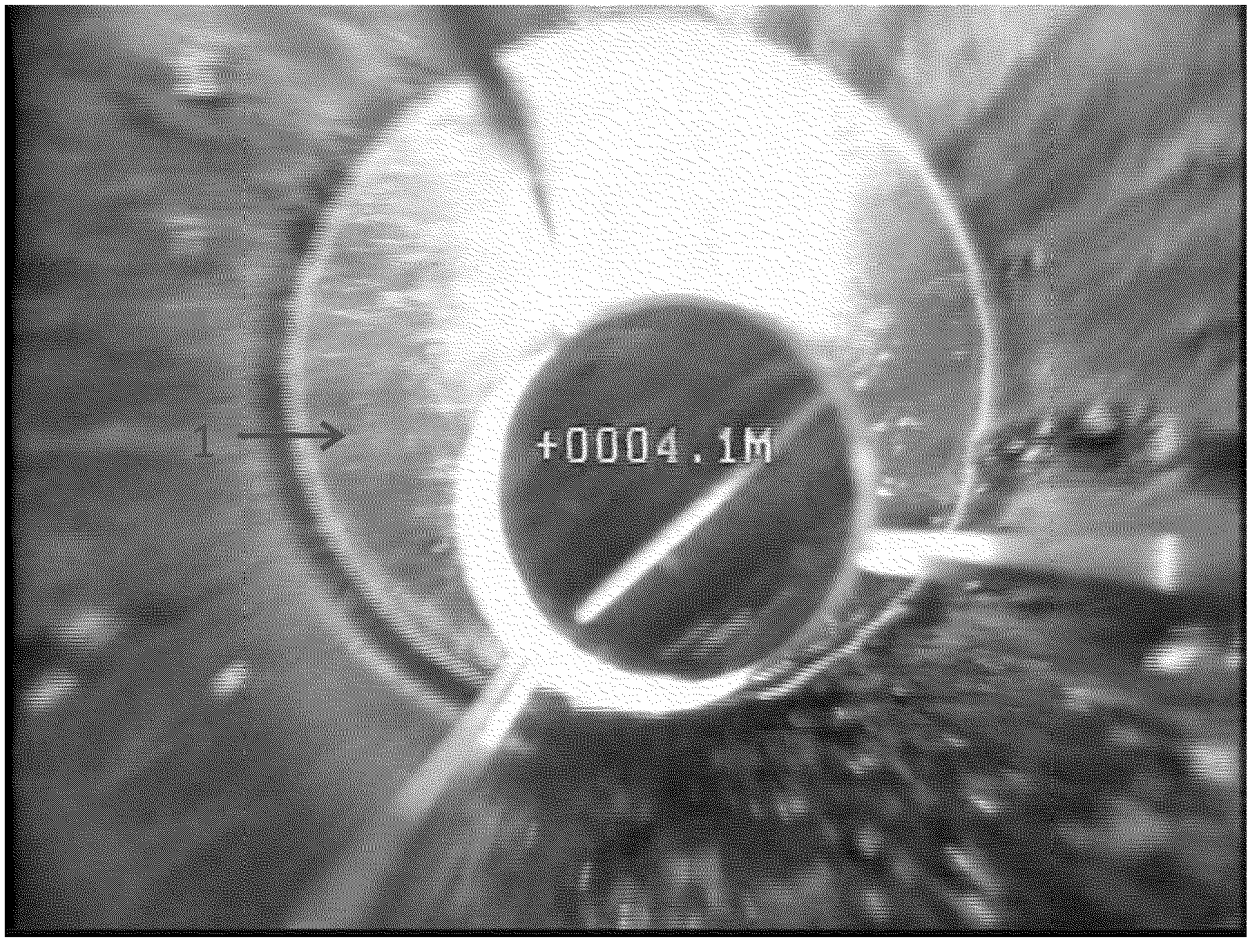
VTS_02_1.VOB at 0:0016

Blank casing in upper section of well.

Note: Depth recorder not working properly.

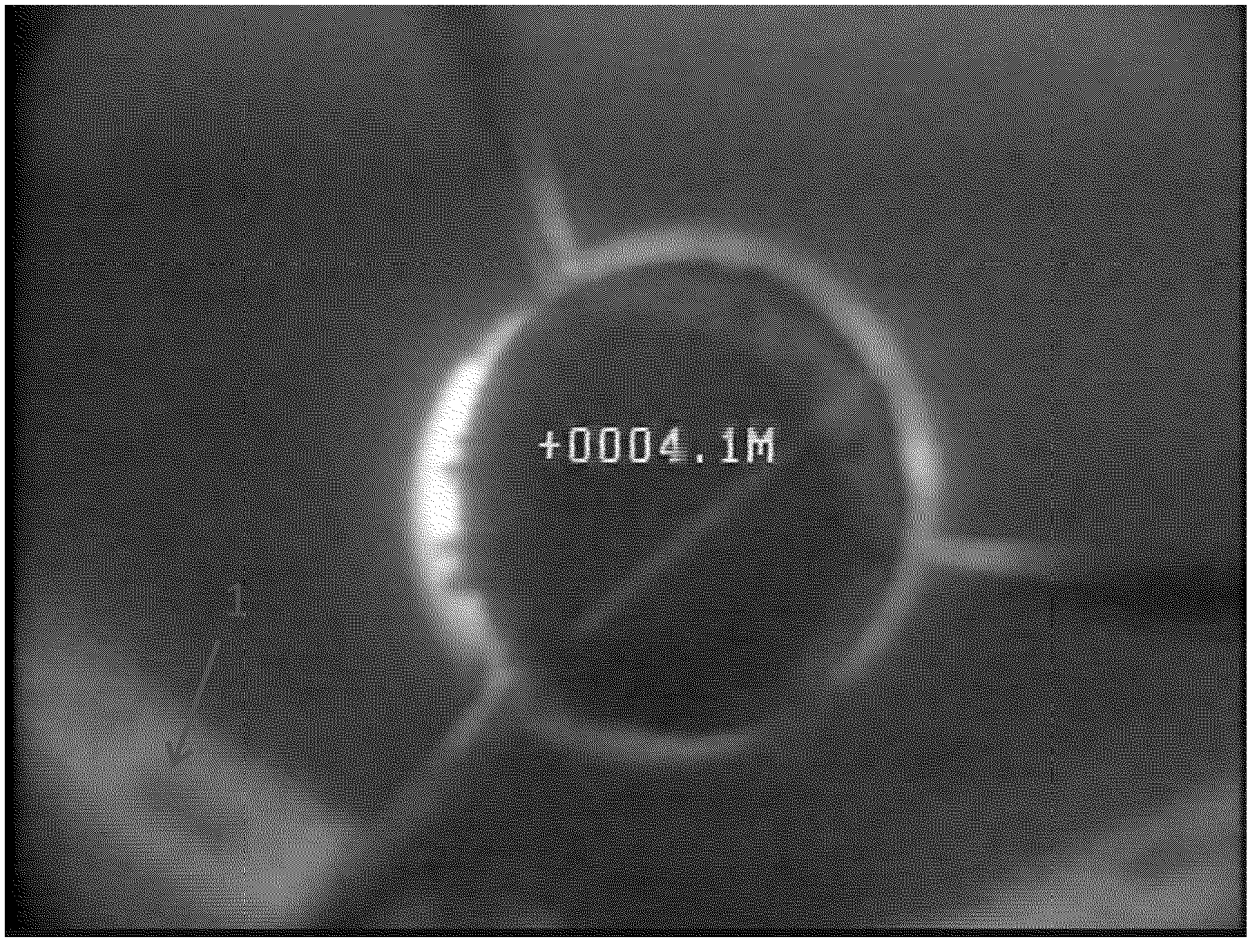
VTS_02_1.VOB at 0:07:49

Casing coupler threads exposed between pipe ends (1) and corrosion of casing below joint (2). 'Scuffed' sidewall of casing pipe (3).



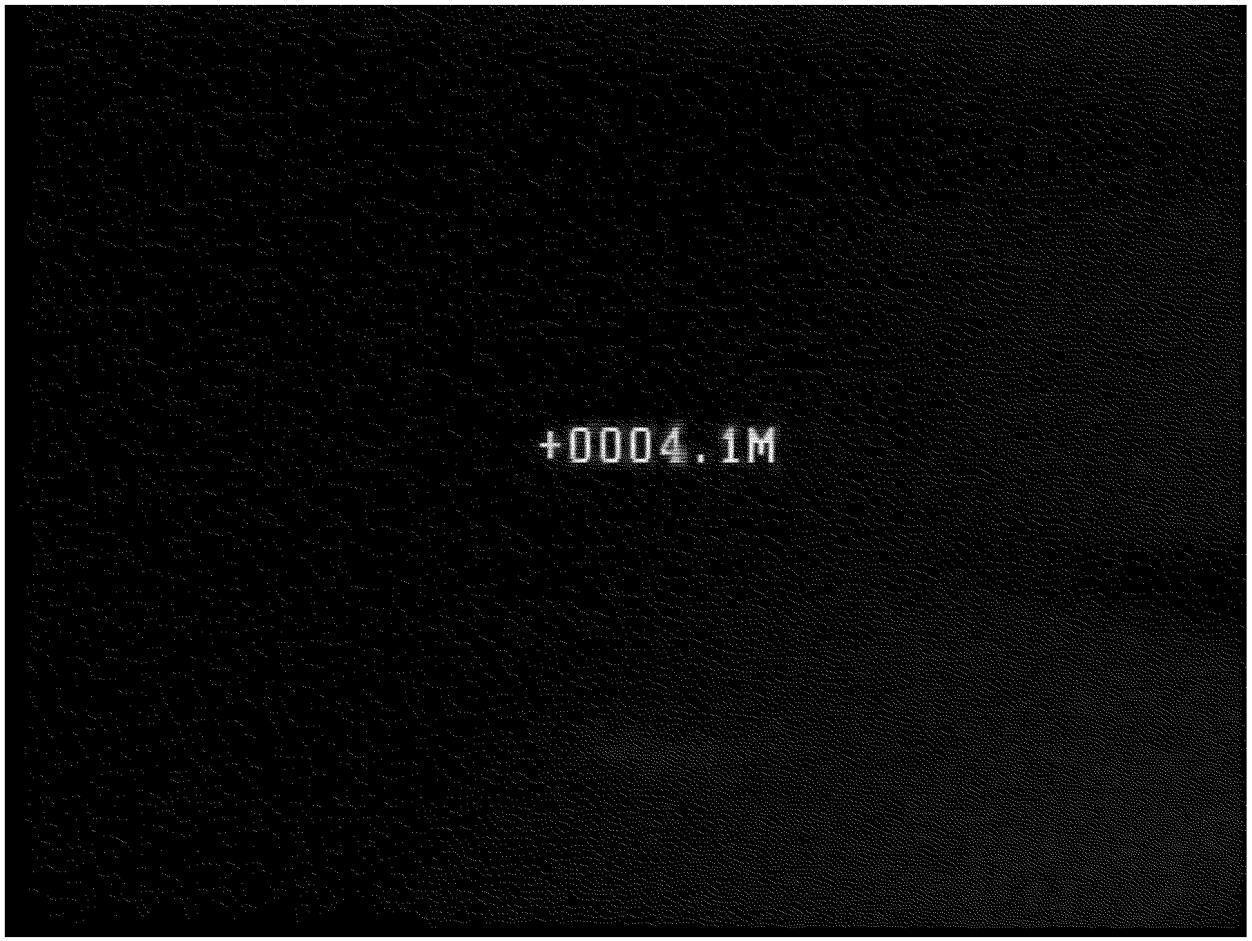
VTS_02.1.VOB at 0:07:54

Water surface (1) encountered at approximately 173-ft below top of casing (btoc).



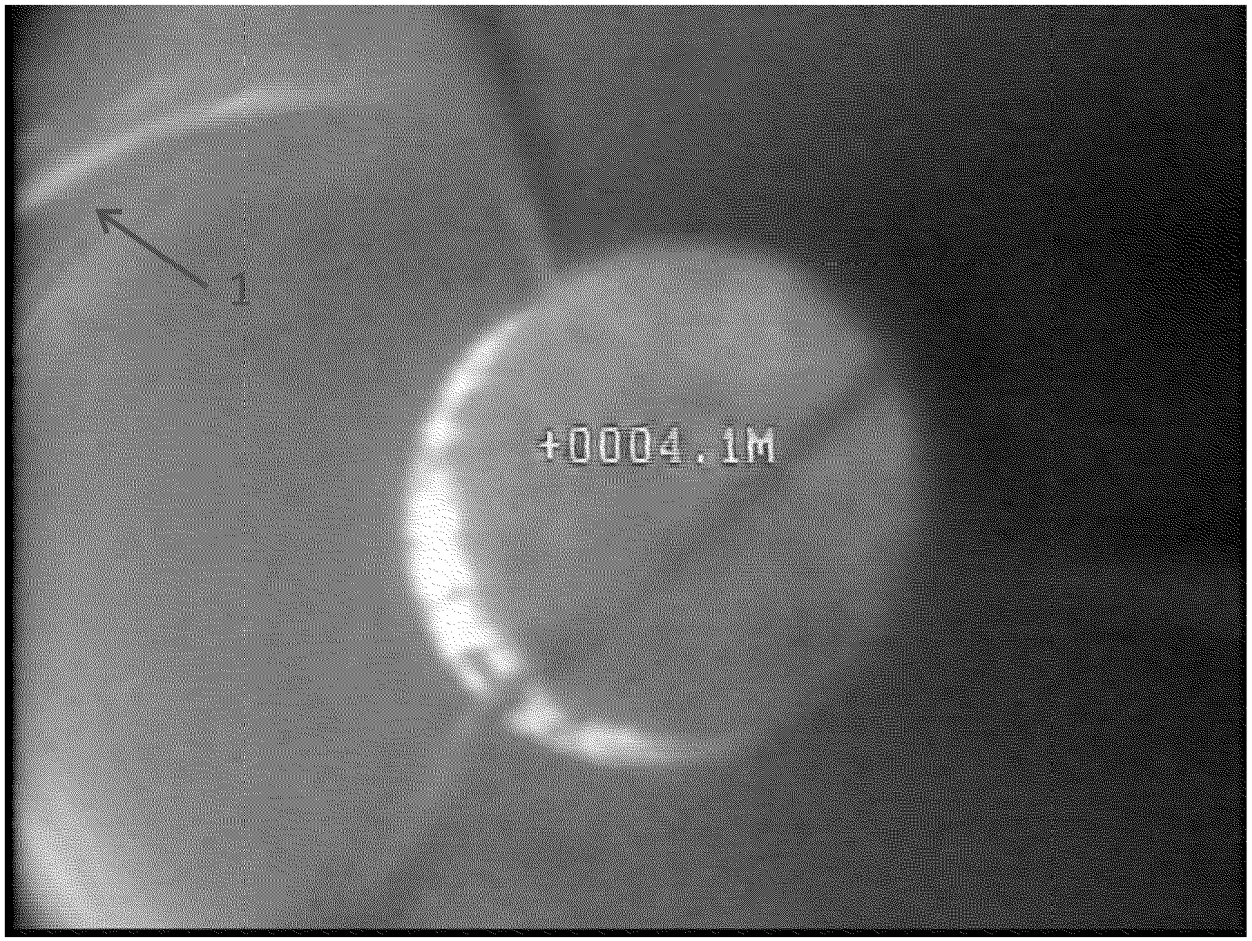
VTS_02_1.VOB at 0:11:37

Visible threaded casing joint below water surface (1), and example of water clarity.



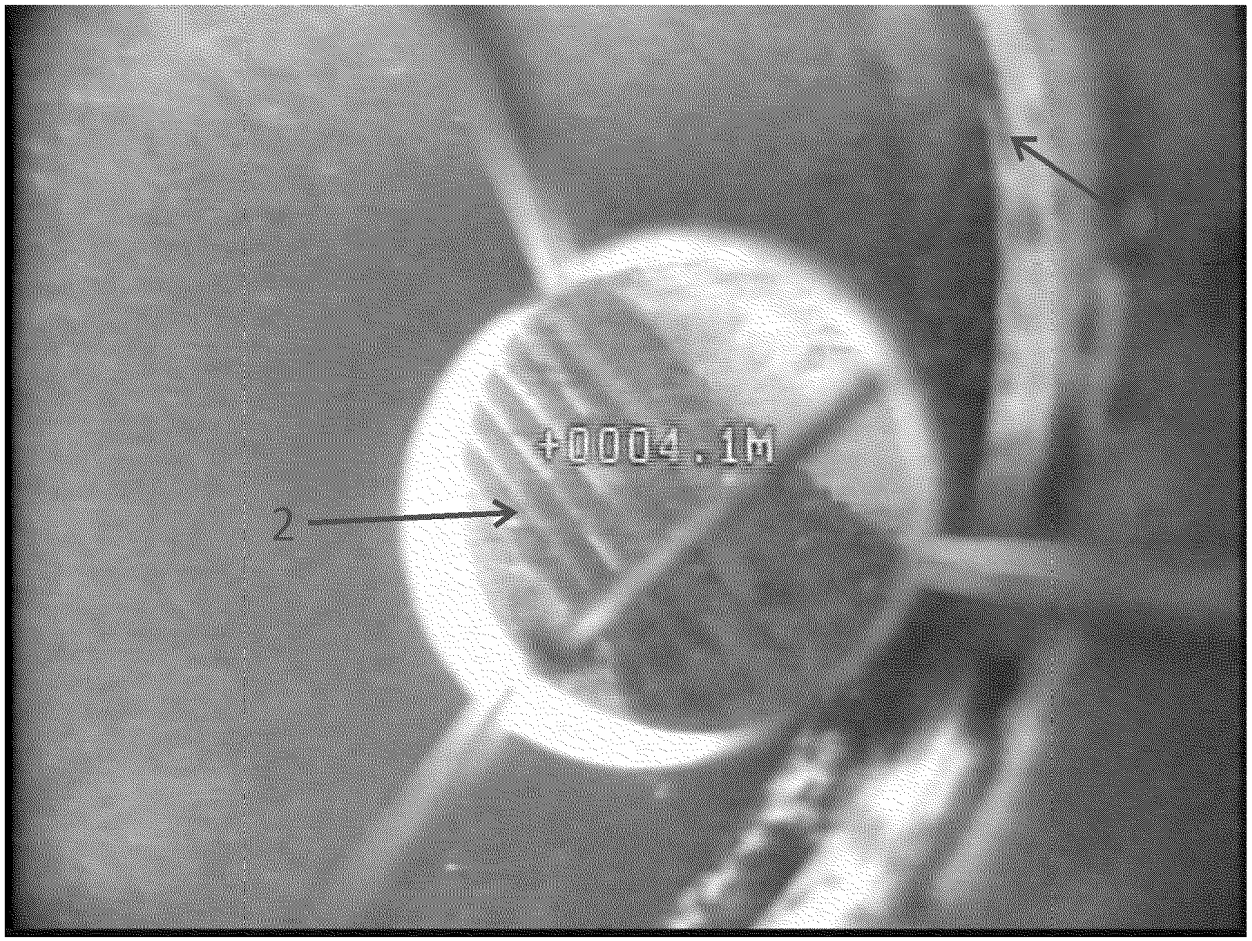
VTS_02_2.VOB at 0:04:40

Water clarity below where 'black whisps' are first seen (0:03:10). Water clarity degrades and lasts until 0:12:51 where clarity starts to return slightly. Significant water clarity does not return until next video segment (VTS_02_3.VOB).



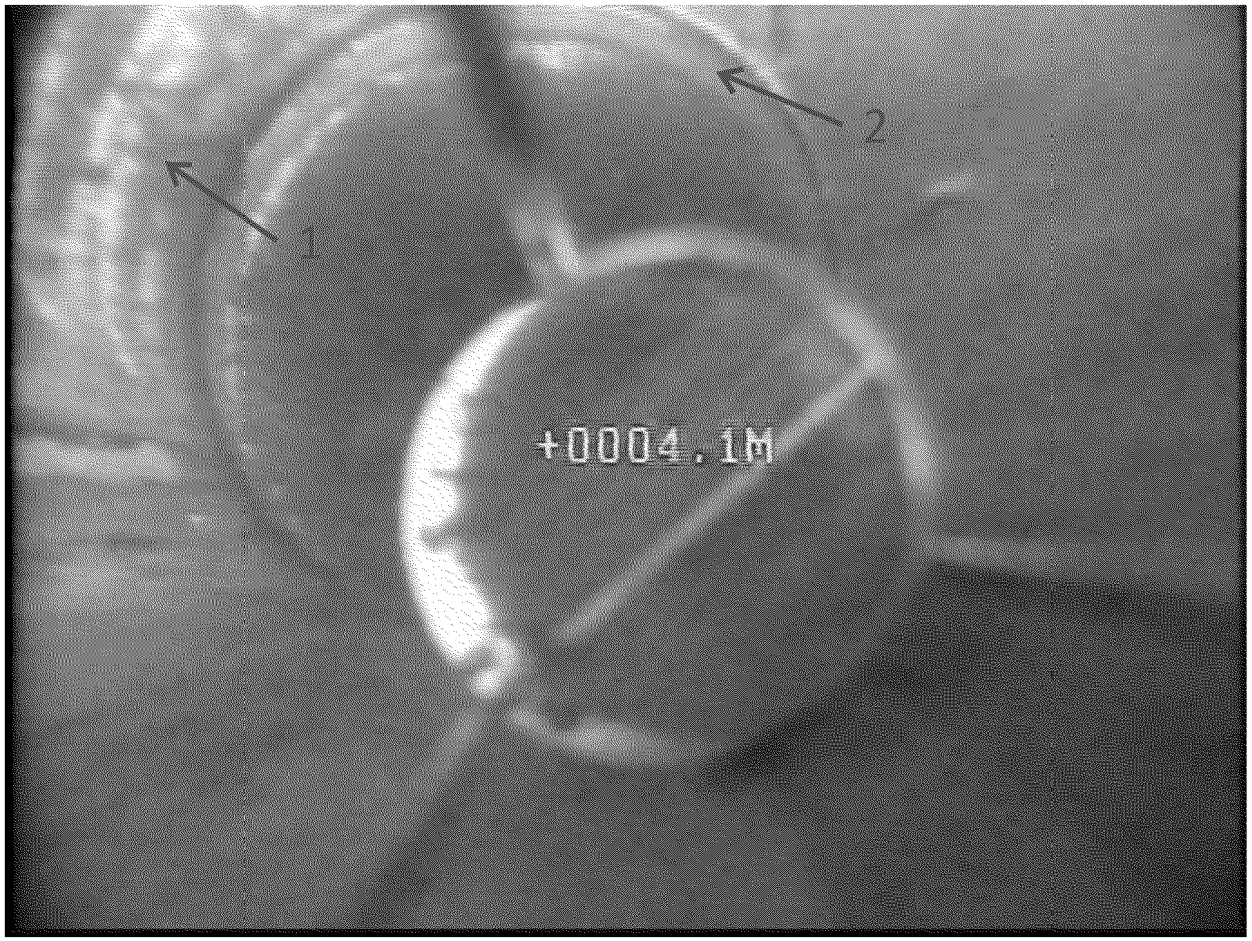
VTS_02_3.VOB at 0:10:29

Water clarity is sufficient again to see threaded casing joints (1).



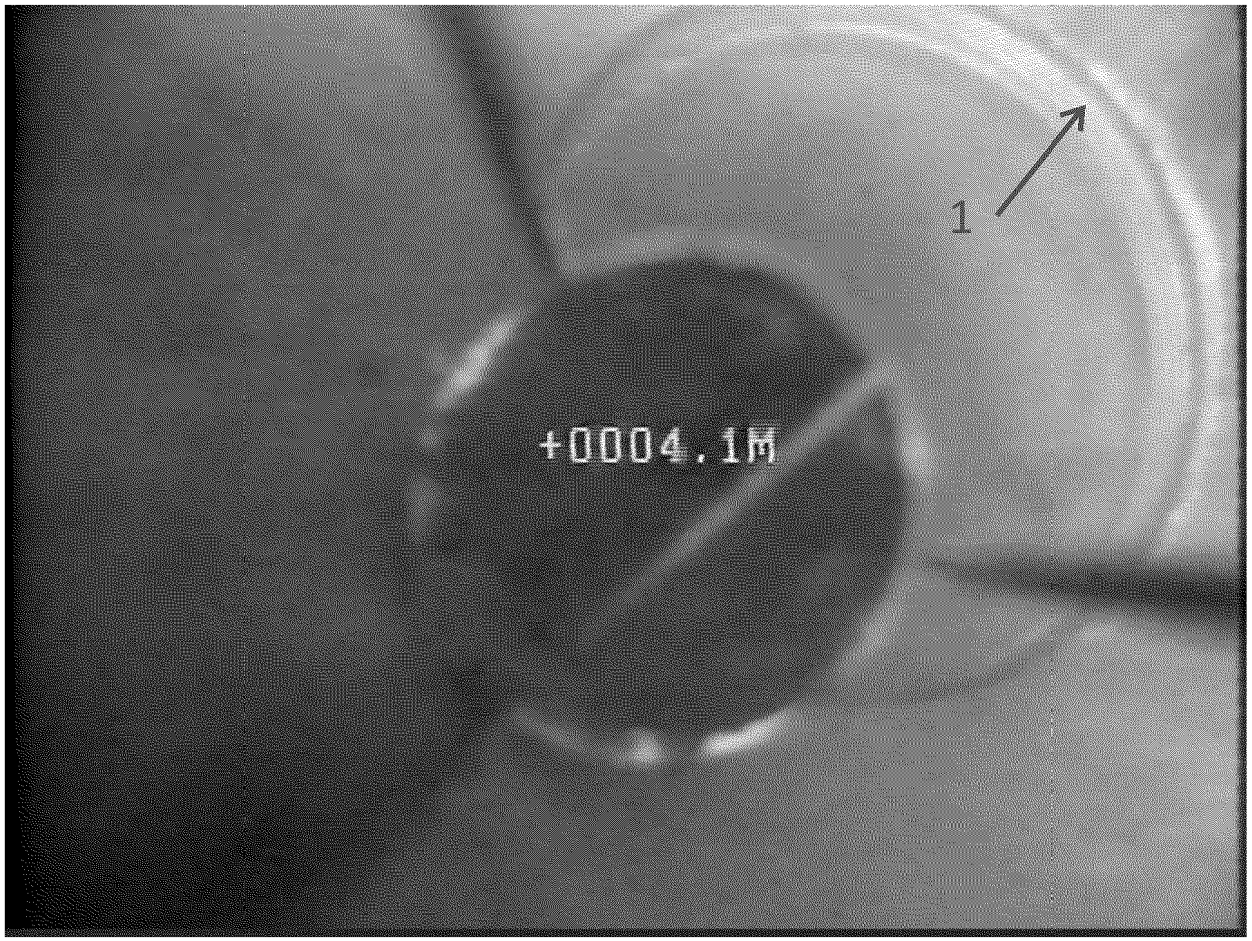
VTS_02_3.VOB at 0:12:07

Threaded casing joint (1) and still image of exposed threads in mirror (2).



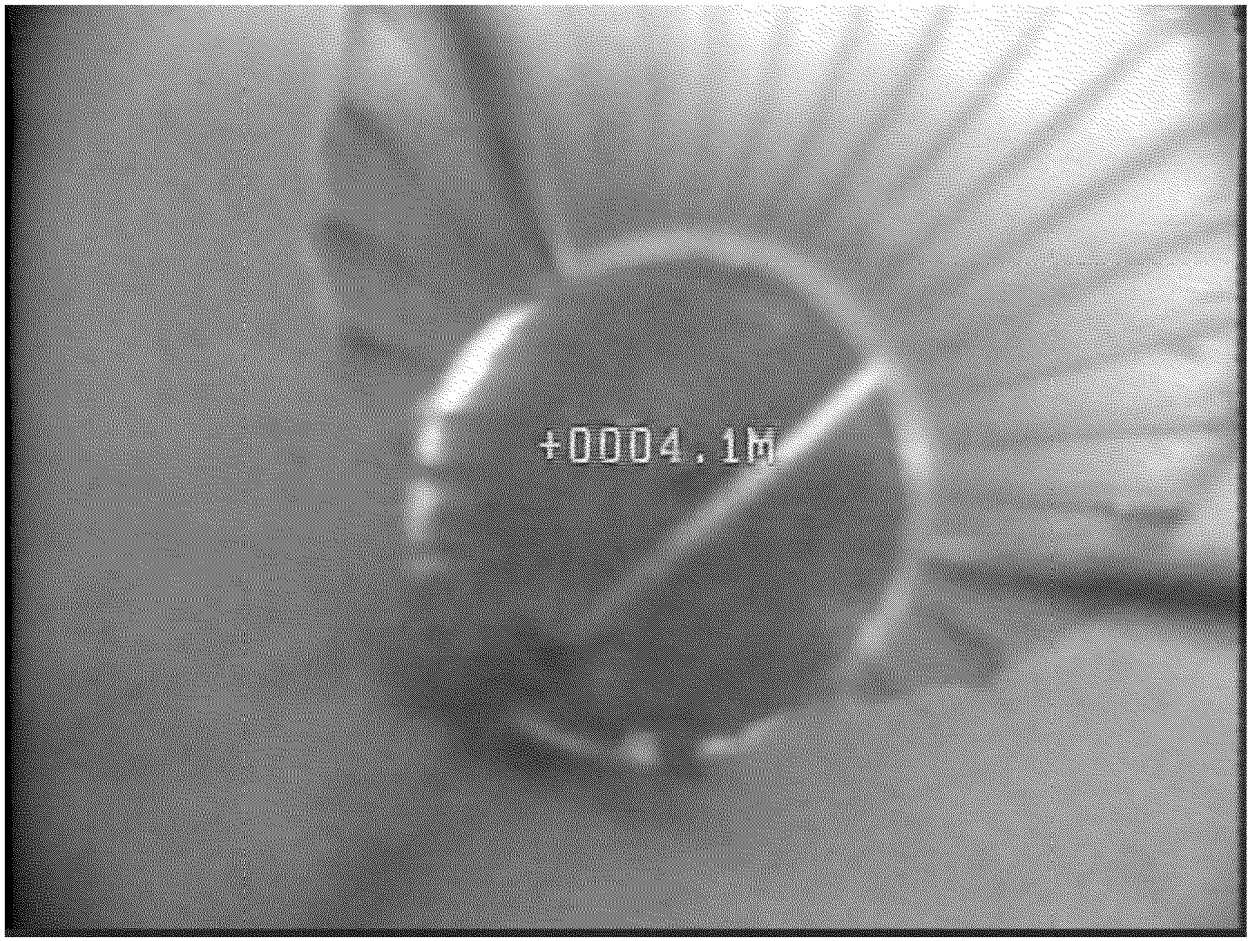
VTS_02_1.VOB at 0:01:18

'Scuffed' area (1) on casing sidewall just prior to threaded joint (2). This 'scuffing' appears prior to other threaded joint locations.



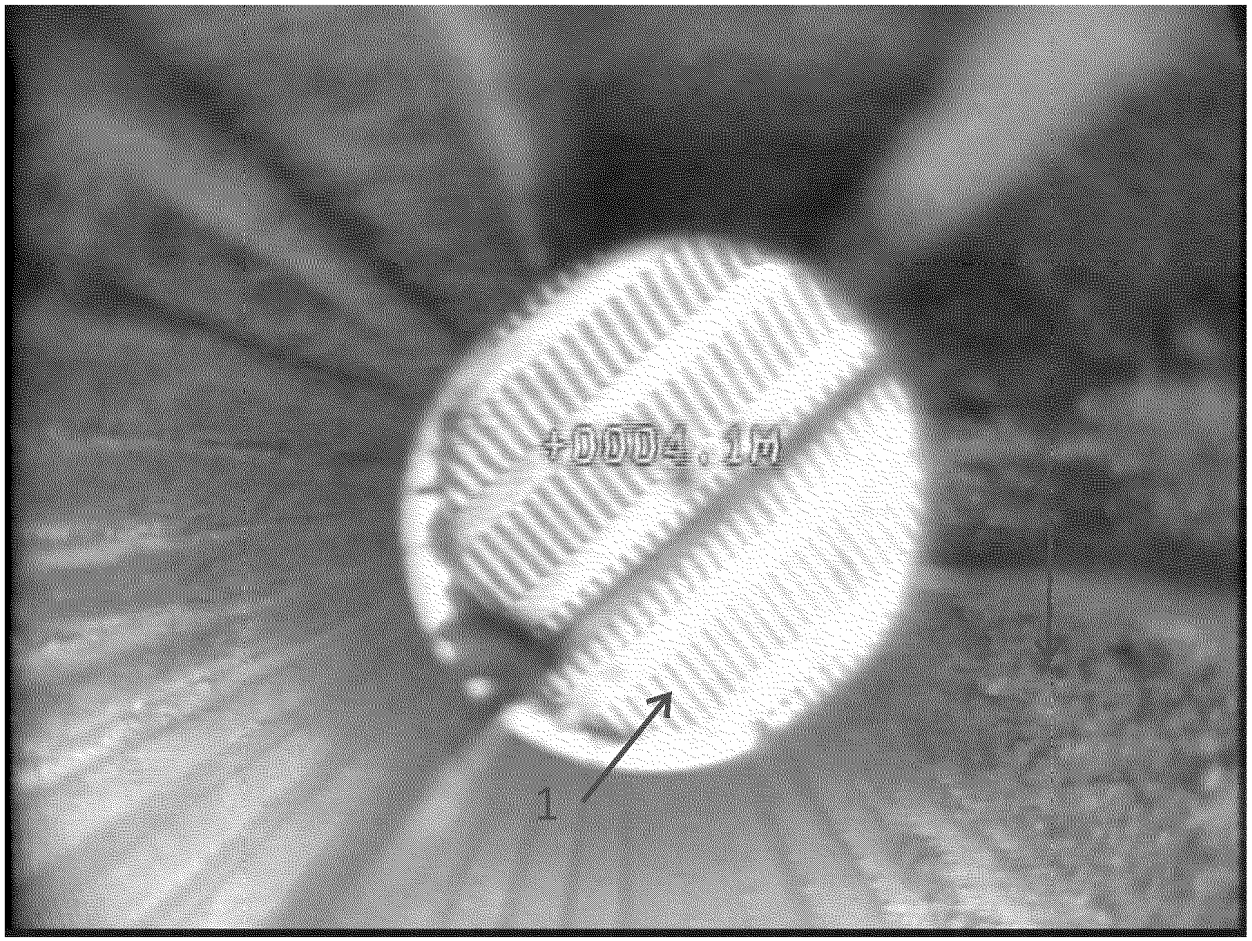
VST_02_4.VOB at 0:06:43

Threaded joint (1) prior to screened interval.



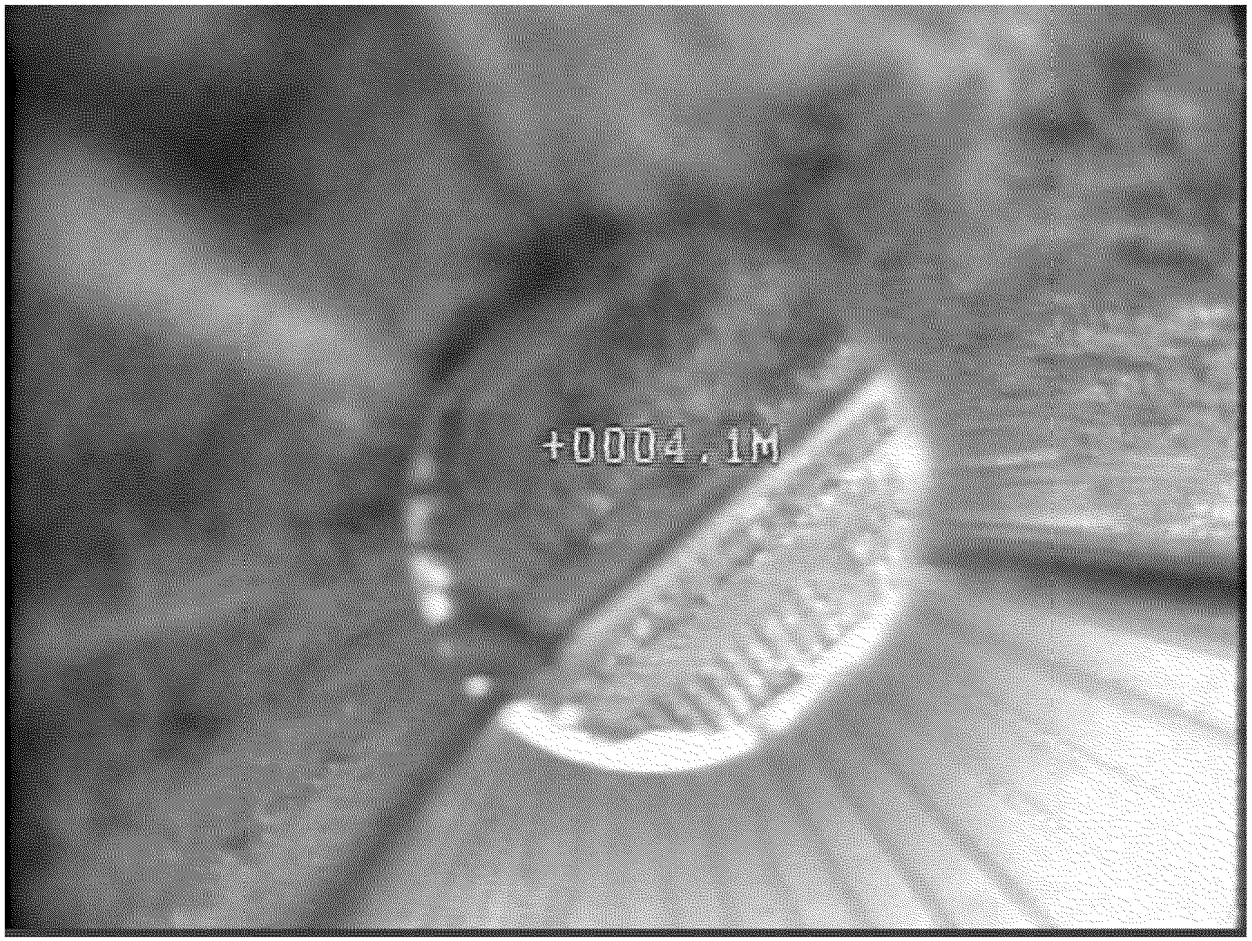
VST_02_4.VOB at 0:06:46

Top of screened interval, encountered at approximately 973-ft btoc.



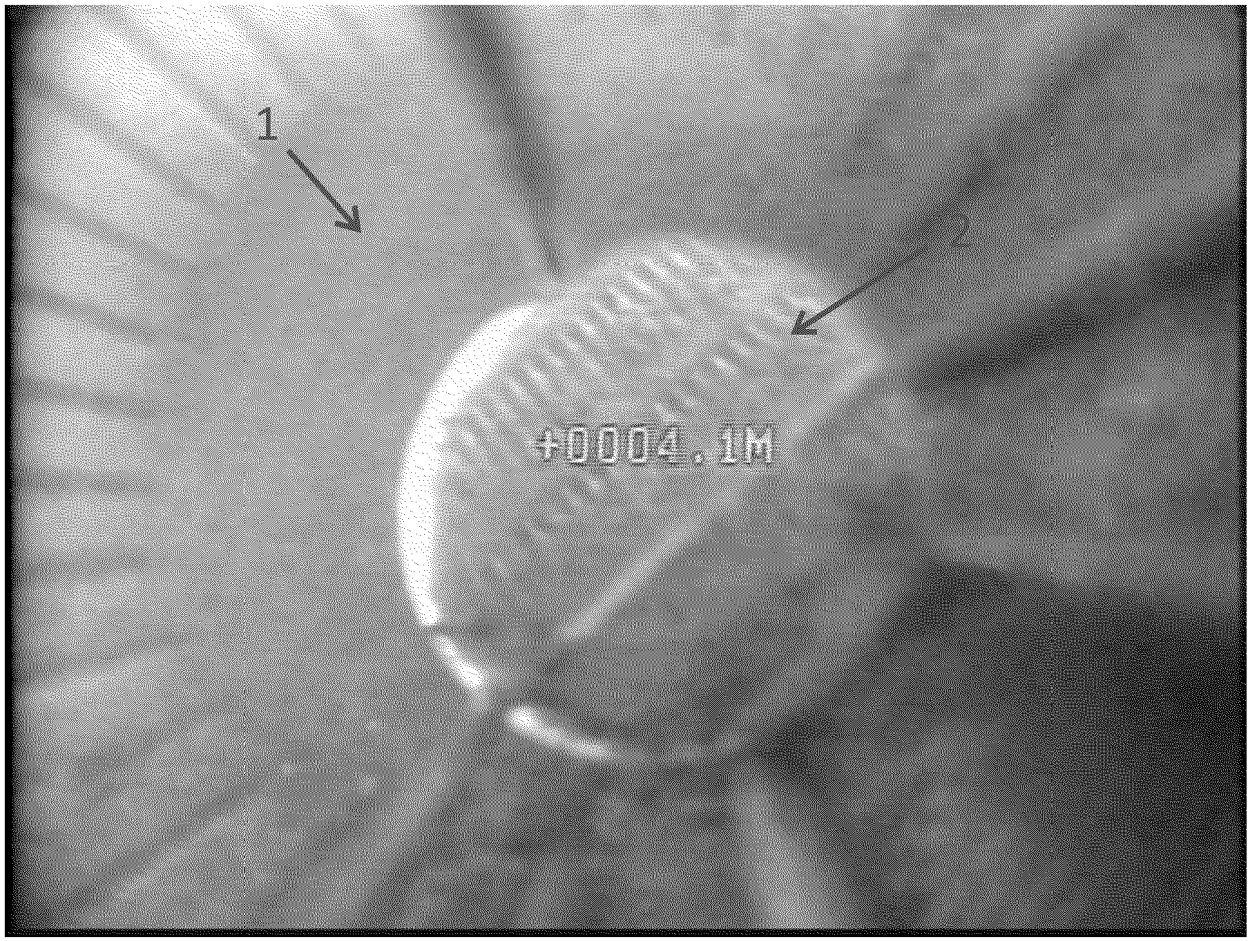
VST_02_4.VOB at 0:10:03

Image of screened interval (1) and material on screen (2).



VST_02_4.VOB at 0:10:24

Material on well screen.



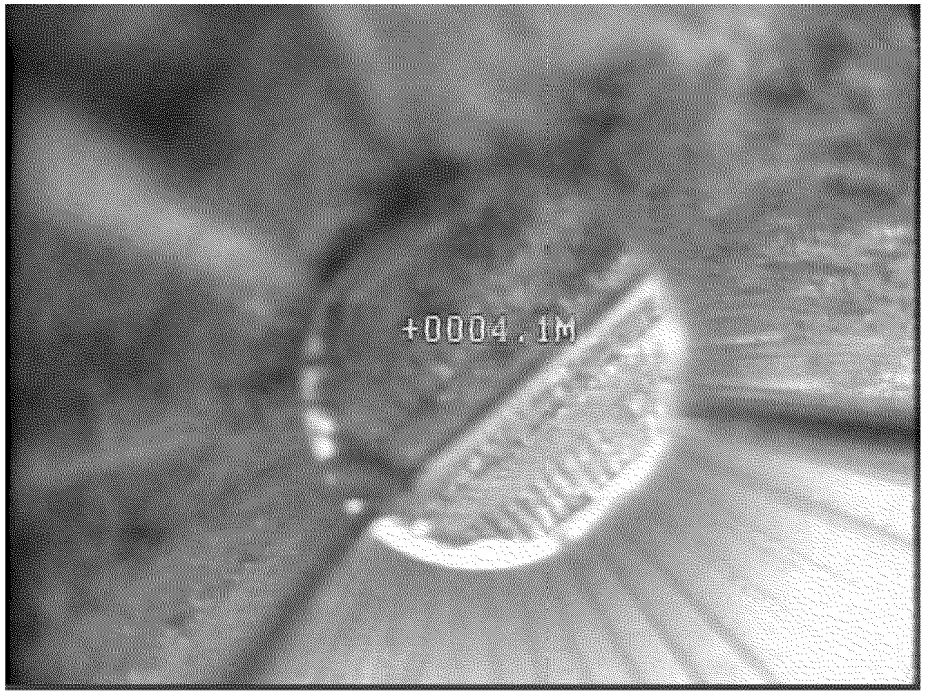
VST_02_4.VOB at 0:14:04

Bottom of well tagged at approximately 989-ft btoc with material visible at bottom of hole (1), and material on well screen (2).

Comparison of Well Screens

EPA MW02 Well Screen

VST_02_4.VOB at 0:10:24



Example of Unobstructed Well Screen

Laval Underground Borehole Camera, R-CAM 1000
http://www.youtube.com/watch?v=HY6Rjpn7qN0

EPA MW02 Well Construction Diagram

(Figure 6b from EPA Draft Pavillion Report)

EPA well completion log indicates 17-feet of drill cuttings and mud fill material in open hole beneath EPA reported depth of MW02.

Open threads observed in video suggest well was completed to a depth deeper than reported by EPA, this was confirmed by USGS.

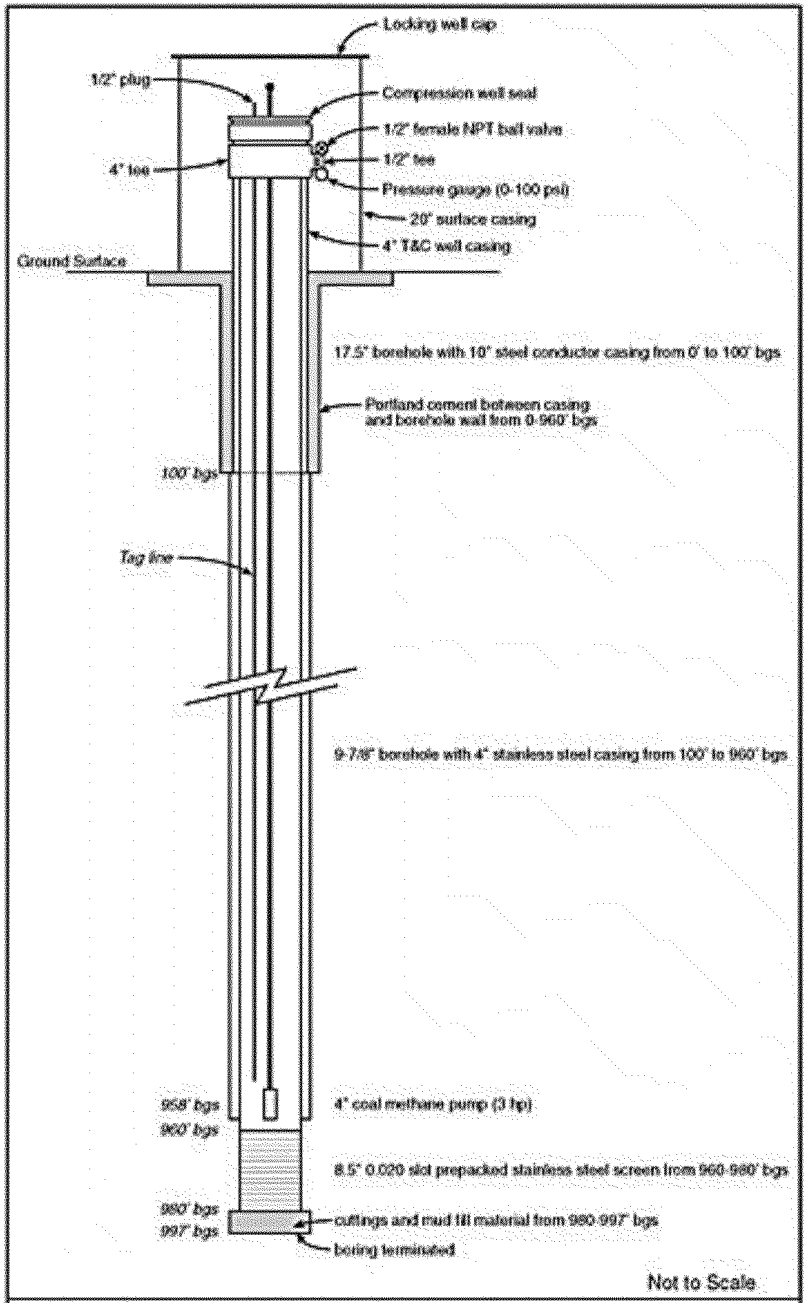
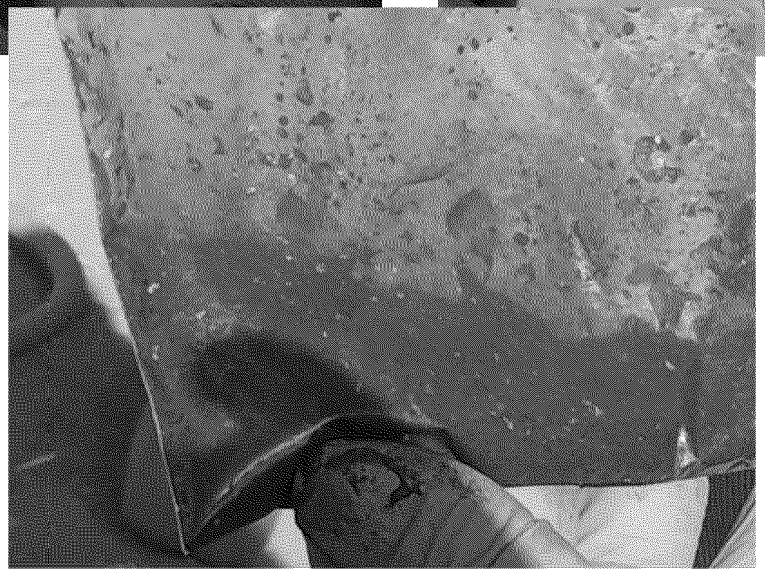


Figure 6b. Schematic illustrating construction of MW02.

Material removed from MW02 during redevelopment of well by USGS, May 2012



Summary of Video

- Video suggests that flow into the well is restricted based on accumulation of material on well screen.
- Due to depth discrepancy of completed well, it appears the screened interval of the monitoring well was completed within the drill cuttings and drill mud used to fill the open hole.
- Mineral accumulation within the well indicates the well casing was not constructed of stainless steel as originally reported by EPA. This has been confirmed by EPA.
- Blank well casing was coated on exterior of pipe with unknown black material, probably a corrosion inhibitor. See Figure C21 or Figure C22 in EPA Draft report.