THE DOWNHOLE VISUAL ANALYTICS COMPANY

OPEN HOLE VIDEO

UVCam

Accurate identification of hydrocarbon-bearing zones is critical to delivering productive wells and maximizing their economic performance. For air drilled wellbores, or open-air shafts, the earth's geology is laid bare, allowing visual inspection of the borehole to detect fracturing, dips, spacing of formation layers, voids, seams and composition. However the ability to detect hydrocarbons in-situ is of even greater advantage

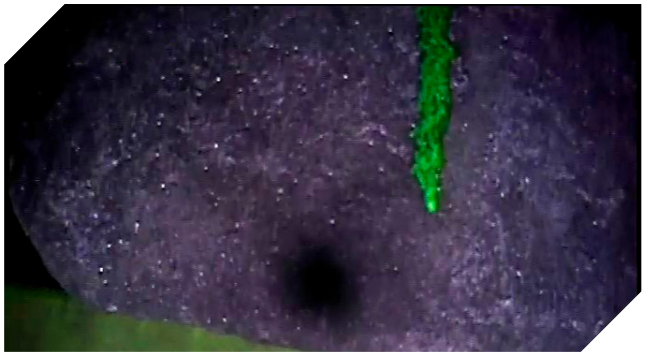
Most camera systems operate within the visual spectrum resulting in limited ability to resolve traces of hydrocarbon from the surrounding formation owing to low relative contrast. Fortunately, most hydrocarbons fluoresce vividly within the ultraviolet (UV) spectrum and with a direct correlation to oil gravity. Additionally, the application of UV light reveals details about the formation in relation to mineral or material content that would otherwise be undetectable.

SOLUTION

EV's UVCam enables definitive identification of hydrocarbons in-situ using ultraviolet lighting and UV filtering of the imaging sensor. Carefully selected UV LEDs bathe the formation with intense ultraviolet light to induce fluorescence. By providing visual information in combination with precise depth control, it is possible to identify the location and total number of potential hydrocarbon producing zones during a single run in hole. This information can be used to verify sampling at surface and greatly increase confidence in selecting zones for production.

The downward facing camera provides a view of the entire borehole and can also be run in combination with a side-viewing camera, using normal light source, in the same run for comparison. This combination of viewing angles and spectral ranges provides a complete picture of the wellbore to support critical decisions during field development and well completion.

As part of the service, UVCam operations are supported by an experienced EV Engineer, either at the wellsite or via real-time remote support, and is available for rapid mobilization to any location, either on-shore or off-shore. All information and deliverables are provided at the wellsite to enable real-time decision making, including live video to surface, simultaneous live video streaming to office locations and snapshot images.



APPLICATIONS

Applications include the detection of:

- Hydrocarbon bearing zones
- Mineral composition
- Oil gravity in-situ
- Natural fractures and faults

TECHNICAL FEATURES

UVCam solutions are available for real-time operations with EV's Optis R-series cameras, enabling live video images via mono-conductor electric line and electrically enabled coiled tubing conveyance systems. Near-time operations are supported with EV's Optis M-series cameras, enabling memory-mode acquisition of images via slickline, braided cable or conventional coiled tubing conveyance systems.

Thanks to EV's in-house engineering capability, it is possible to configure the UV lighting in other wavelengths (if available in LED form) to induce fluorescence in other materials. Through the application of rapid prototyping and laboratory testing, EV engineers can design, manufacture and verify the performance of UVCam solutions to help maximise the success of hydrocarbon or other material identification.

All EV products are supported by ISO 9001 certified design and manufacturing processes and are constructed from high-strength, corrosion resistant materials throughout.

Typical OD	1.69 in	43.0 mm
UV Wavelength	1.437e-5 in (UV-A zone)	365nm (UV-A zone)
Max Working Temp	158 °F	70 °C
Max Pressure	15,000 Psi	103.421 MPa
Compatible Cameras (Real-Time) †	Optis R125	
Compatible Cameras (Memory) †	Optis M125	

† See separate datasheet for camera specifications

Example Fluorescence Chart