Bandweaver

CASE STUDY

VIRTUAL FACTORY ACCEPTANCE TEST (FAT) FOR BANDWEAVER PIPELINE THIRD PARTY INTRUSION (TPI) SYSTEMS

The Scenario

One of Bandweaver's customers had a requirement for a fiber optic based Pipeline Third Party Intrusion (TPI) detection systems. The system was due to be delivered during the lockdown period of the COVID19 pandemic. Due to the global travel restrictions and social distancing guidelines in place at the time, it was no longer possible for the customer to visit the site in person to carry out the test.

However, the proposed pipeline monitoring system provided a key part of the national critical infrastructure and needed to proceed according to the agreed timetable as much as possible. Together, Bandweaver and the customer designed a factory acceptance test (FAT) that met all of their requirements but which respected all social distancing guidelines and did not put any personnel at an increased level of risk.

Client Requirements

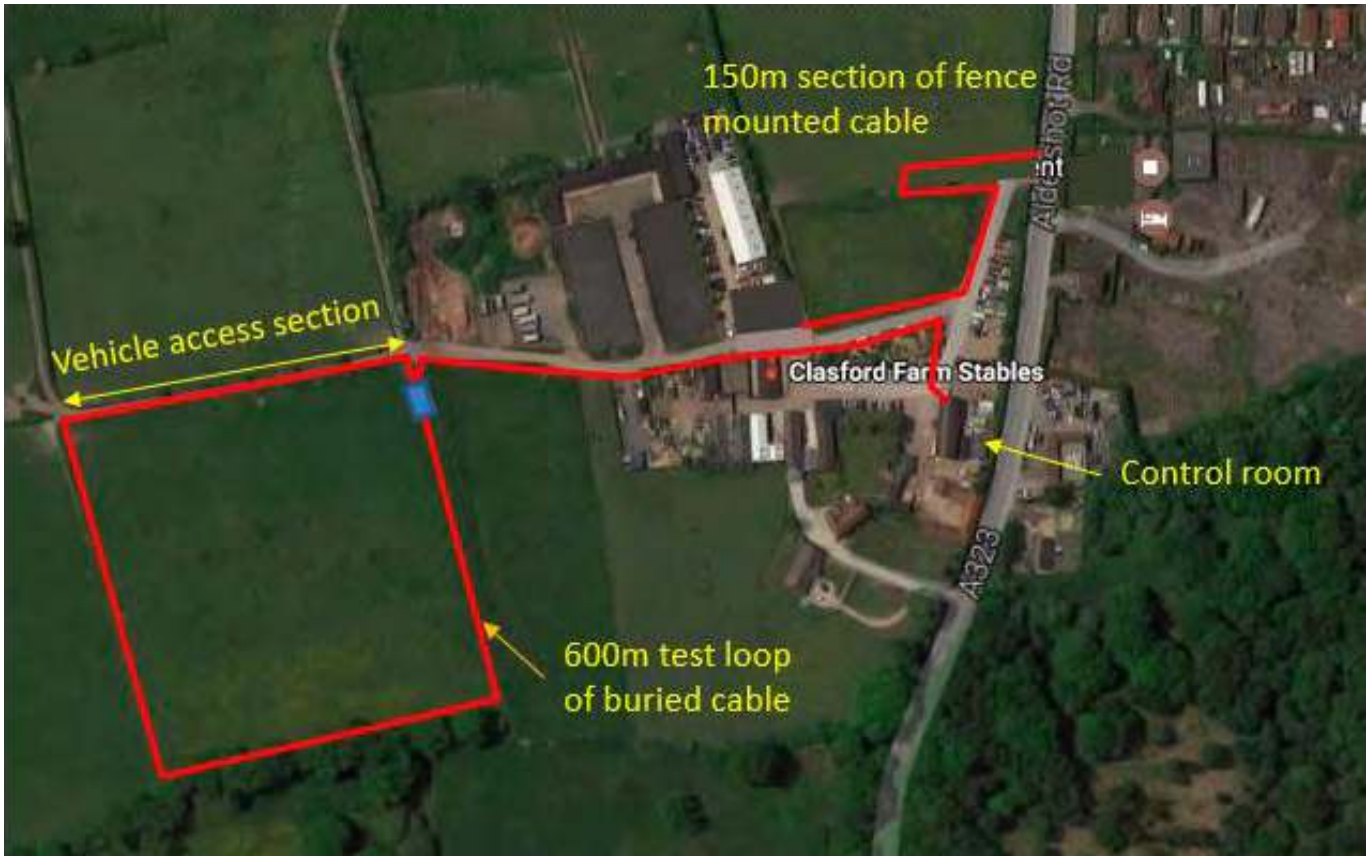
The client required a Pipeline Intrusion Detection system utilising two Bandweaver Horizon DAS systems to provide complete coverage of the pipeline. As part of the FAT testing requirements, the procedure included demonstrating detection of personnel movement, personnel digging and vehicle movement.

Monitored | Secured | Safe

What Did We Do?

Bandweaver utilised the comprehensive test site at the facility based in the United Kingdom to test and demonstrate the equipment.

The site has multiple sections of fiber optic sensing cable suitable for both buried and fence mounted testing with all of them linked back to a central control room. There are multiple cameras also linked back to the control centre for integration with the systems.



For this particular project, the PIDS system only required buried sensing detection and so only the buried cable was utilised during the FAT. From the customer side there were three stakeholders represented at the FAT which included:

End user – pipeline operator

System integrators

Engineering consultant aiding the pipeline operators

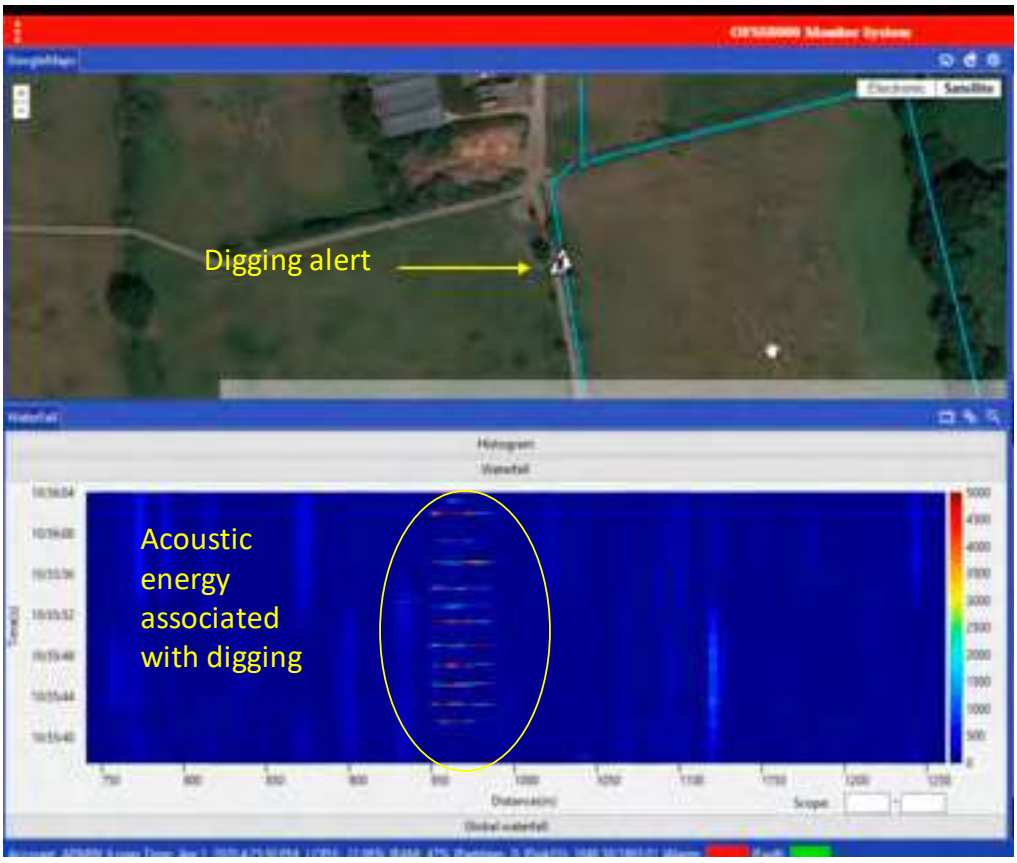
In total there were 5 personnel who accessed the video conferencing facility. Bandweaver utilised 2 login identities one for the screensharing of the PIDS system and one for video conferencing of the Bandweaver project manager. All of the stakeholders had full video and audio access and the ability to see the relevant desktops.

There was an additional Bandweaver representative who was carrying out the simulated intrusion events in the vicinity of the sensing cable. At all times the recommend government social distancing recommendations for COVID19 were respected and adhered to.

Personnel Walking Intrusion Test

Manual Digging Alert

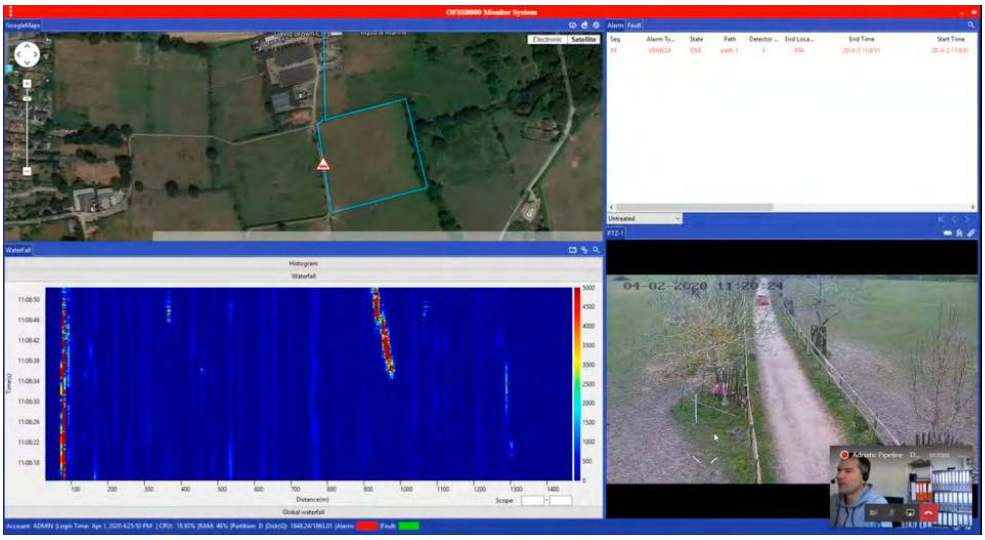
As can be seen below the alert for manual digging generated a different acoustic signature from walking personnel:



Vehicle Detection

For the vehicle detection test, the vehicle travelled along the outside of the field and on average was in the range of 5-10 metres from the cable.

In the screen shot below you can see the larger acoustic energy event associated with the vehicle and again the location of the alert on the map view and the associated CCTV image.



Benefits to the Client

The Factory Acceptance Test was successfully completed with no delay to the project timetable and no additional risk to any personnel. This use of video conferencing technology and system integration allowed to Bandweaver to demonstrate:

Ability of TPI system to accurately locate alarm events: The Horizon DAS was able to locate the intrusionvarious events to within 5m. The software was able to visually display the acoustic energy, specific details of the alarm and also display the relevant CCTV camera feed for visual confirmation of an event.

Event Classification: Bandweaver's Horizon DAS demonstrates that it can clearly classify and identify different types of events. Bandweaver uses artificial intelligence algorithms based around deep neural network machine learning to continually enhance detection capabilities.

Full Service Capability: Through Bandweaver's personnel and facilities, we were able to work closely with our customers to ensure that the project was delivered on time and to their exacting specifications even in challenging environments.