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Case Study of a Multi-Well 4D DAS-VSP

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SUMMARY

Since the first DAS-VSP measurement was made in September 2009, there has been considerable progress in developing the technology and techniques to fully exploit the unique benefits of DAS for VSP. This technology is increasingly seen as an enabler for VSP measurements to be acquired in wells where it would be impracticable to run a conventional VSP with geophones. One particular use is in EOR applications where DAS-VSP is now being used to enable 4D VSP surveys to be taken in order to image the sub-surface changes to features, such as the growth of a steam chest.

In this case study, we describe the setup and simultaneous acquisitions of a baseline 4D vibroseis survey using DAS-VSP deployed on eight vertical wells. We will explain how the eight systems were fully synchronised with vibroseis trucks and describe the process used to provide real-time, remotely viewable SEG-Y outputs from each well.

Using DAS-VSP in EOR applications of this type, we will show how it is now possible to acquire low cost 4D imagery of the sub-surface across an entire field, which can be used to monitor the injection process, plan future pattern spacing and inform the infill strategy to increase the ultimate recovery.

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