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# Four-Phase Production Logging Determines Sand Production Rate for Setting Sand-Free Flow Rate

## High-sensitivity SandView downhole service counts sand grains produced per interval for optimizing production and surface facilities, Gulf of Thailand

### CHALLENGE

Identify sand-producing intervals and determine the sand production rate to adjust the flow rate to obtain sand-free production.

### SOLUTION

Run SandView* downhole sand surveillance service to find and accurately determine the rate of sand production.

### RESULTS

Prevented erosional damage to the flowline by adjusting the flow rate on the basis of the produced sand analysis to generate zero sand.

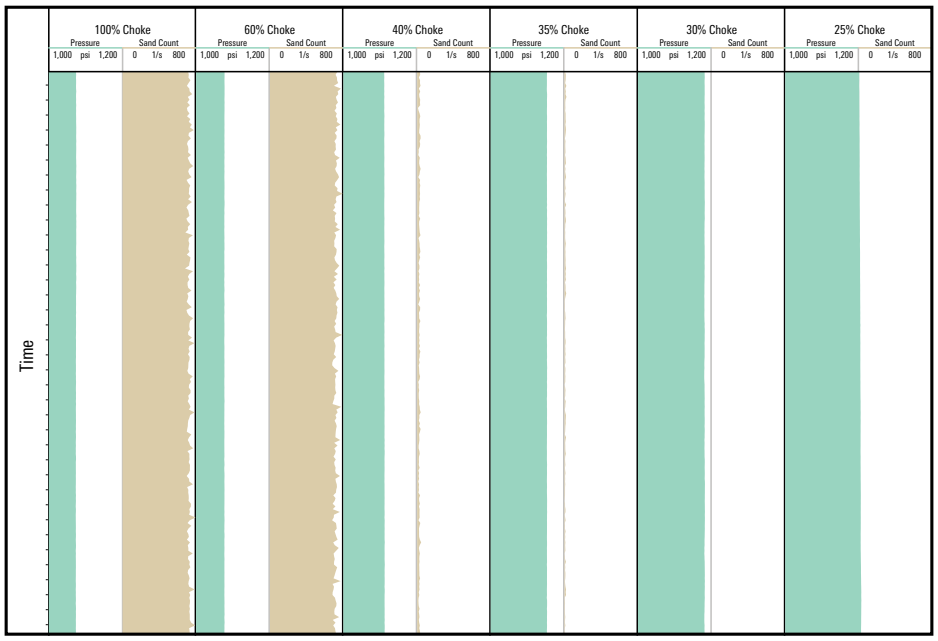
### Sand production damages flowline

An operator in the Gulf of Thailand was experiencing flowline damage from erosion caused by sand production. A surface clamp-on sensor was installed to detect the produced sand but could not reliably measure the sand production rate. Obtaining a realistic estimate required significant calibration. Without quantification of the sand production rate and knowing which interval was producing the sand, the operator could not adjust the drawdown to achieve sand-free production.

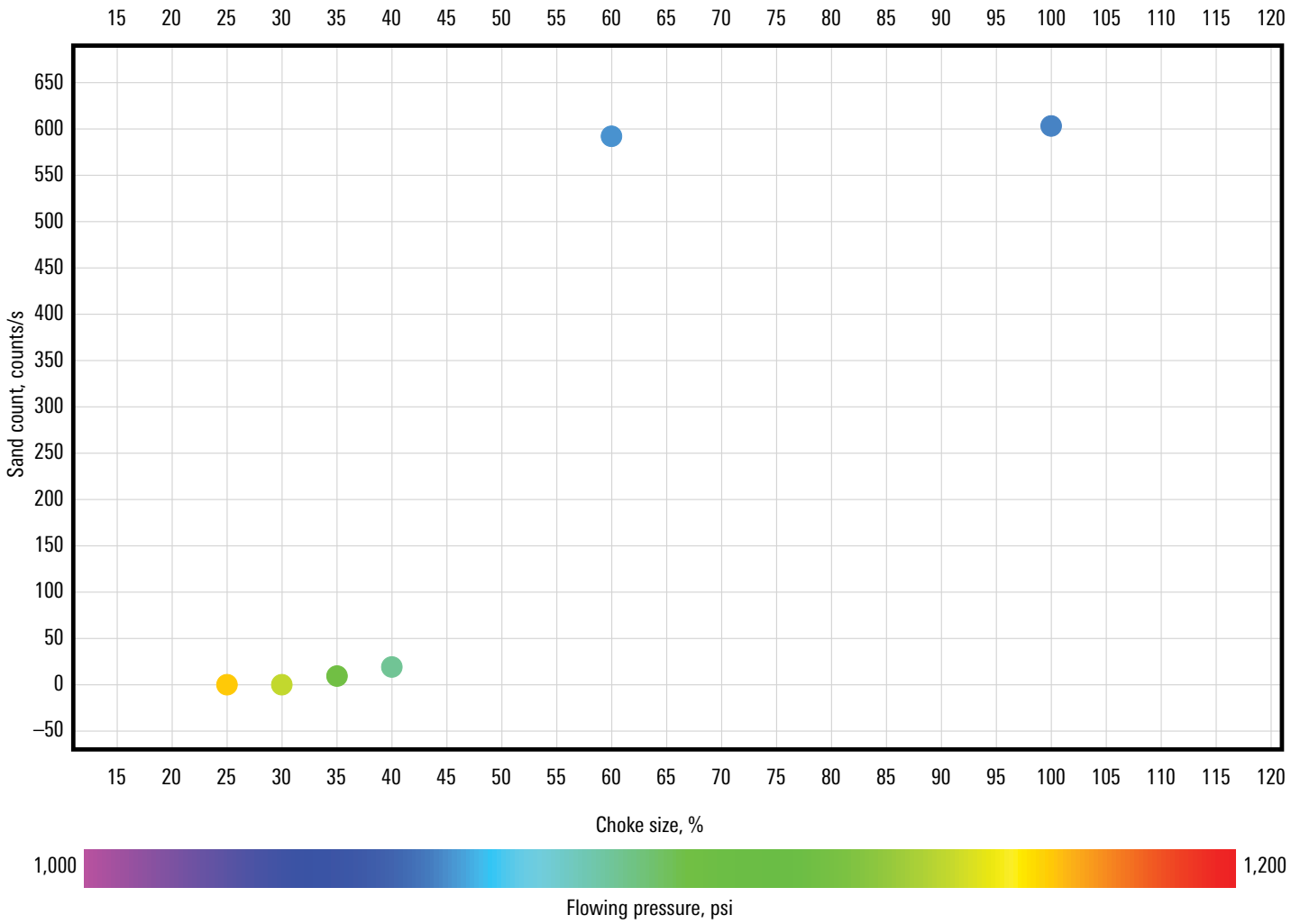
### Unique acoustic tool accurately counts wellbore particle intrusion

The innovative tool architecture of SandView downhole sand surveillance service integrates a new sensor design with signal processing and an interpretation algorithm to enhance the detection of sand entry points and determine production rates. The fully digitized high-resolution acquisition can detect single particles as small as 0.1 mm in diameter. Although the service is highly sensitive, detecting up to 1,500 impacts per second, it is immune to the typical sensing challenges posed by background noise from tool motion and fluid and gas jetting.

Run with the PS Platform* production logging platform for either continuous or station logging, SandView service introduces a fourth phase—sand—to production logging. Deployment on wireline or tractor conveyance accesses a wide range of wellbore trajectories.




*With SandView service stationary at a perforation interval in the well, the choke size was varied. While sand production was almost identical at 100% and 60% chokes, a sharp drop occurred at 40%.*




*By correlating the accurate sand counts determined by SandView service with the well pressure determined by choke size, the operator was able to adjust the choke size to prevent sand production and protect the flowline from erosion.*

## Sand production located and quantified to optimize production

SandView service was run in three producing wells where sand production was eroding the flowline. In the first well, SandView service detected 603 counts/s of small sand grains at one of the perforation intervals. Because the sand particle size and density were known, the sand production rate was easily computed, providing the operator with critical information for preventing sand production by either isolating the producing interval or adjusting the choke and drawdown to deliver a sand-free flow rate.

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