

ENVIRONMENTAL FRACTURING APPLICATIONS



FRACTURE-ENHANCED RECOVERY OF GAS CONDENSATE USING MULTI-PHASE EXTRACTION

... soil fracturing of low permeability silts and clays resulted in the recovery of liquid gas condensate which was otherwise immobile and unrecoverable using the existing extraction system.

Connecting sand slurry line in preparation for initiating fractures in soils near existing MPE extraction wells at a former gas plant in Alberta.

PROBLEM

Immobile pockets of liquid condensate persist in silt & clay soils underlying a former gas plant site. Attempts to stimulate recovery from high vacuum MPE extraction wells have met with little success in removing the remaining condensate.

OBJECTIVES

- to increase MPE recovery rates and eliminate the remaining condensate plumes.

FIELD PROGRAM

One fractured well was completed in each of the four remaining condensate plumes to increase the bulk permeability of impacted soils and performance of surrounding wells. A total of 21 tonnes of highly permeable sand was placed as discrete fractures between 9.5 to 12.5m depth. Surfactant was included in the fracture slurry to enhance condensate mobilization towards recovery wells. Fracturing and well installations were completed in 3 days.

EVALUATION

The soil fracturing program resulted in:

- an increase in bulk permeability of silt and clay soils of two orders of magnitude in condensate plumes
- A doubling of condensate recovery rates from fractured wells compared to conventional wells
- shrinkage of condensate plume (work ongoing).

