3M Specialty Materials

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U.S. Department of Energy
Office of Fossil Energy (FE-30)
ATTN: Trudy Transtrum or Nancy Johnson
1000 Independence Avenue, SW
Washington, DC 20585

Subject: Comments on balancing Natural Gas Supply and Demand

3M is pleased to comment on a new technology that offers the promise of making a major contribution to increasing the Nation's natural gas supply. Significantly increasing production from existing wells is a very effective approach to efficiently increase supply to meet the growing demand.

The 3M Company and the University of Texas, Austin have been conducting studies to address the problem of condensate banking around the well bore that reduces gas flow rates by as much as 90%. Condensate blockage occurs when the field pressure drops below the dew point of the condensate. In the United States, approximately 250,000 gas condensate wells are experiencing reduced recovery rates due to condensate banking.

The UT program is sponsored by a number of oil and gas majors and conducted under the leadership of Drs. Gary Pope and Mukul Sharma at UT. In these studies sandstone cores of typical porosity have been treated with a new class of 3M™ Novec™ FC-4430 Fluorosurfactants based on perfluorobutane sulfonate (PFBS). In laboratory experiments at simulated field pressures and temperatures, flow rates of 200 to 300% of the original flow rate were achieved. The treatment appears durable and does not damage the sandstone cores that were tested. Industry majors are supporting UT in this work, and the results to date are considered a technical breakthrough. Attached is a brief presentation of the work at the University of Texas with 3M fluorochemical materials.

The next step is validation of the treatment in field trials. Field tests are needed to determine:

- How to best apply the treatment under different well conditions
- How much the gas production is improved under different conditions
- How long the treatment lasts
- The long term impact on production from the field

The sponsors of the UT research program are moving forward with 3M to validate the new technology in a number of field trials in global locations. There are no field trials planned in U.S. gas condensate fields at this time.

It would be helpful if some of the first validation trials were on-shore in the United States by both independent and major operators, as the 3M technical resources are available and the FC 4430 is approved for sale in the United States for a number of applications.

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Therefore we would suggest:

1) 3M and UT see value in field trials in U.S. based gas condensate fields.
2) Advice is needed for selecting candidate wells in the U.S.
3) Marketing assistance in identifying the wells that can economically benefit from use of this new technology would accelerate use.
4) Incentives for stimulation of production of natural gas from gas condensate wells would accelerate acceptance of the new technology.

Sincerely,

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