

**Report from the Mining and Energy Commission (MEC)  
Coordinated Permitting Study Group to the  
Funding Levels and Sources Study Group  
On  
Calculations of Hydraulic Fracturing Impact**

In response to a request by MEC Chairman James Womack, the Coordinated Permitting Study Group Director, Dr. Kenneth Taylor was tasked to provide the Funding Levels and Sources Study Group with estimates of the impacts of hydraulic fracturing.

A comparison of the oil and gas permit application, instructions, bonding paperwork, and additional permits of eight states – Wyoming (WY), Arkansas (AR), Colorado (CO), North Dakota (ND), Ohio (OH), Pennsylvania (PA), Texas (TX), and West Virginia (WV) was conducted as an activity of the Coordinated Permitting Study Group. A single paper copy (double-sided when possible) was presented to the study group and each study group member, all MEC Commissioners, and all MEC staff were provided with a compact disc (CD) of the material.

The CD contained 231 megabytes (231 MB) of material in eight directories (one for each state). For each state, the following material was compiled: WY (35 files), AR (64 files), CO (56 files), ND (48 files), OH (41 files); PA (71 files); TX (162 files); and WV (41 files). Included in the Ohio material were two complete application packages for two wells. These documents also included the completion reports and simulation (hydraulic fracturing) reports.

The simulation report for Frank Unit No. 2-H was used. This was a 13,374-foot well drilled in Stark County, Ohio. A total of 24 hydraulic fracturing stages were completed on the 6,780-foot lateral.

The attached perforation report gives the totals for materials used in the hydraulic fracturing process: 67,272 gallons of 15% HCl, 2,708,561 gallons of slickwater, 1,169,960 gallons of linear gel, 4,048,893 gallons of crosslink, and 11,257,439 (lbs) pounds of fracturing sand.

A MC 306 (motor carrier type 306) also called a DOT 406 as the means to carry the liquid ingredients was used. The average maximum capacity of the carrier is 9,000 gallons. The number of loads for the 15% HCl is eight loads. For the slickwater, it would take 301 loads. For the linear gel, it would take 130 loads. For the crosslinks, it would take 450 loads. For the fracturing sand, it would take 245 loads using a 22 or 24 ton box carrier.

For the 15% HCl, it would average 0.3 to 0.5 loads per stage. For the slickwater, 12.5 loads per stage; for the linear gel, 5.4 loads per stage; for the crosslinks, 18.8 loads per stage; and for the fracturing sand it would take between 10 to 11 loads per stage.

From our contact in the NC DOT and with input from Toby Vinson, the impact of a fully loaded truck as listed about is equivalent to 3,000 to 4,000 individual vehicles. If the trucks are moved in convoy, there will be greater damage to the road because the pressure from one vehicle will not rebound prior to the pressure from the follow-on vehicle.

Impact from the same loaded carrier will be greater at slower speeds and should traffic be stopped the live load of the wheel converts into a dead load.

The attached spreadsheet also shows the particulars of how fast and how long the hydraulic fracturing process took place for the Frank 2-H well.

KBT