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Agitation

Disposal of drilling waste with a vacuum truck traditionally meant fluids only. With the progress of technology, limitations of onsite pit disposal, and cost-effectiveness of eliminating a shale pit, vacuum trucks have taken on the disposal of "total waste" - clear fluids, drilling mud, and drilling solids. These trucks were not originally meant for this task, and technology and techniques had to make up for its shortcomings. To prevent solids from settling in the bottom of a vac tank, they need to be "agitated" to form a slurry, which can subsequently be forced out of the tank.

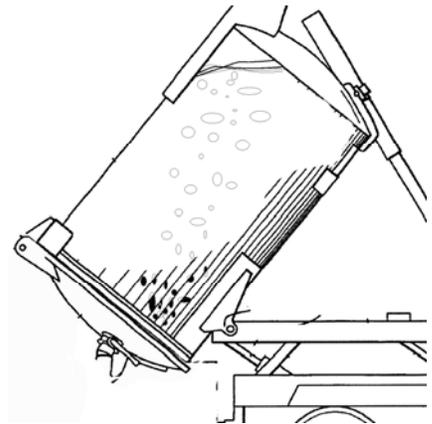
Methodology

The first vac trucks only had a basic round container — the metal tank. If you had solids in there, you were lucky enough to have a rear opening such that an operator could get in and shovel any remaining solids out. The more experienced operators, as you might still see around, started to "burp" their tanks. This involves keeping the tank under negative pressure (vacuum), with the hoist in the air and the bottom valve open. Coupled with a bouncing truck & tank, solids would slide to the back, where air would carry them upwards into the mud making a slurry. This procedure spawned the idea for some equipment that could be more reliable and self-automated.

Equipment

Bubble Bar: One of the first "agitators", this was a flat bar on the bottom of the vac tank. Hollowed with holes drilled along its length, it allowed an outside vent to let air into the flat bar or tube, with small bubbles of air lifting solids into a slurry state. Unfortunately, heavy accumulations of solids prevented any air to get in, and the amount of agitation proved insufficient (especially compared to the paddle agitators).

Mechanical Paddles: Probably developed by Westech systems, someone thought how much more efficient at agitation it would be to get a rotational blending action going in the tank. The first prototypes involved an off-set shaft from the front right side to the back rear left side. This shaft had arms coming off it, with small paddles at the end. Outside at the front, a small hydraulic motor (hooked up to the trucks' hydraulic system) would twist this shaft and create an agitation inside the tank. Though effective, it was found that a shaft mounted at the direct centre of the tank, lengthwise was much more efficient. (the offset ones would often accumulate solids in the corners, including a 'special surprise' for any operator that opened the back door. The downside of ... (cont'd page 2)



"burping" a vac truck tank



A common "Mechanical Paddle" style agitator in a vac truck tank

Study shows water well quality not related to coalbed methane development

Landowners, Operators rejoice! *Edmonton...* A thorough assessment of four water well quality concerns from private landowners shows no relation between coalbed methane development and well-water quality. The Alberta Research council has conducted an independent review of four water well complaints allegedly linked to coalbed methane activity. The end results showed that... (cont'd)

(agitators continued)

...these paddle agitators is that heavy bottom accumulations including settling or frozen solids can cause the paddles to get 'stuck' in place. Furthermore, attempt at enabling the agitator can often cause expensive twisting of the

shaft, and if you really want to annoy a vac truck operator, making him shovel 4000kg's of sand and shale between tight arms is a certain unpleasantly!

Hydraulic Agitation: Within the last 4 years, vac trucks are being equipped with specialized trash pumps. These pumps take fluid that is already in the tanks, and under high pressure, *jet* the existing fluids around the bottom and sides of the tank.

Originally as a big bulky trash pump on the back of a vac truck that would often get ripped off in the field or deep rutted roads, they are now being installed *inside* the vac truck tanks. While this increases the risk of hydraulic oil contamination of fluids, **Mark Gallup of Gallup**

Agitator Systems Inc. says their "newest generation of agitators are now vented to atmospheric system—to greatly decrease the negative pressure on the seals and bearings of the internal pump". Add to this the flexible spout that discourages plugging, the system is a vac operators' best friend.

Additionally, the "suck and blast" procedure can be used. Some options allow to use existing fluids on the truck to water-blast any solids outside the truck. This creates a very self-sufficient truck at remote worksites, and removes the need for a separate water truck, complete with its associated extra costs.

The hydraulic agitator, with its high efficiency, may however have its difficulties with operation. A little finicky to get used to at first, proper training will be required for your vac truck operator to get a good understanding of how to use it. Frozen pumps and lines are also possible in extreme cold conditions.

The agitator system you use will depend on availability and features on the vac truck you use. You may request an agitator with your vac truck, typically \$100/day more, but unless you are specific, you may get any of the above styles. Whatever the case, proper agitation is crucial in efficient operations at the well site.



A Hydraulic Agitator system.

-Photo Courtesy of Gallup Agitators Systems Inc.

(Water wells cont'd)

...the four wells were not affected by coalbed methane development, but rather (as industry speculated—Ed.) but from natural issue. Poor maintenance, drilling water wells into formations with natural methane or methane-producing conditions, as well as general poor construction were attributed to these circumstances initially reported with nearby CBM development.

CBM development has been getting a very bad rap due to the highly publicized CBM development directly attributed to water well damages in Montana. As such in May 2006, companies involved in CBM development were required to collect baseline information on active water wells within a 600-metre radius of their CBM well. While Alberta environment does acknowledge there is a potential for methane to migrate from these activities into a water well, it is highly unlikely for a number of reasons, unique to Western Canada compared to Montana. While there are no known or demonstrated adverse health effects associated with drinking or bathing in well water that contains methane, the explosive nature of this odorless, colorless gas could be tragic. Accumulation in well pits, cellars, basements or well houses could cause injury or death due to explosion or asphyxiation.

For more information on the full news release, please go to:

CBM FAQ: Alberta energy: <http://www.energy.gov.ab.ca/NaturalGas/750.asp>

Full Article: <http://www.gov.ab.ca/home/NewsFrame.cfm?ReleaseID=/acn/200801/22887889795A5-AA94-8312-8BF835E01B01EE07.html>

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