

We were very happy with the first day of testing. The following pictures show the load size increase from using the Air Assisted Loading and not.

We also did a weight measurement, so that we could tell how much of the increase in load size was fluff and how much was actually more dirt. We will have the exact details of the weight measurement out in the next few days. But the preliminary result is about a **36.8% larger load size** (by weight).

Date: Feb 28, 2005

Place: Green Canyon bridge construction project (Idaho)

Operator: Dan Mitchel (20+ years experience)

Soil: Loam/clay dry

Tractor: Ford/NH 8770 (142 drawbar HP)

Scraper: Miskin SP-C17BT (17 yard)

Loading Area: Very short, downhill grade.

Recharge time: 2 minutes

Air Blast time: 20 seconds (with aprox 75% of the air coming out in the first 10 seconds)

The scraper was equipped with a ripper, but it was not used.

Baseline (no air): We made several loads at first, with no air, and then more once in a while though the day, to see if any change in ground conditions would affect the baseline. All the "no air" loads were about the same size and weight, with very little differences between loads.

We had the same loading distance (and about the same time) when loading both with and without air assist.

We purposely chose a tractor that was significantly undersized, so we could better measure the effect of the air assist. Normally the C-17 would have over 300 hp pulling it. Our recommended minimum is 200 hp (drawbar). We were using 142, so we did not expect to get giant heaping loads. Our main purpose was to accurately determine the differences between loads (air and no air), not to obtain giant loads.

We also experimented with various techniques for using the air to assist loading.

We did a few loads in wetter ground, and had about the same results with the air assist, as in the dry ground.



This was as big a load as we could get without air assist. Struck capacity is 12 yards, and this was about 10-11 yards.



This was loaded with the air assist, in the same distance and time, using the same 142hp tractor. Note that in addition to filling taller, the "corners" of the bowl also filled up much better with the air assist. If the ground had been more moist, the dirt would have stacked up higher.



You can see that some of the load ran over the sides.



As the air kicks in, you can see little dust "volcanoes" but it did not create significant dust, even in this dry dirt.



This is about the "most" dust it created at any time. We loaded the scraper as much as we could without the air. Then as the tractor ran out of power, we would turn on the air blast. The tractor lunged forward. From the cab, it felt almost like the scraper came out of the ground (although the digging depth was the same). It was immediately very notably easier to pull, due to the air lowering the scrapers pulling resistance. The tractor immediately gained traction, speed, and momentum.



The air changes the dirt in the bowl to a "fluid" state. Note how it is spilling over the sides, without being heaped up. In this "fluid" state, more new dirt can easily enter the bowl.



We noticed that the "peak" of an air-assisted load is generally farther forward, than it would be without air. The MisKin "forward reaching" apron will be an important feature on air assisted loads.



Note how the dirt piles all the way to the top of the Apron Control Pipe (the rest ran off the front and sides).

It was amazing to see this much dirt loaded into the scraper so quickly. To load the SP-C17 this full this fast, would typically would require a 350+ hp tractor.



Note the short loading area (indicated by green arrows) in the background. The man is standing at the mid-point. Normally the shorter the loading distance, the larger the tractor would need to be. Not so, with Air Assisted loading.

<http://www.miskin.com/AirScraper.htm>

AirScraper is a trademark of Miskin Scraper Works, Inc. The Air Assisted loading concept is patented in the USA and internationally.