May 2010 test of spiral panning machine modified for heavy mineral separation. The 24” spirally grooved pan rotates clockwise and a spray of water washes over the sample. Heavier grains remain in the grooves, and are carried through the tube in the center to a collection beaker. Lights are washed down, and eventually overflow and fall into the bucket at the bottom. Water for the spray bar is supplied from the bucket at left by a 12V pump (power supply at right). Overflow from the lights bucket falls first into the rectangular plastic bin to settle out part of the suspended sediment, then to a bucket on the floor.

Below: view of the spiral grooves, holding a decreasing amount of sample as the sample is carried to the center, resulting in a concentration of the heavier minerals.
Top left: view of gravity feeder/demagger. The sample was first crushed to <500 um and demagged once by this device. The bottom of the plastic funnel is covered by a paper funnel with a ca. 1/8” opening in the bottom. The sample falls past a paper-covered 25 lb. pull magnet to pull off remaining mags. The 1/8” opening seems to give about the right feed rate, and most samples don’t clog too much. The mags periodically need to be swept aside on the magnet (generally not a big problem after the first demag).

Bottom left: back view of the panner showing the 12V motor and gearbox, and heavies beaker. The larger magnet used as a support for the sample feeder is also visible, as is the Bico disk mill with dust enclosure in the background.

Top right: closeup of heavies beaker - a 250 mL beaker with a hoseclamp and wire holder. By the time they reach the beaker, the heavies are quite well cleaned of dust and fines.
Heavies from the panner.

**Top:** view of a good patch of zircons in the heavies beaker. The large quartz and feldspar grains are ~500 um.

**Middle:** view of the heavies after sieving to 250 um. The pink, zircon-rich patch is visible at right. This gives a reasonably good idea of the zircon concentration in the heavies.

**Bottom:** closeup of zircon-rich patch in the middle photo.

This sample was a granitic pegmatite, probably about 1.5-2 kg. This took about an hour to run on the panner, requiring ca. 10-15 gallons of water.