

Can we reduce the “per unit” *SD detector tank costs?*

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At least ... **several issues:**

- What will be **the** goals of Northern Auger?
- Assuming a large surface array ... what is new/special with construction in the U.S. and/or with the Colorado site?
- What has been learned from installation and/or operation of the surface detectors (SD) in Southern Auger
- What has been learned about the SD detectors from the analysis of the data from Southern Auger?

Even if Northern Auger = **Southern Auger**

- For both *cost* and *time for installation* reasons the surface detectors should be as simplified as possible ... the issue here is **what is a reasonable goal** [consistent with maintaining detectors acceptable to the collaboration]?
- While the most costly and/or time consuming components should be considered first, it is likely that “all” components should be scrutinized with the goal of simplification and/or cost reduction and/or increase in reliability.
- Note: even if we do not choose to do this ourselves our funding agencies may demand it! **And this is even more true if we were to propose a significantly bigger array.**

For SD the costs are many places!

- From my reading of the Auger W.B.S. (*i.e.* not the management's fault ...):
 - $SD_{total} = \$22M$
 - Comms = \$3M
 - Site = \$7M
- Allocating all of these to SD, the SD-total = \$32M or \$20k/tank.
- My point is that SD tank "per unit" costs are not just in tanks themselves.

SD “per unit” cost reduction R&D issues:

- What would be the impact on a Northern Auger decision if “per unit” SD detector tank costs could be **substantially reduced**?
- What cost reduction might be possible? An what is likely based on (other) suggested R&D:
 - *Surface Detector local station electronics*, Laurent Gugleilmi
 - *Surface Detector front end R&D*, Tiina Suomijarvi
 - *A roto-molder in Lincoln, NE*, Greg Snow
 - *SD manufacture in SE Colorado*, Dave Warner
- What are possible sources for funding “this” R&D?
- What are possible *instrumentation* science objectives?
- What are possible *political* objectives?