Index-velocity Quick Sheet

ADVM Cell Size

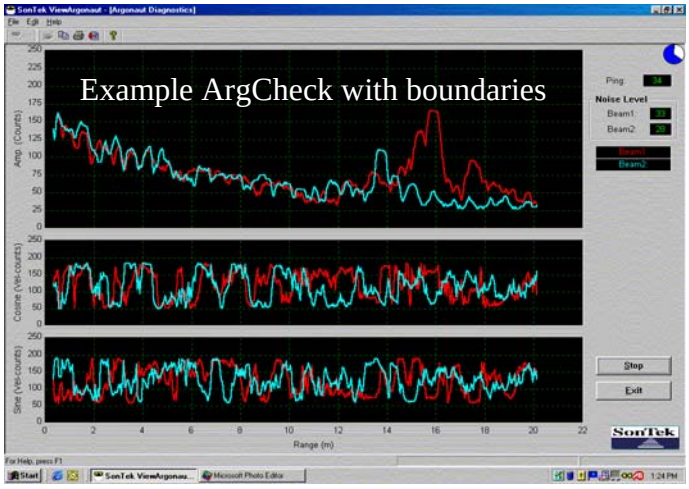
- After site reconnaissance, estimate the maximum cell end by computing Aspect Ratio (AR)
  - AR = R/D; where R is the range to the end of the cell and D is distance to nearest boundary
  - Maximum AR of 10 is conservative
  - Consider an AR of < 8 if there is a rough stream bed or stratification.
  - In many channels the zone of maximum velocity is below the water surface at 0.05 to 0.25 times the depth
- Set cell beginning so that it is beyond bridge pier wake turbulence zone (**b**), where

$$\mathbf{b = c(dx)^{0.5}}$$

b = lateral distance from pier centerline to edge of wake zone
d = pier width
x = distance from ADVM to upstream face of pier
c = pier shape factor

Pier shape factor for a round nosed pier:	0.62
Pier shape factor for a rectangular nosed pier:	0.81

- With ADVM in the water and positioned at the location in the vertical that will be used for index-velocity measurements, run a beam amplitude check. Use ***ArgCheck*** for a SonTek/YSI Argonaut SL and Range Check for a Nortek EasyQ). The cell end should be set so that:
  - beam amplitudes at the cell end are <u>at least</u> 10 counts above the instrument noise level, **and**
  - the cell end is at least ½ the pulse length from any boundary, **and**
  - the cell end is at least 0.10*D from any boundary, where D is the distance from the ADVM to the boundary
- A 1.5 MHz SonTek/YSI Argonaut pulse length is 0.5 meters, a 2 MHz EasyQ has an adjustable 0.4—2 m pulse length
- Run a beam amplitude check with ADVM out of water to obtain the instrument noise level.



REMEMBER: the ADVM cell **must** be in a zone of stable velocity in order to have a stable index velocity rating.