

# Positioning Systems

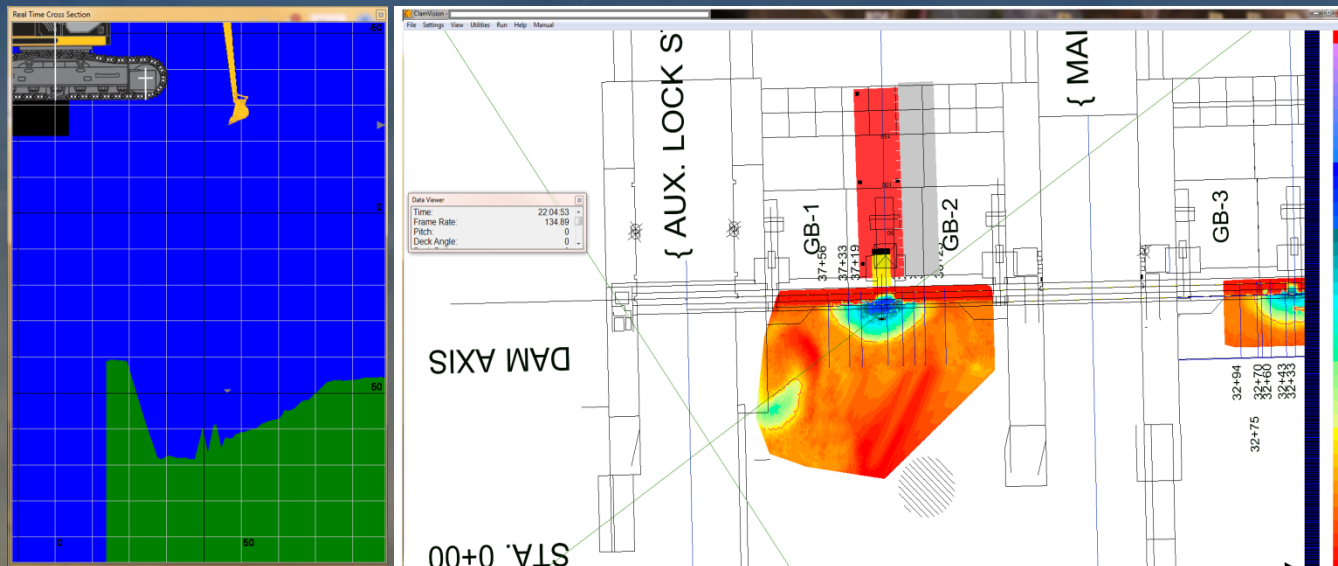
## Environmental vs Navigational



**Harrison Steves  
Cable Arm, Inc.**

# What is a positioning system?

- Positioning systems use the latest technology and sensors to provide real time job data to the construction crew. They also monitor, record, and in some cases automate construction work.
- Positioning systems also track dredged material.



# What's the difference between environmental and Navigational dredging?

- Movements
- Budgets
- Disposal requirements
- Material type
- Reporting
- Production numbers
- Crew
- Accuracy and precision

# How are positioning systems used differently?

## Navigational Dredgers:

- Low system complexity
- Barge and tool position
- Tool depth, maybe
- Barge speed
- Protection of equipment
- Customized by contractor
- Features used for operations other than dredging

# How are positioning systems used differently?

## Environmental Dredgers:

- Higher system complexity
- Customized by spec
- Barge and tool position
- Tool depth
- Barge speed
- Protection of equipment
- Track material
- Turbidity
- Open/closed status of clamshell bucket
- Record of material type in bucket
- Automated data transmissions to servers
- More focus on reporting



# System Accuracy?

## Navigational Dredgers:

GPS- Submeter

X-3'

Y-3'

Z-6'

Depth- 6"-1'

Angle measurement-  $.25^{\circ}$

Heading-  $.3^{\circ}$

Pressures- .1% full scale

## Environmental Dredgers:

GPS- 2cm

X-2cm

Y-2cm

Z-4cm

Depth- .1'

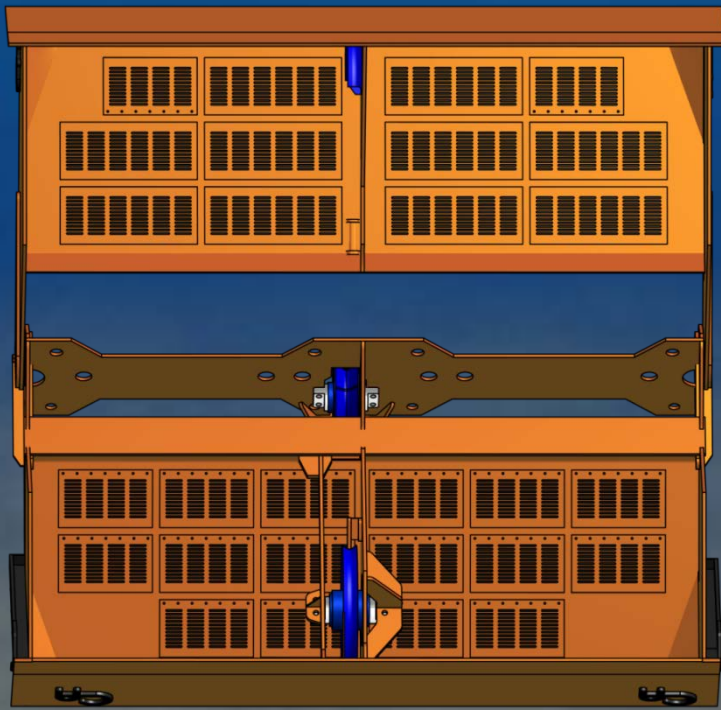
Angle measurement-

$.1^{\circ}$  or better

Heading-  $.01^{\circ}$

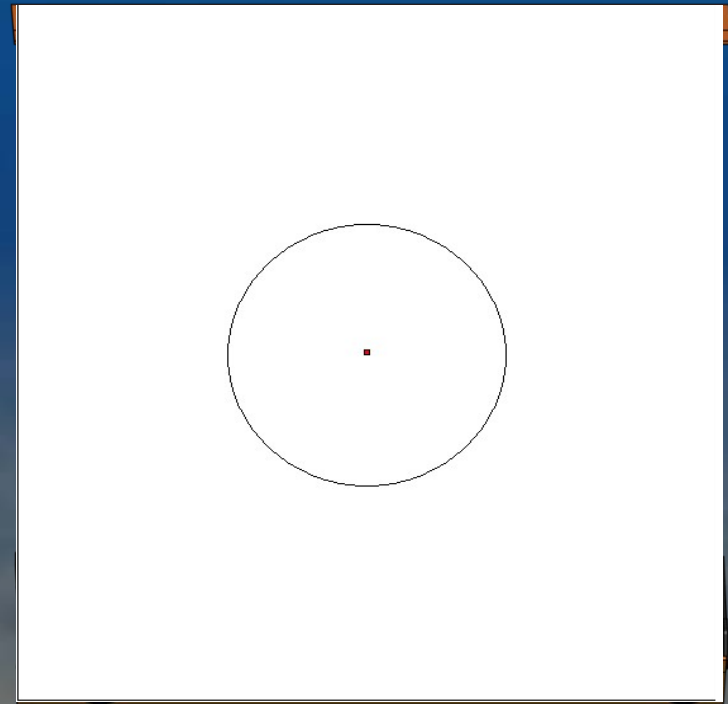
Pressures- .01% full  
scale

# SUBMETER vs RTK GPS



15'

16'



15'

16'

# Keeping the cost down...

- Down time- Keep spares on board, have personnel available
- PC- Know your PC and use backups
- GPS- follow the spec. USE RTK only where you need to
- Utilize existing equipment
- KISS



# Thank You



**CLAMVISION®**  
WIRELESS DREDGE POSITIONING SOFTWARE

