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Flux Chamber Designed For Mercury Contaminated Sediments

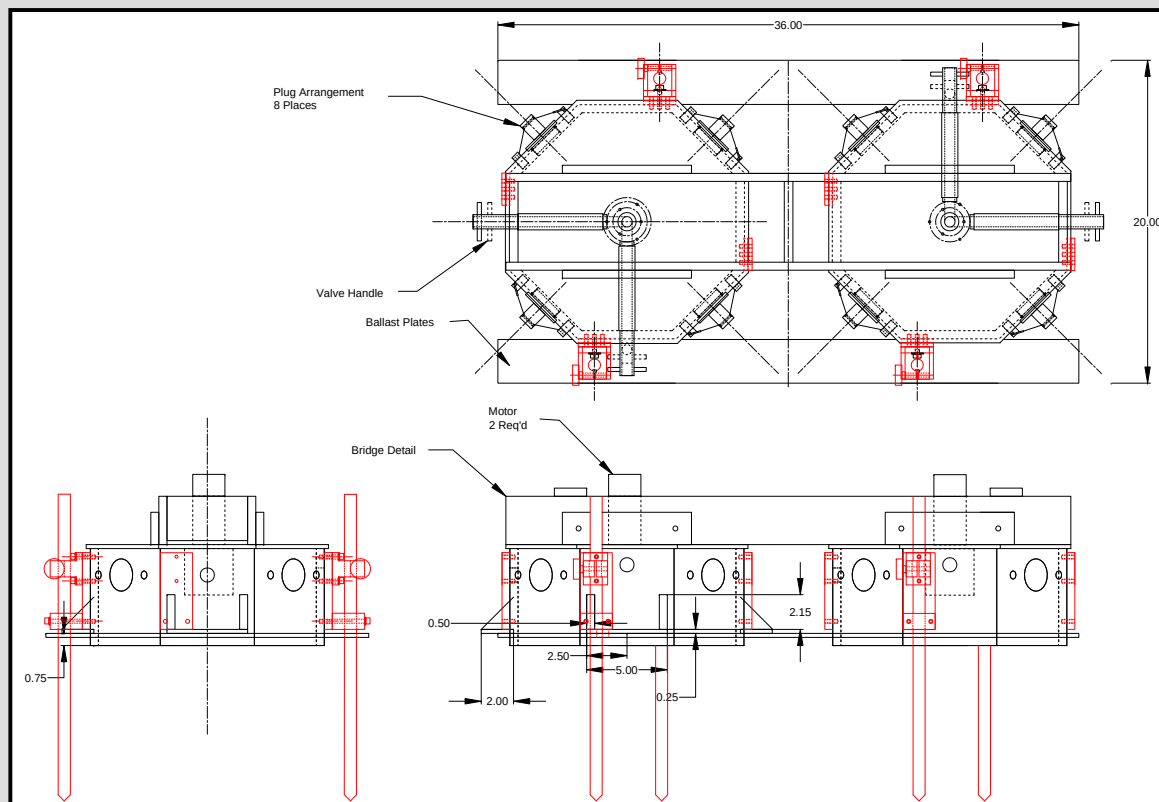


Figure 1. Flux chamber design

Rich Landis - DuPont

Flux Chamber Background

- Flux chamber is specifically designed for measuring very low levels of mercury efflux from sediments.
- Flux chamber design is based upon collaboration with Dr Gary Gill with Texas A&M - Galveston.
- Design uses only polycarbonate or Teflon materials for surfaces in contact with efflux from sediment.
- Design incorporates a pump, ports, and unique valving to prevent stagnation of internal water prior to initiation of sampling and during sampling.

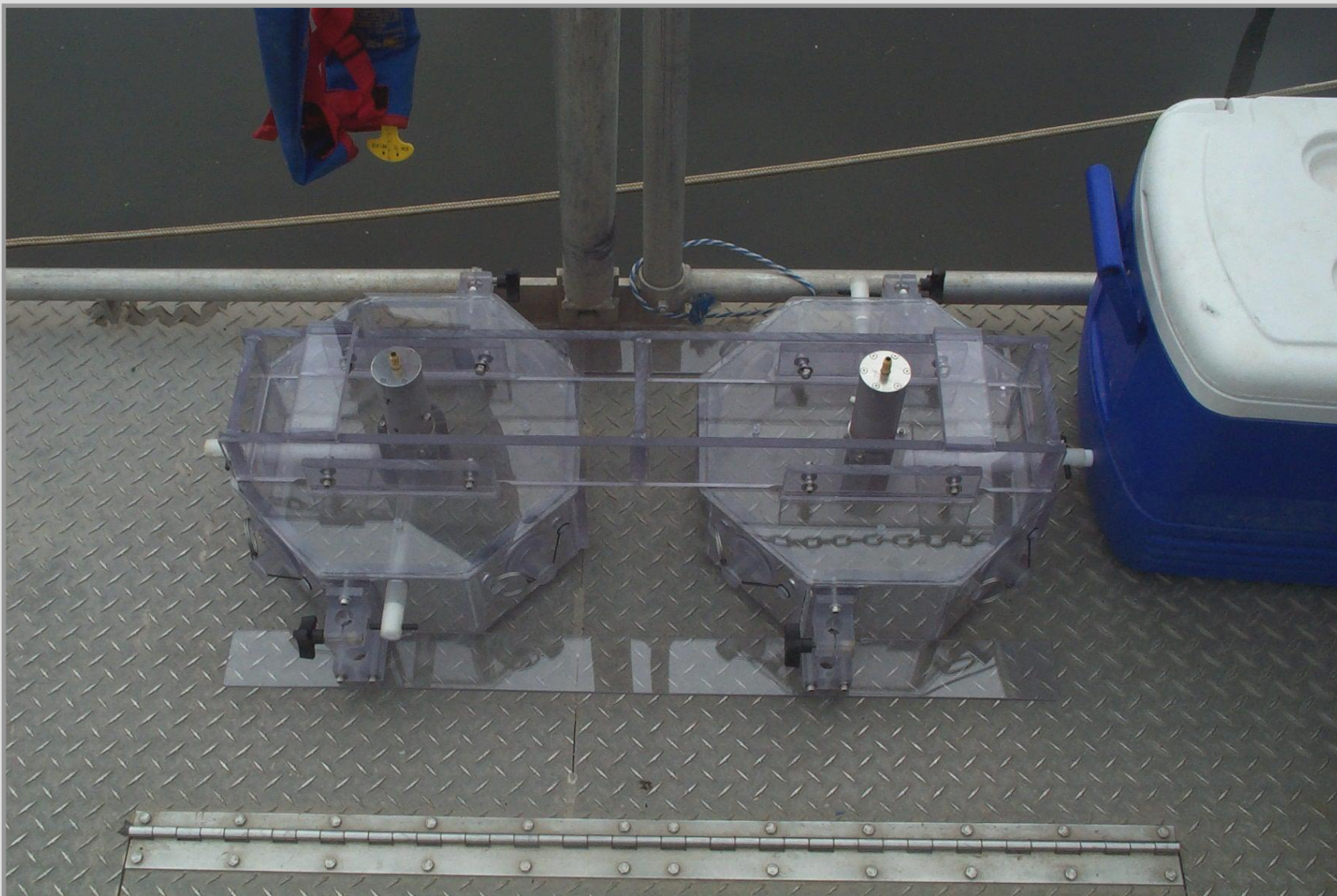
Chamber Preparation

- Chambers go through an extensive cleaning process to remove trace amounts of mercury.
- Assembly of the each chamber is done in a medical type clean hood.
- Chambers are bagged until ready to be deployed.
- Two chambers are assembled together for deployment using ultra-clean procedures.

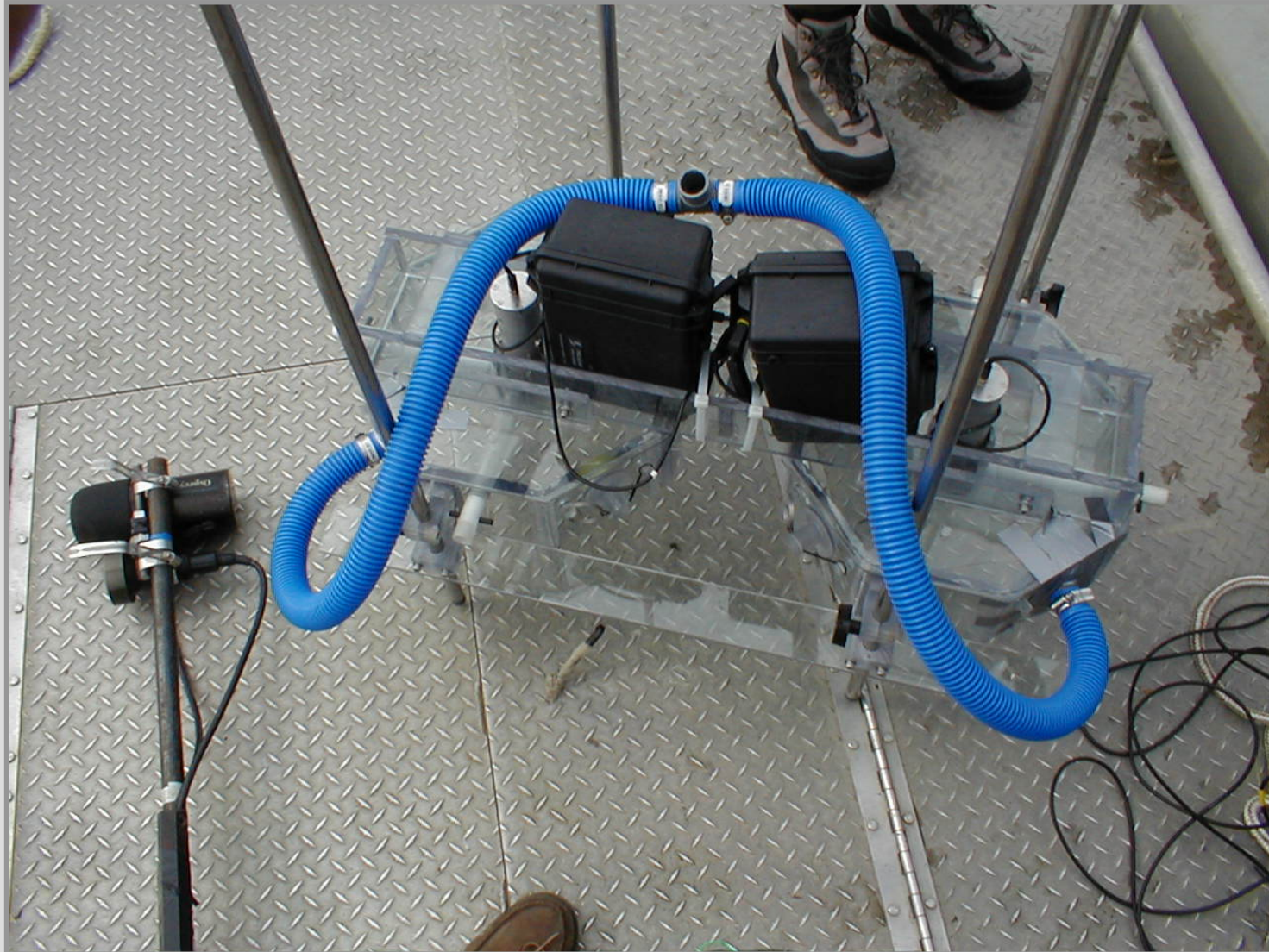
Flux Chamber Sampling

- The flux chamber is pushed into the sediment until the support plates come into contact with the sediment.
- The sediment is then allowed to settle for 30 to 60 minutes.
- After the equalization period, the ports are closed and the valves are opened/closed.
- A baseline sample is taken at time zero and hourly thereafter for roughly five samples or until DO is 50% its original level.

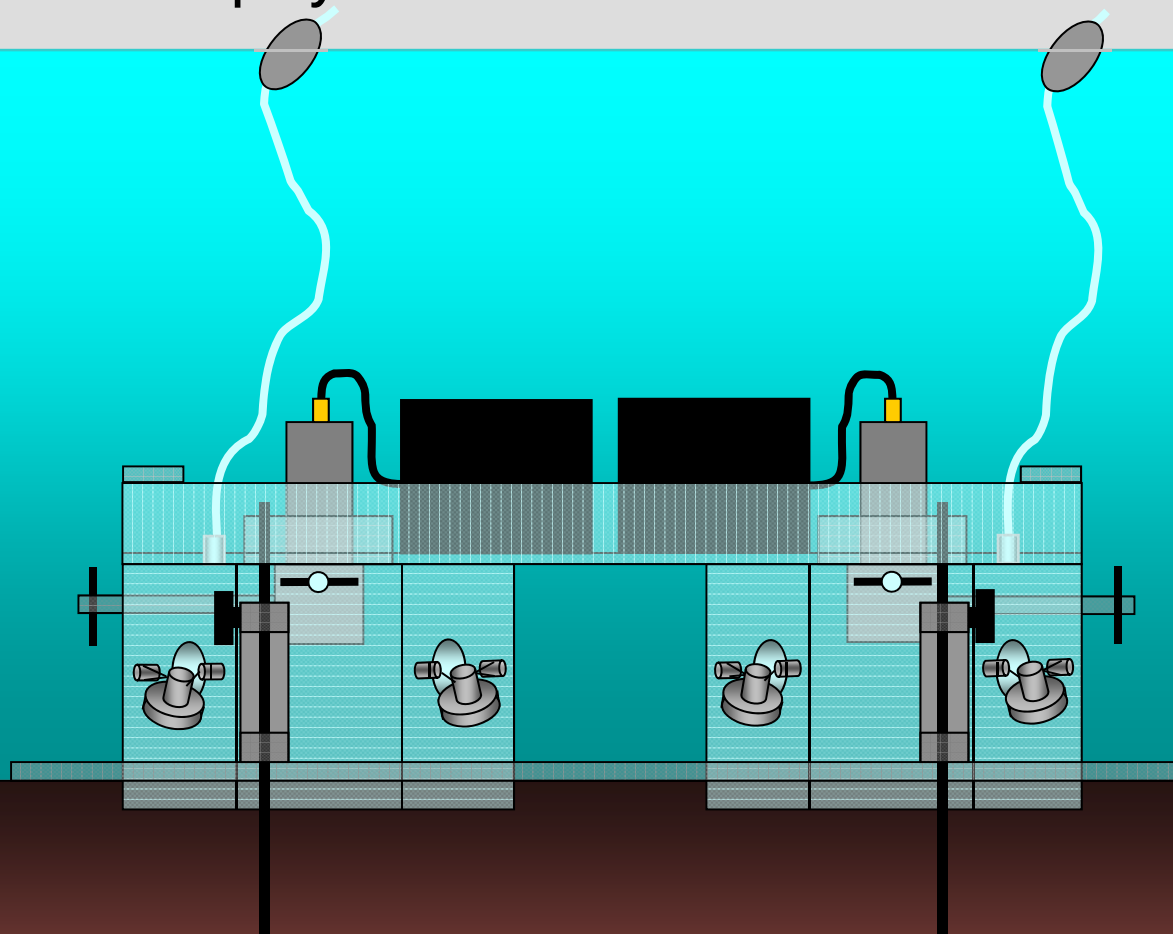
Flux Chamber Assembly



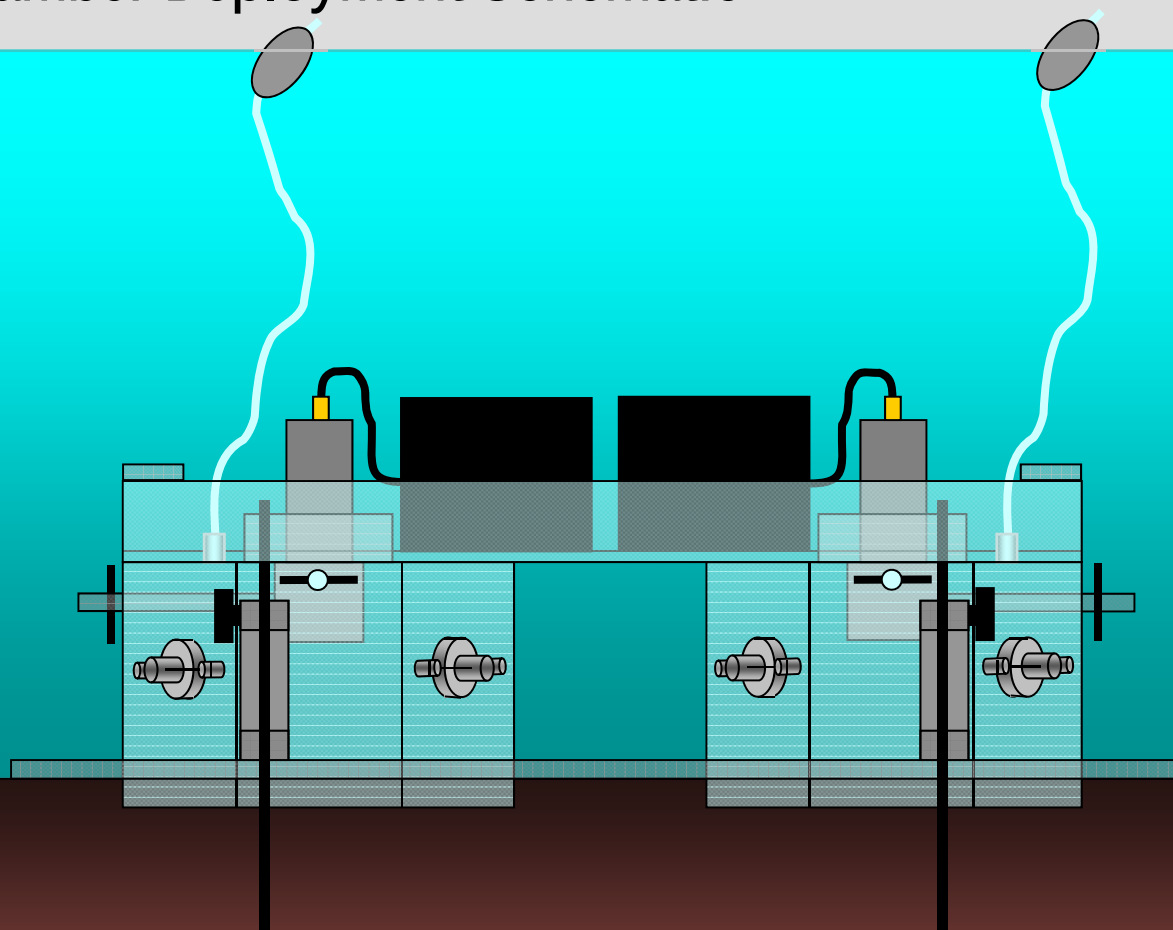
Flux Chamber Ready For Deployment



Flux Chamber Deployment Schematic



Flux Chamber Deployment Schematic



Internal Mixing Pump



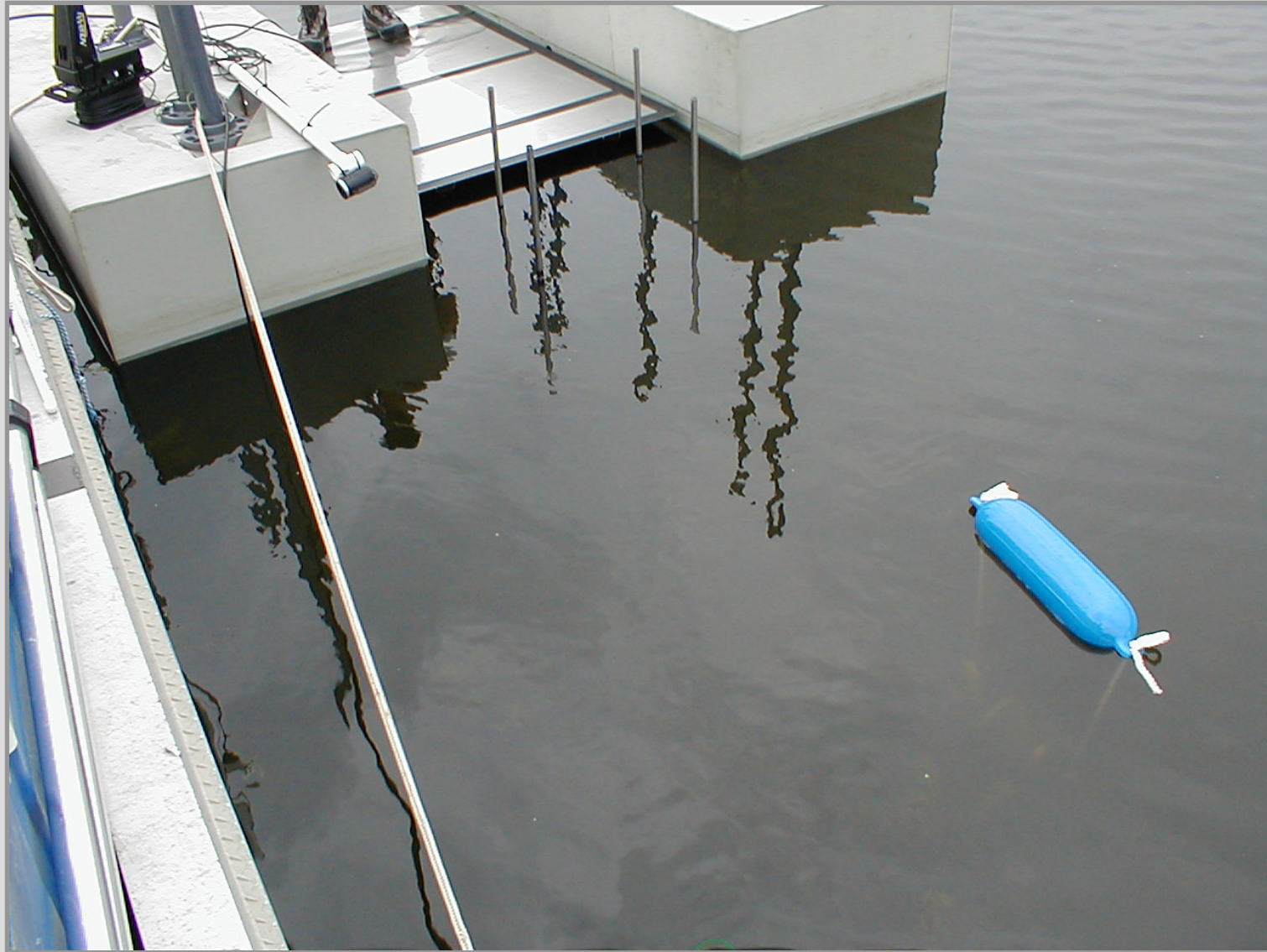
Flux Chamber Work Platform



Chamber Being Readied For Deployment



Flux Chamber Deployed In 4 Feet Of Water



Flux Chamber Status

- Ten flux chamber assemblies with dual chambers have been fabricated.
- One underwater flow meter has been procured.
- Two underwater cameras have been procured.
- Preliminary trials of the flux chamber, work platform, and underwater cameras were successful.
- Remote valve design was successful, but remote means to actuate the valves was less than desirable.

Path Forward

- Next deployment will be done by divers with manual valve actuation.
- Next deployment is expected to be in March/April 2005.



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