Requirements

- Discrete inductively linked instruments in top 300m.
- Antenna connection for data (data from MMP's also?)
- Sufficient power to meet sampling requirements .
- 1 Year turn-around
- Wave excitation of Mclane wire within acceptable limits (maybe an operational/survival distinction appropriate here)
- Possibly a requirement for one or more data/power breakout along mooring wire

Basic Concept

- Submersible mooring connected to top of McLane floatation with wire-rope and stretch hoses to decouple wave motions from McLane wire.
- Power for inductive modems and data comms from primary battery pack (assumption is that solar/wind on submersible buoy isn't feasible).

Design Space

Design variables available to meet requirements:

- Buoy size
- Cable characteristics (wire-rope or EM cable)
- length/size of stretch hoses.
- Depth of sub-surface float that marks the top of the MMP travel.
- Size of the sub-surface float
- Location of batteries
  - In Buoy. Traditional and easier pressure requirements and allows wire-rope to be used as inductive path. But drives buoy size proportional to power requirements
  - Somewhere else. (i.e. at subsurface float or an intermediate position between the surface buoy and sub-surface float). This drives a requirement for an EM cable between the batteries and the surface buoy.

Work Breakdown

- Determine Power Budget (Instrument list and data transmission requirements)
- Determine max acceptable wire motions for MMP (operational and survivable). Is a test required? Certainly McLane involvement
- Buoy concept design to set size. Possibly two required, one with batteries, and one that just houses radio and antenna.
- Determine cable characteristics for wire-rope and E-M cabling options as well as stretch-hose characteristics.
- Develop one or more mooring concept designs based on static buoyancy requirements and intuition/experience.
- Model concept designs. Compare results to allowable peak tensions and wire-motions.

  Rough estimate of number of model runs (for one location):
  Sea Conditions = 3 (10/30/100 Year conditions)
  Concept Configurations = 2
  Iterations = 3
  Total = 3X2X3 = 18

- Preliminary Design Review that highlights most promising concept
- Detailed design of all mooring components
- Critical Design Review
- Build
- Deploy