Akim Mahadiow – UCC Team

EECE401
Senior Design I
Electrical and Computer Eng
Howard Univ
Dr. Charles Kim -- Instructor
WWW.MWFTR.COM

- Performance Requirements.
  - Function in sea water and Fresh water at depths up to 100m.
  - Function in temperatures between -2 and 50 °C
  - Input power 48 VDC, 25 amp.
  - Capable of carrying a 2.4 or 5GHz and a 802.11 signal across the connector.

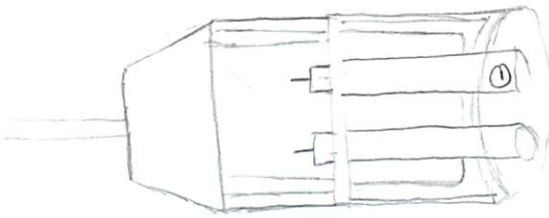


Figure 1

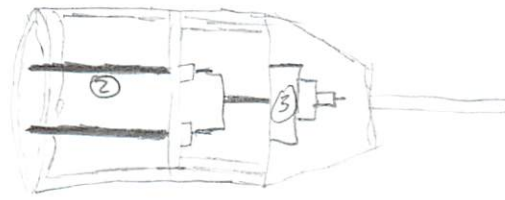


Figure 2.

Figure ① number 1 is one of two female socket, which the niobium male componet will be connected from nuber 1 figure ②. The entie System is made from material that can withstand pressure and intese temperature. Number 3 ifug ② is the power source which will transmit up to 48 VDC, 25 amps of power.

Individual Idea Generation

De'Shawnn Woods II
2026668528
Underwater Connector

* Underwater Current Connector (UUC)

Description

For Connector Piece

1) The Main connector piece used to charge the Unmanned Underwater Vehicle, from a power station, made with Niobium

2) Rf Support (Bias tee) used within connector piece to help the connector to communicate with the charging station.

3) RF Funnel System (Choke) used to help the signal sent from the bias tee be contained and properly sent and transported to the charging station

4) Power Supply for the connector

5) Plugs used to connect physically to the charging station itself and collect the distributed power needed to charge the UUV

6) Meters to calculate power collected, and power needed

7) Connects to the actual UUV to transport the power to the energy source and recharge the source.

Design

Connector at UUV (Design #1)

Crepin A. Makap / UCC Team

(onceptual design

Figure A is description of concephualized dry-mate, wet-mate Unmanned underwater vehicle.

(21) represents the piece connected to the UUV

(22) represents the piece connected to the charging station.

② will be the pin of niobuim connected on (21)

① will be the female pin of niobium connected to the charging station.

Note : Niobuim is used because of his capacity to operate as a super conductor under −150 k temperature and it's not affected by sea water

① X block represents the electrical circuit system that recieves current from the charging station

⑥ Y block represents the electrical circuit system that dispatches current into the UUV.

① is composed of a load (12) that must likely will be a battery, of 25A (8) which is an inductance, (7) which is capacitor

③ and ⑩ will be respectively

Global View

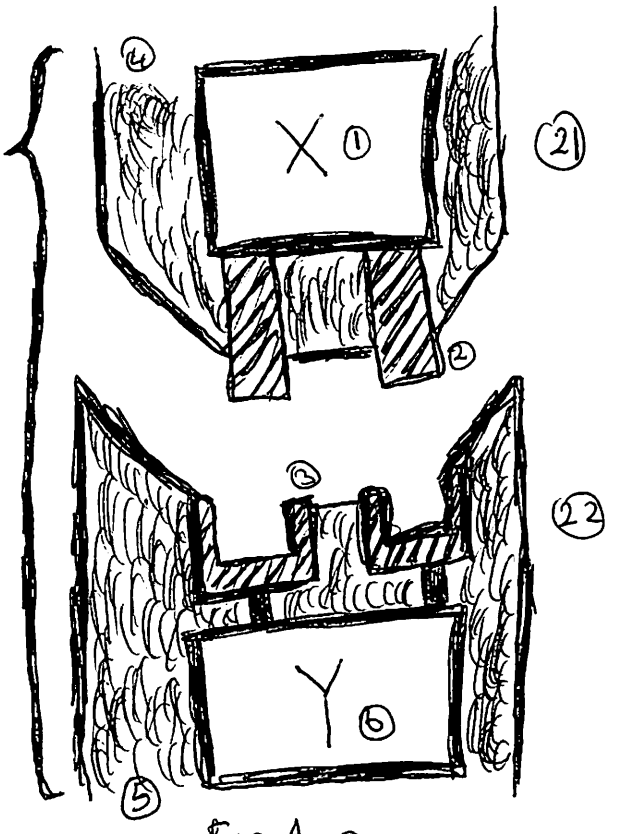
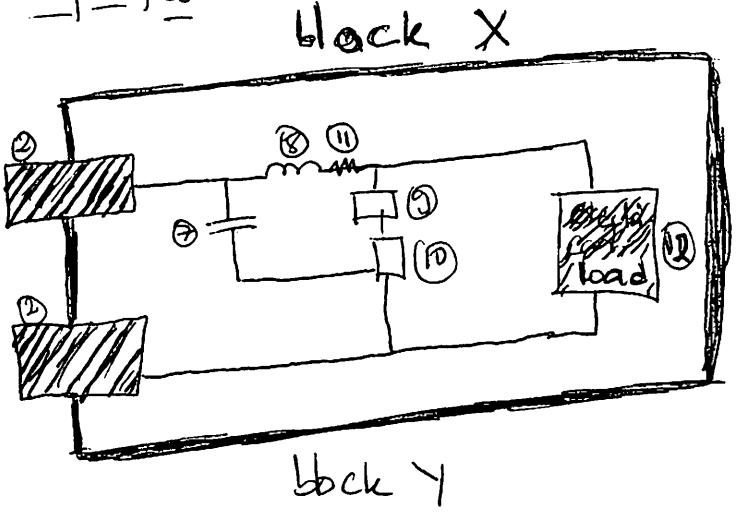


Fig A.a

Specifics



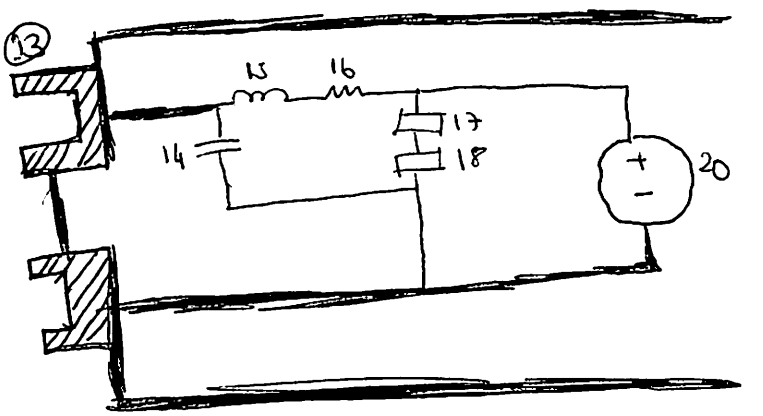


Fig A. b

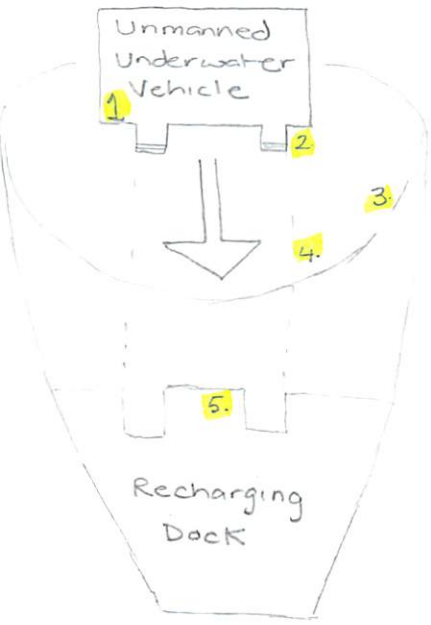
power converter and RF.

⑥ Block 4 ~~represents~~ is composed of a generating source of 48 DC voltage (20), a capacitor (14), an inductor 15 and a resistance (16) (17) and (18) correspond respectively to power converter and RF micro.

Underwater Current Connector
Kerri Chambers @02667717
October 22, 2014

Solution Generation

Proposed Design



Concept of Proposed Design

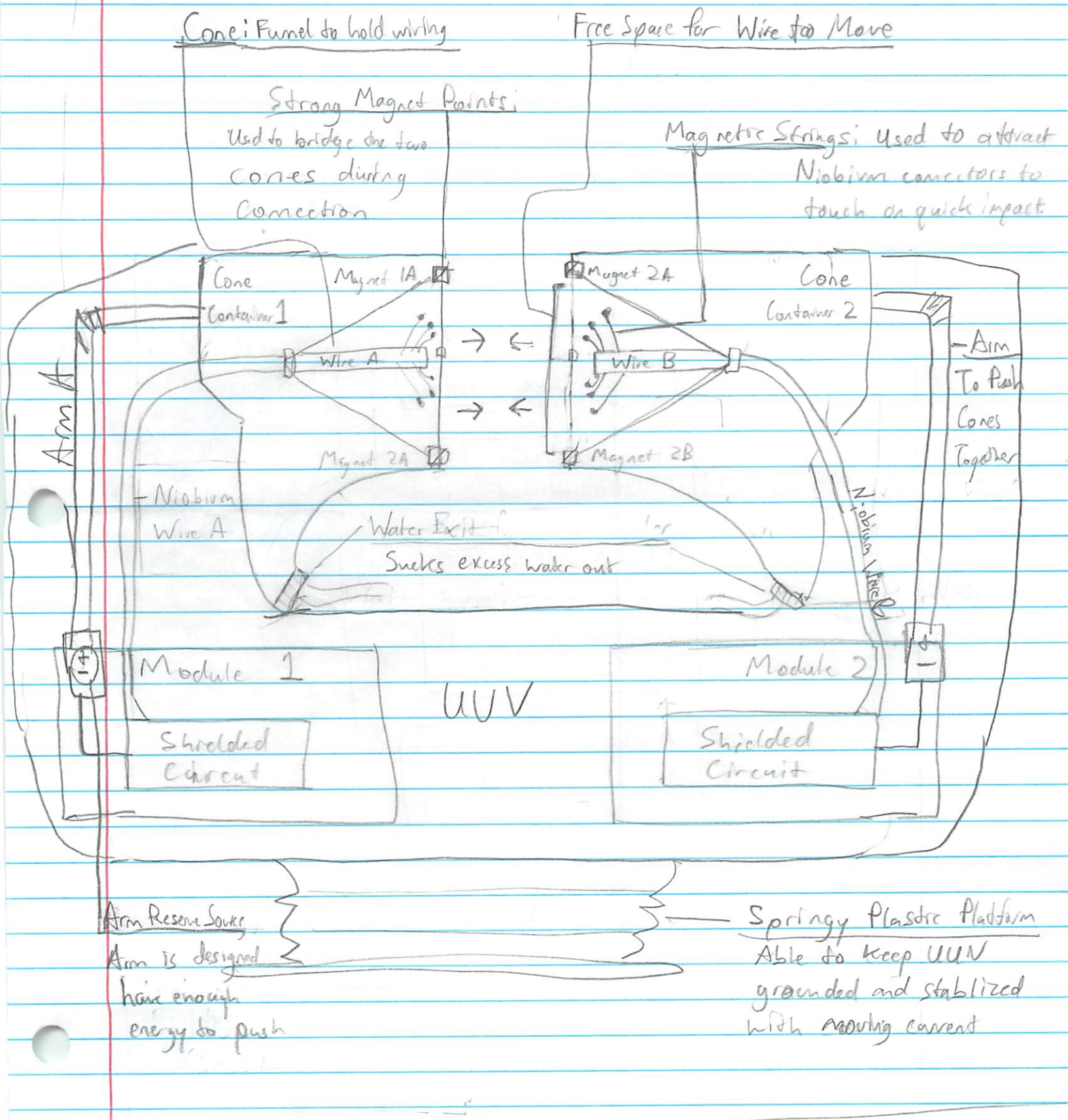
[1] The unmanned underwater vehicle (UUV) carries on board batteries for power. Without recharging capabilities the lengths of each UUV mission are cut short due to low power. By making use of the beneficial physical and chemical characteristics of niobium (and or tantalum which has similar characteristics) and and taking a "self-insulating" approach [2] and requires no seals, we may be able to implement a loading dock concept [3]. The UUV will travel downward [4] into the conelike shaped dock. The niobium (or tantalum) wet mate electrical connectors will thus fit into the designated connector ports located at the bottom of the dock [5] for the purpose of recharging the unmanned underwater vehicle.

Joshua Ajayi
@02640816

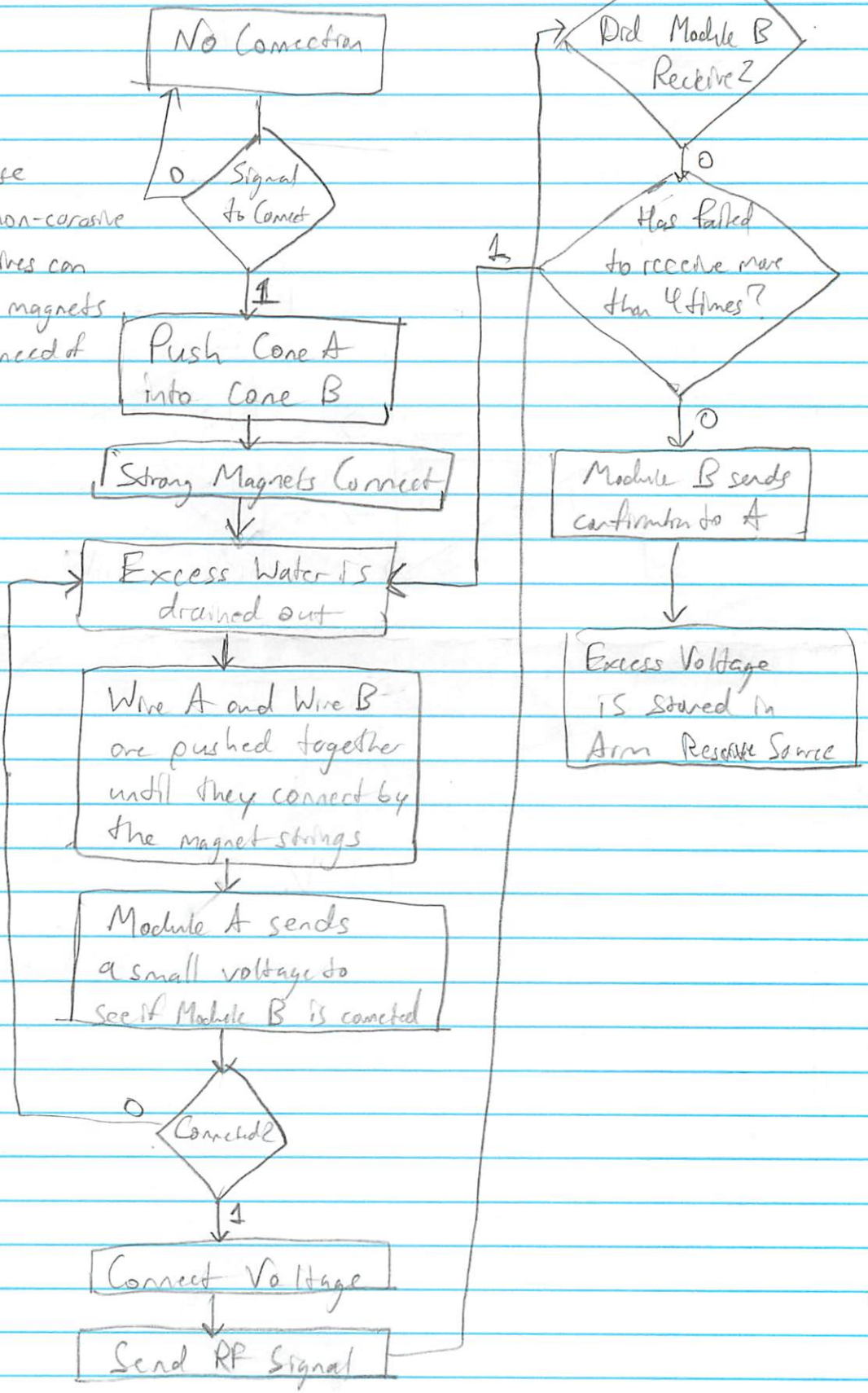
Senior Design I

UCC

DEEP SEA WATER



Flow Chart



Note: Because Niobium is a non-corrosive metal, the wires can be joined by magnets instead of the need of a closed seal