Safety Plan

for

Dr. Kamran Mohseni's research facility

in

PERC Testbed.

Prepared for:

Final approval by EH&S

On: September 20, 2011

By

Bobby Hodgkinson

Research Group's Lab Manager

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Signature Page

I hereby approve the following document as an acceptable safety plan for Professor Mohseni's research space located in building #0746 (Particle Science & Technology).

Signature: _____ Date: _____

Dr. William Properzio (*Associate Professor; Director, Environmental Health and Safety Division)*

Signature: _____ Date: _____

Dr. David Norton (*Associate Dean, College of Engineering)*

Signature: _____ Date: _____

Dr. David Hahn (*Chairman, Department of Mechanical and Aerospace Engineering)*

Signature: _____ Date: _____

Dr. Kamran Mohseni (*Professor, Mechanical and Aerospace Engineering, Director of Research Space)*

Signature: _____ Date: _____

Bobby Hodgkinson (*Lab Manager, Professor Mohseni's research group, Safety Plan Preparer)*

Document purpose

The purpose of this safety plan is to provide a written document that describes and identifies the physical and health hazards that could harm workers, procedures to prevent accidents, and steps to take when accidents occur in Dr. Mohseni's research space in the PERC testbed area. Dr. Mohseni's research space is defined as: the space on the mezzanine south of the chain link barriers, and the space on the first floor level located within the yellow and black marking tape. This document will require constant revision as the research space is constantly evolving. In order to maintain the most up to date document possible and maintain a high level of safety this document shall be revisited and revised (if necessary) weekly until 11/30/2011 and then monthly starting 12/1/2011. This document will supplement a safety plan for the entire PERC testbed (currently being composed by Dr. Kevin Powers).

Emergency contact information

IN ANY LIFE OR LIMB THREATENING EMERGENCY IMMEDIATELY CALL 911.

YOU ARE LOCATED IN:

THE PARTICLE SCIENCE BUILDING AT THE UNIVERSITY OF FLORIDA.

ADDRESS:

205 PARTICLE SCIENCE & TECHNOLOGY DRIVEWAY OFF OF CENTER DRIVE.

Additional emergency contact information:

- UFPD **392.1111**
- Bobby Hodgkinson **352.275.9477**
- Kamran Mohseni **303.547.0651**
- Gary Scheiffele **352.281.8262**

List of responsible persons

The following list provides contact information for all persons directly responsible for the research facility. It should be noted that all researchers permitted in the space share common responsibilities to: maintain a high level of safety at all times, notify proper individuals of safety hazards, maintain open communication with fellow researchers, hold other researchers accountable, and adhere to all safety requirements as listed in this document.

Supervisor and Primary Enforcer:

Dr. Kamran Mohseni

303.547.0651

mohseni@ufl.edu

Lab Manager:

Bobby Hodgkinson

352.275.9477

hodgkinson@ufl.edu

List of permitted Individuals

The following individuals are permitted in the research space at all times. Any individuals not on this list must: be accompanied by an individual on the list at all times, or have been approved by one of the persons on the *List of responsible persons* list for short-term permission in the research space. This list will require constant revision and shall be revisited and revised (if necessary) weekly.

- Any emergency personnel
- Any PPD personnel
- Kamran Mohseni
- Bobby Hodgkinson
- Mike Krieg
- Matt Shields
- Nick Songz
- ~~Harsha Ramakrishnappa~~
- Maria Cardinal
- Richard O'Donnell
- Environmental Health and Safety staff conducting operations or safety inspections / WSP
- Yiming Xu
- Bhuvanesh Radhakrishnankulasekaran

List of individuals permitted in underwater vehicle research arena.

The following individuals are permitted in the underwater vehicle research arena. The vehicle research arena encompasses the water tank and the platform over the water tank. These individuals shall adhere to all safety requirements pertaining to the underwater vehicle research arena at all times and without prejudice. Any individual found in violation of this requirement shall no longer be permitted in the research space until further review. The department chair will be notified of any individual's violation.

- Kamran Mohseni
- Bobby Hodgkinson (will be permitted in water*)
- Mike Kreig (will be permitted in water*)
- Matt Shields
- Richard O'Donnell

*Individuals that will seek to satisfy the swimming requirements for individuals allowed in the water.

Hazard identification

The research facility contains several unique hazards that require specific identification. It is the responsibility of all researchers in the space to be aware of these hazards, the mitigation strategies associated with each and every one of the hazards, and most importantly the emergency plan of action in case a situation arises requiring emergency action. The mitigation strategies may be found on the following pages.

List of specific hazards:

- Underwater vehicle testing arena hazards
    - Drowning
    - Fall
    - Electrical shock
    - Exhaustion

Hazard controls and safe practices

In order to mitigate any and all potential hazards in the research facility the requirements listed on the following pages shall be met at all times in the facility with no exception. The requirements are intended to control the hazards and provide the minimum safety standards of the space. It is expected that all individuals strive to maintain a working environment that goes above and beyond these requirements.

Along with common sense safe practices the following practices are recommended by all individuals in the space:

- ☐ Know the potential hazards and appropriate safety precautions before beginning work. Ask and be able to answer the following questions:
  - What are the hazards?
  - What are the worst things that could happen?
  - What do I need to do to be prepared?
  - What work practices, facilities or personal protective equipment are needed to minimize the risk?
- ☐ Know the location and how to use emergency equipment, including safety showers and eyewash stations.
- ☐ Never block safety equipment or doors and keep aisles clear and free from tripping hazards.
- ☐ Familiarize yourself with the emergency response procedures, facility alarms and building evacuation routes.
- ☐ Know the types of personal protective equipment available and how to use them for each procedure.
- ☐ Be alert to unsafe conditions and actions and bring them to the attention of your supervisor or lab manager immediately so that corrections can be made as soon as possible.

General safety requirements for Dr. Kamran Mohseni's research space located in the Particle Engineering Research Center (PERC)

1) The research space shall remain clean and organized at all times.
2) Only permitted individuals and equipment shall be allowed in the research space.
3) A list of permitted individuals shall be displayed at both entrances.
4) The list of permitted individuals shall be maintained by Dr. Kamran Mohseni.
5) Emergency contact information shall be clearly displayed at both entrances.
6) Dr. Kamran Mohseni shall be assigned supervisory and enforcement responsibilities for the space.
7) All individuals shall abide by the requirements outlined in the "Underwater vehicle testing tank located in the Particle Engineering Research Center (PERC)" document.
8) No storage of items intended for human consumption shall be allowed except in designated areas.
9) Consumption of food or drink shall not be allowed except in designated areas.
10) Safety glasses shall be available to all personnel at all times.
11) All personnel shall properly wear safety glasses during hazardous times.
12) Safety glasses are recommended at all times.
13) A list of current hazards and prevention techniques shall be displayed at both entrances.
14) All individuals shall be aware of hazards and prevention techniques prior to receiving permitted access to the research space.
15) Any potentially hazardous activity shall only be allowed with 2 or more individuals in the research space.
16) No hazardous activity shall be conducted after hours unless the proper individuals have been notified of the activity.
17) All hazards shall be immediately reported to Dr. Kamran Mohseni and/or Bobby Hodgkinson.
18) GFI circuits shall be used as appropriate for electrical equipment near/above the pool./DWH

Safety Requirements for the Underwater vehicle research arena located in the Particle Engineering Research Center (PERC).

1) The fall detecting pool alarm shall be in operation at all times except while testing facility is being used. (Alarm typical of: http://www.allsafepool.com/swim-alert-pool-alarm.html)
2) Fall detecting pool alarm shall be detectible throughout the experimental bay (and possibly outside the experimental bay TBD)
3) A shepherd's crook (typical of: http://www.recreonics.com/water_rescue_equipment.htm) with 16' pole shall remain in working condition at all times.
4) The shepherd's crook shall be within 8' of the water's edge.
5) The shepherd's crook shall only be used in emergency situations.
6) A life ring with 25' rope (typical of: http://www.lesliespool.com/Home/Pool-Safety/Lifeguard-Equipment/24415.html) shall remain in working condition at all times.
7) The life ring shall be within 8' of the water's edge.
8) The life ring shall only be used in emergency situations.
9) Entrance to platform and testing tank shall remain closed and locked while testing facility is not in use.
10) No person shall be allowed on the platform that has not passed a safety/knowledge test.
11) A physical barrier (6' high chain link fence) shall be installed on the walkway above the tank in order to limit access to the underwater vehicle testing facility.
12) Only permitted individuals shall be allowed past the physical barrier.
13) The physical barrier shall contain two 48 inch gates (one on each end of the barrier) that are capable of locking from outside the barrier with a panic bar exit device on the inside of the gate.
14) Both gates shall remain unlocked and open while individuals are testing in or around the testing tank to allow for uninhibited access by emergency personnel in the event of an emergency.
15) A list of permitted individuals shall be posted at both entrances.
16) The list of permitted individuals shall be maintained by Dr. Kamran Mohseni.
17) Dr. Kamran Mohseni shall be assigned enforcement responsibility for all safety rules.
18) No individual(s) shall be allowed in the water unless the total number of individuals outside the water (and within 25' of the testing facility) is greater than that in the water at all times while individuals are in the water.
19) A maximum of 2 individuals are allowed in the testing tank at one time.

20) All individuals allowed in the water shall have satisfactorily completed: treading water for 15 minutes, underwater swim of 25 yards on one breath, a distance swim of 100 yards, and a dive down to the bottom of the testing tank to retrieve a weighted object.
21) No diving shall be allowed off the platform
22) No running on platform.
23) All unsealed electrical equipment shall be no closer than 5' from the water's edge.
24) No more than 1 person shall be allowed on an individual submersible platform at a time.
25) No more than 4 individuals shall be allowed on the platform at one time.
26) The testing tank shall be covered with a "solar" cover unless an approved test is currently underway.
27) The testing tank shall be tested for internal cocci and fecal coliform on the first Tuesday of every month. Results shall be maintained in a log book./WSP
28) In the event a SCUBA diver is needed that diver shall have TBD certification and at least 1 standby diver with TBD certification shall be in place as an emergency diver. The TBD criteria shall be determined by the UF Dive Safety Officer, Cheryl Thacker, UF/EHS. /WSP.
29) A land line telephone shall be available in the vehicle testing area at all times.
30) Flotation aid devices shall be available for individuals conducting experiments in the water.
31) Flotation aid devices shall be required by an individual if the individual has been treading water for longer than 5 minutes.