An underwater photograph of a scuba tank with yellow hoses and a regulator. The tank is dark with white bands and is suspended by a rope. The background is a clear blue-green water with some bubbles.

Underwater Ups and Downs: One Example of an in-house Emergency and Maintenance Dive Team

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Monterey Bay Aquarium
May 2010 AALSO Symposium

Early Days:

- a. Background, responsibilities: ocean maintenance dives to 60 ft., lift bag to 500 lbs. awkward biofouled gear, pair of 16" HDPE pipes x 1000 ft. w/ concrete top blocks to 100 lbs., occasional negative animal interaction both wild and in-house: jellyfish stings, sea lions, harbor seals, sea otters. Confined space dives in pumphouse & other tanks, in weir flows or pipe suction spaces for aquatic animal life support system maintenance.
- b. Less requirements.
 - 1. Two-person dive team.
 - 2. Minimal training. SCUBA only.
 - 3. Safety minded, trained employees.
 - 3. Ocean and confined space dives run the same.
 - 4. No other work that day.



II. Begin Transition:

a. Mindset change:

1. Industry standards, desire for increased personnel safety & general risk avoidance.

2. Dictated by OSHA CFR1910 Subpart T / Commercial Diving Operations.

3.ADC: Association of Dive Contractors, more info.

4. Stephen C Butler – wrote paper – clarifies many questions and grey areas.

b. Program initiation:

1. Training: Rescue Level Diver, CPR, First Aid, O2, increased safety procedures.

2. Annual dive physicals, age of staff noted.

3. Bi-annual gear check, available alternate air source.

4. Appendix 16: Commercial Diving added to MBA Dive Policy, voted in by Diving Control Board 2004.



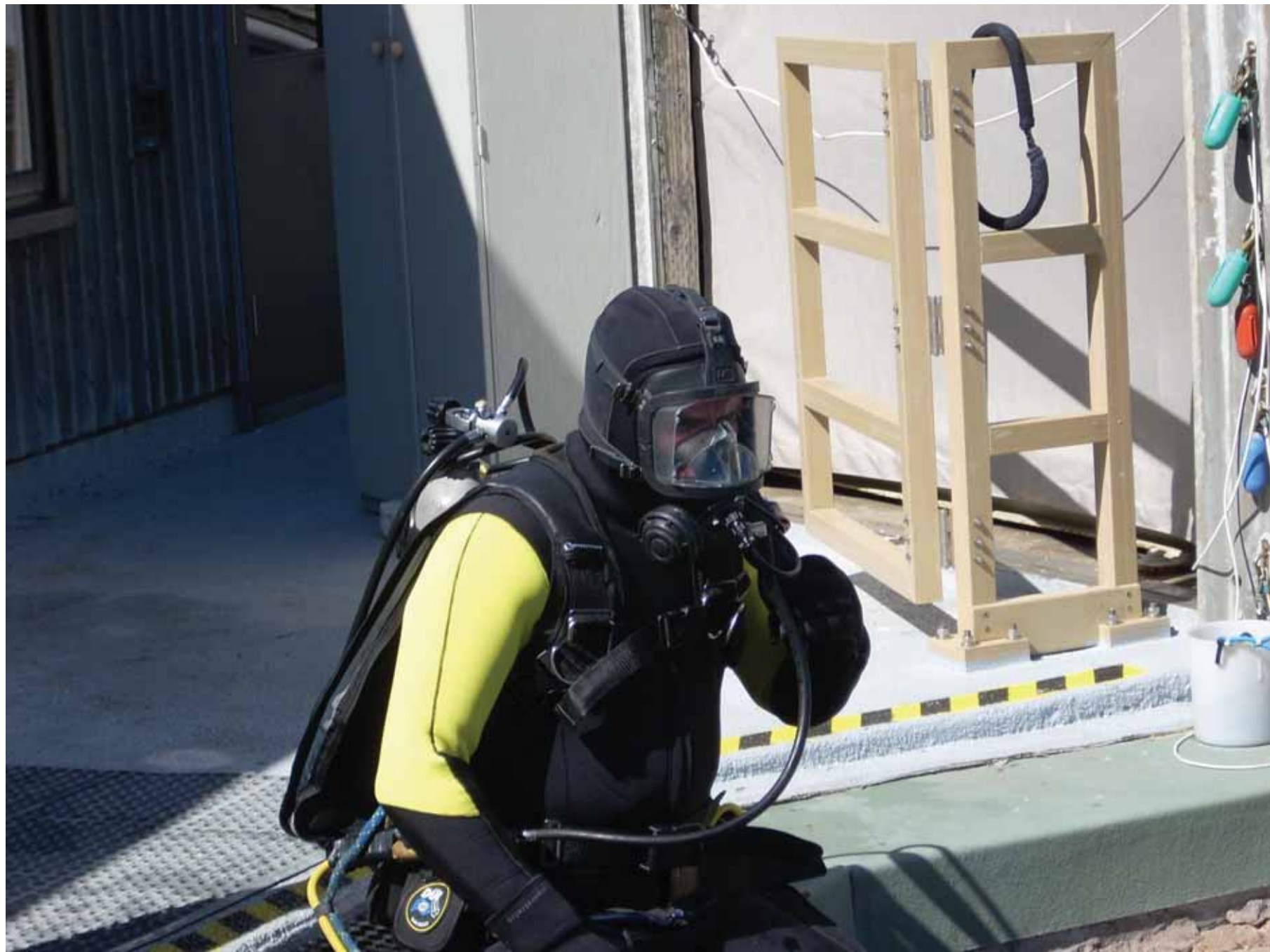
III. Final Years:

- a. **OSHA Commercial Dive Standards.**
- b. **Training:** Lift bags, confined space, hang tank, sling tank, Lead Diver, DPIC (designated person in charge).
- c. **Gear:** Shoulder harness weight belt, sling tank, hang tank, octopus rig, whistle, float, Kevlar gloves, standby diver tag line, SSA (surface supplied air) rig with communications.
- d. **Personnel:**
 1. **Ocean dive:** 4 people minimum: 2 working divers, 1 standby diver, 1 DPIC.
 2. **Confined Space dive:** 3 people minimum: 1 working diver, 1 standby diver, 1 DPIC.
 3. **Minimum 16 Commercial dives per yr/per diver.**

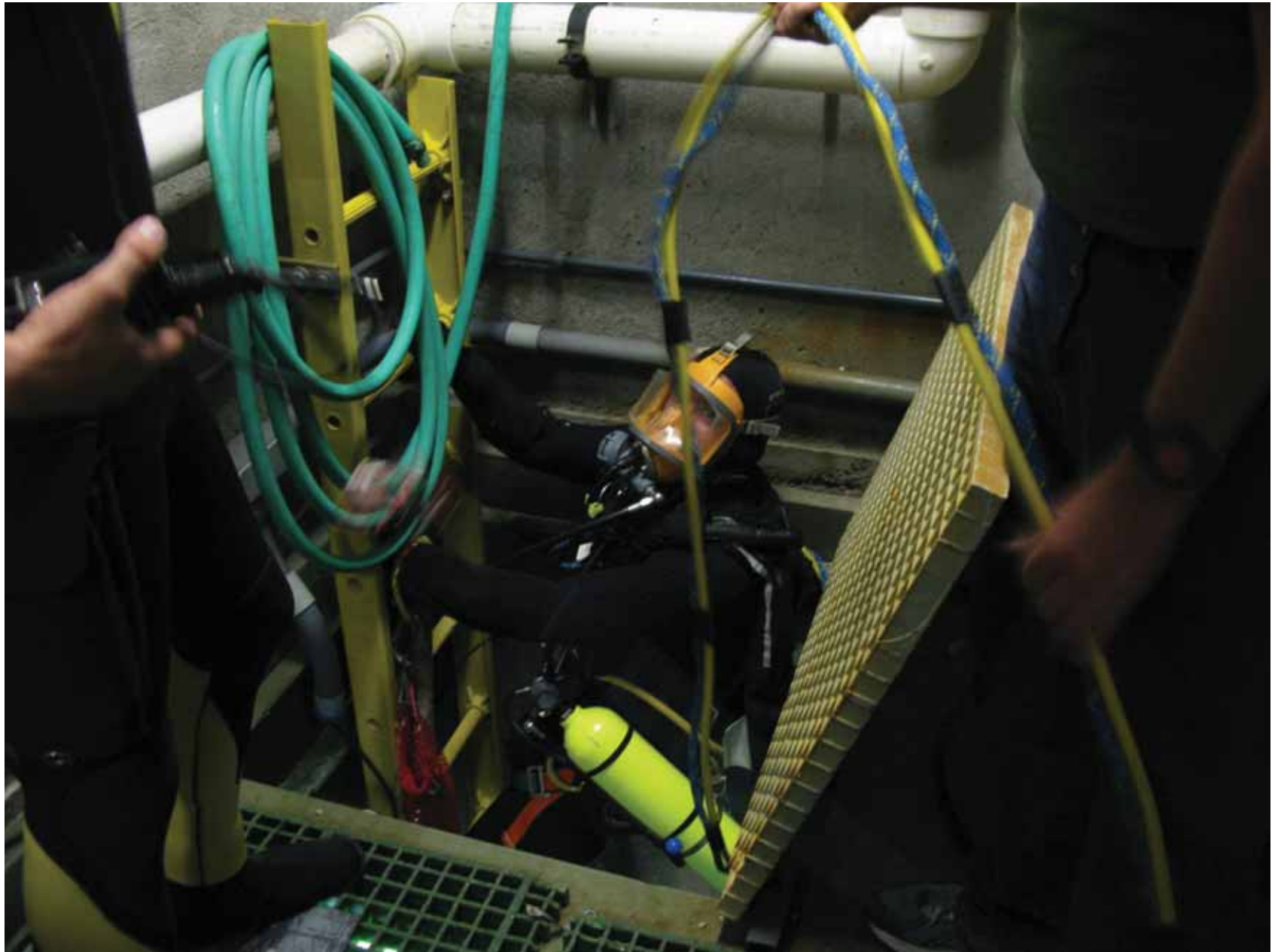
IV. Program Review:

- a. Labor hours required: 3536 per year, 8 person team.
 - 1. Includes annual training dives.
 - 2. Dives and lunch completed by 1300 hrs, Work until 1800 hrs.
 - 3. Operator night shift eliminates 4 months/year, must average 2 dives/each month-long day shift period.
 - 4. Actual dive days limited by weather, boat availability, divers out sick or on vacation, enough staff to cover both dive and watch.
 - 5. Ocean dives minimum 4 person, surface supplied air three person.



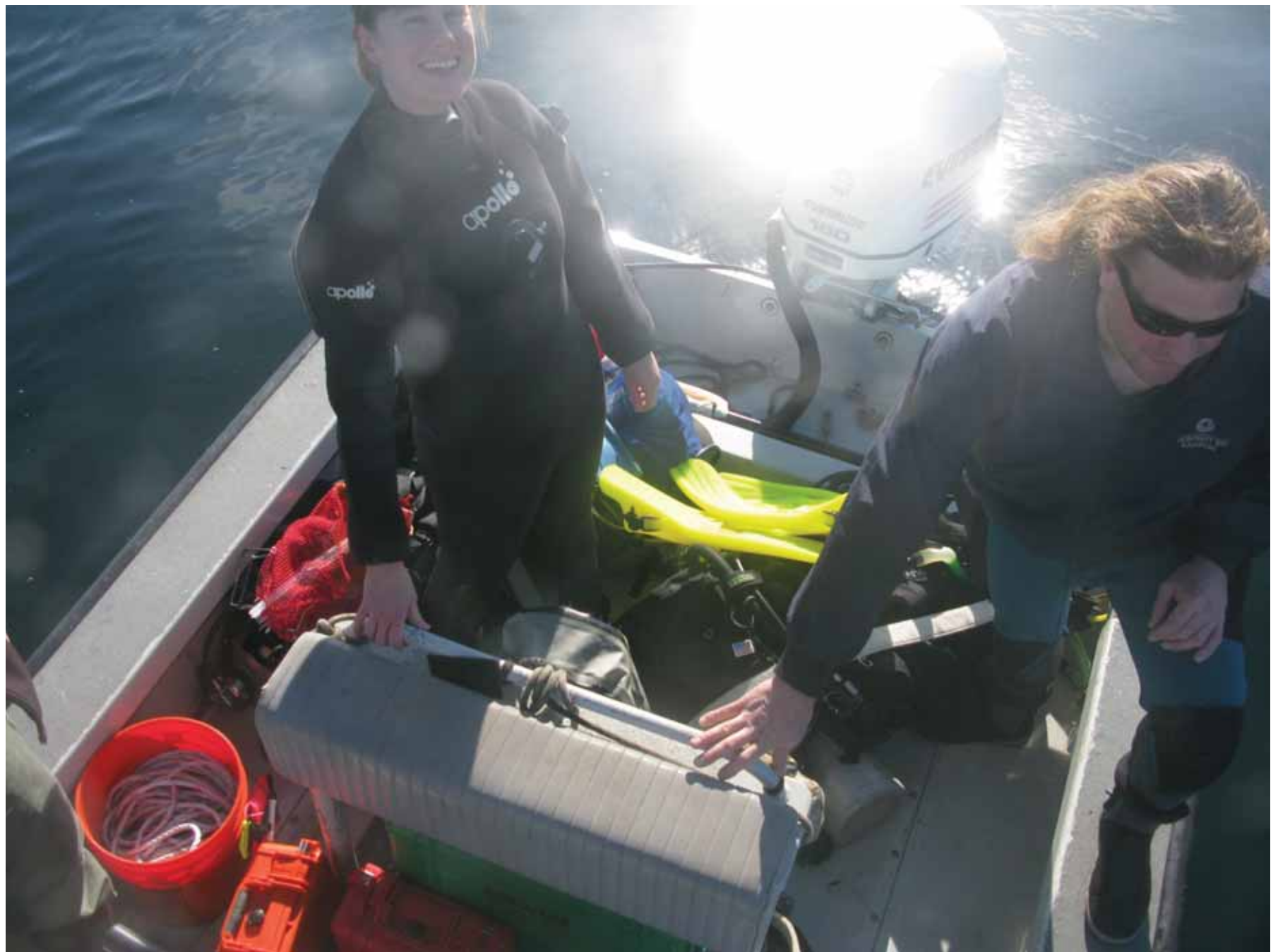




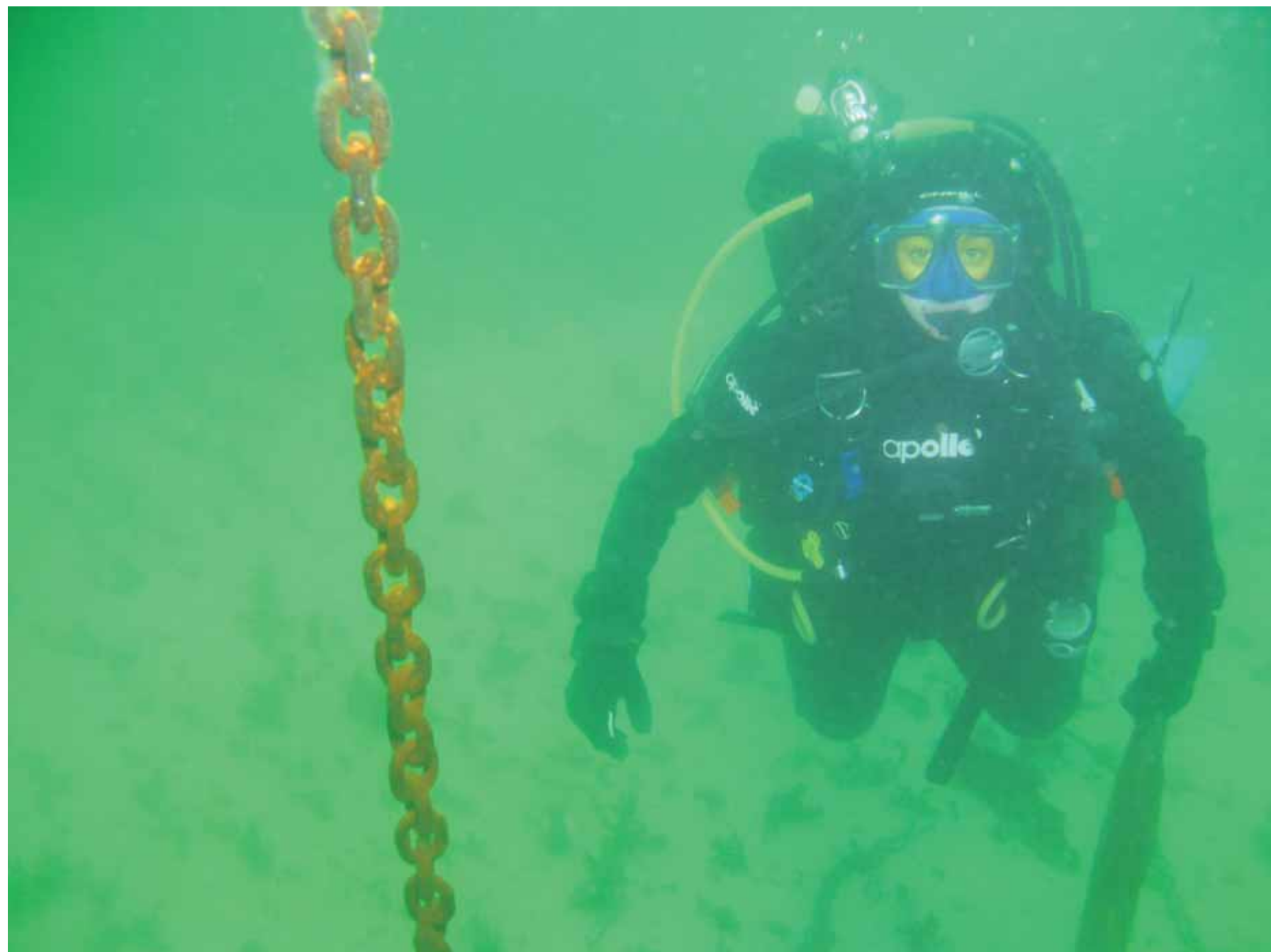






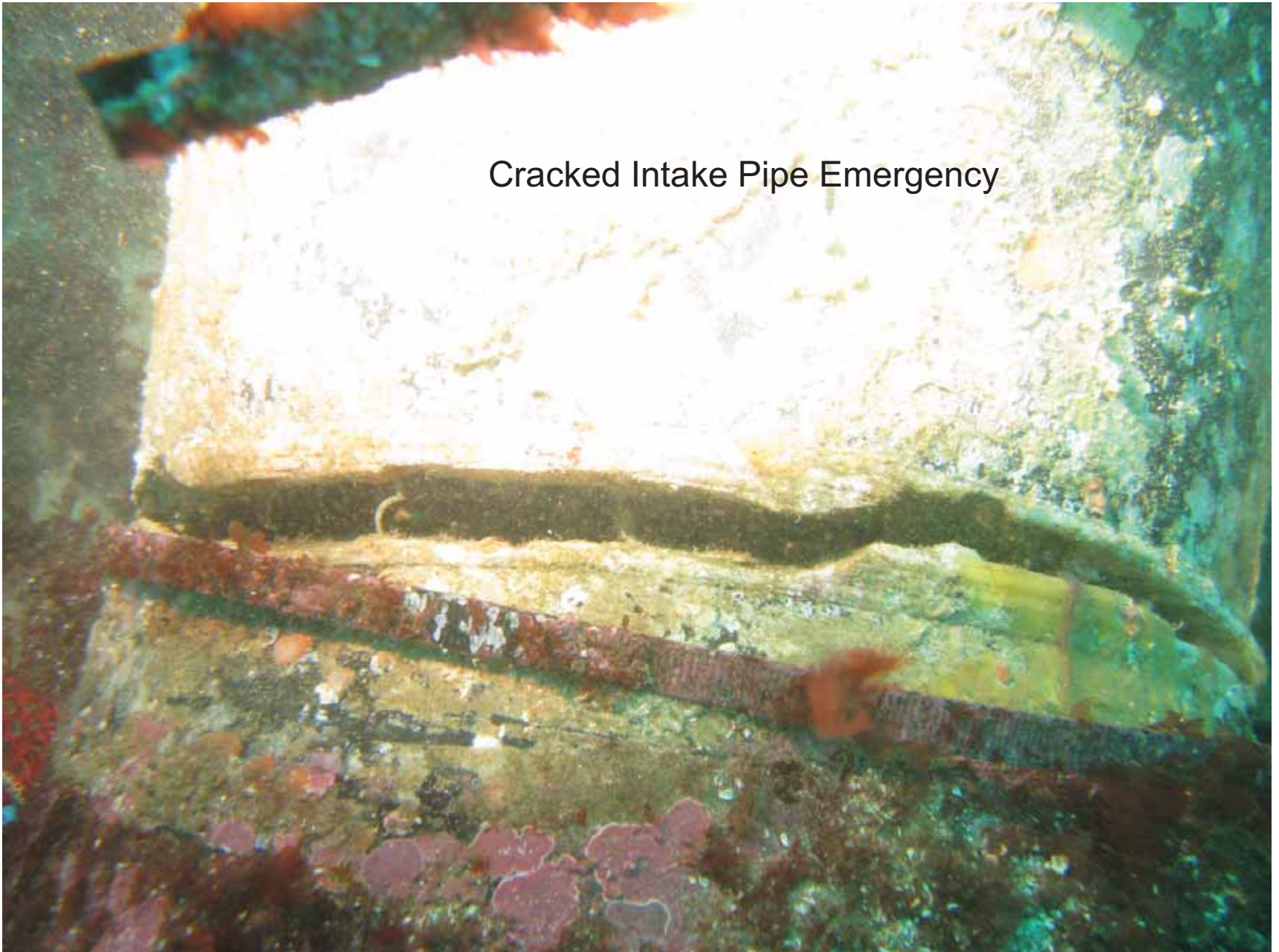








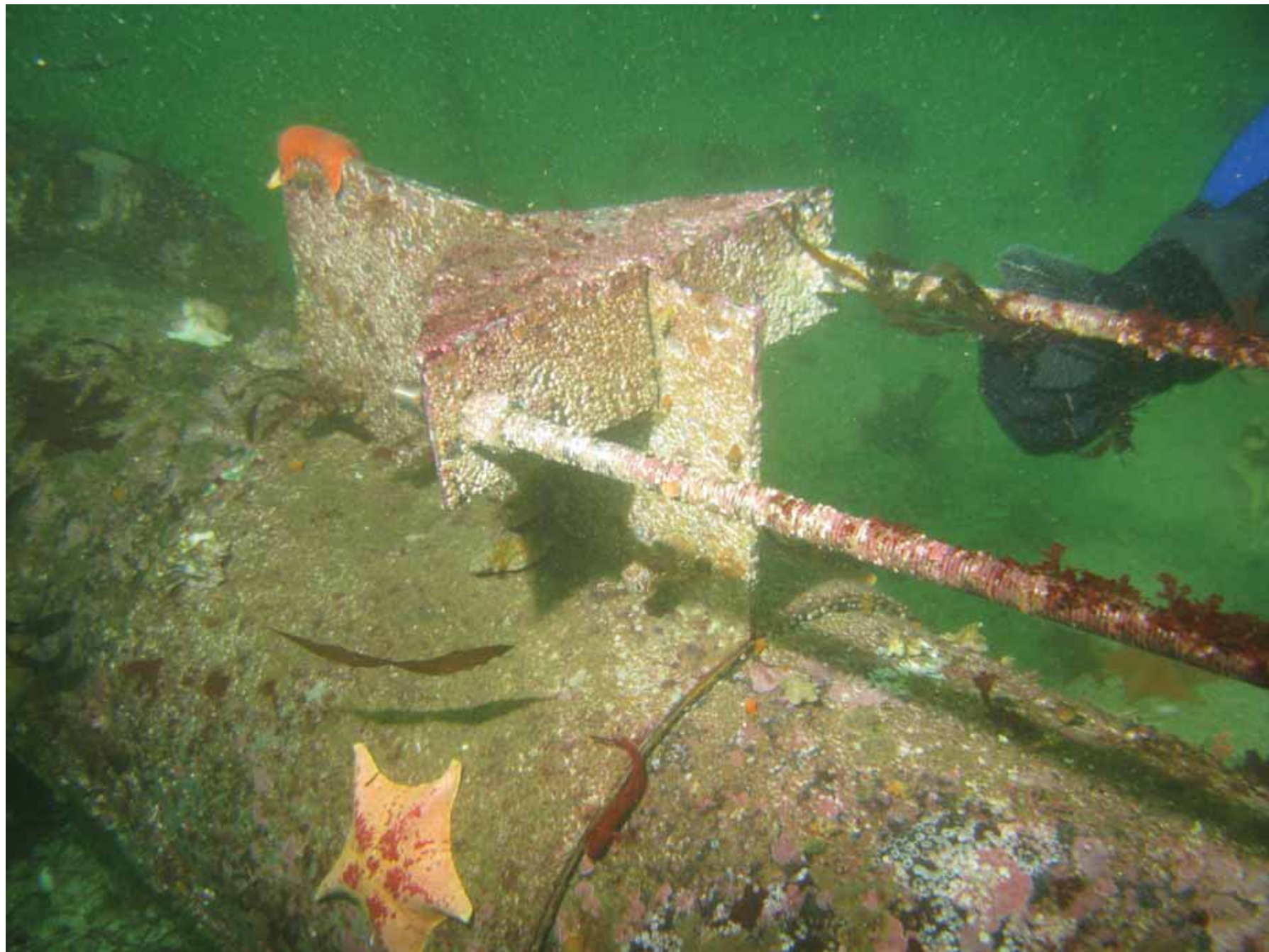
Cracked Intake Pipe Emergency





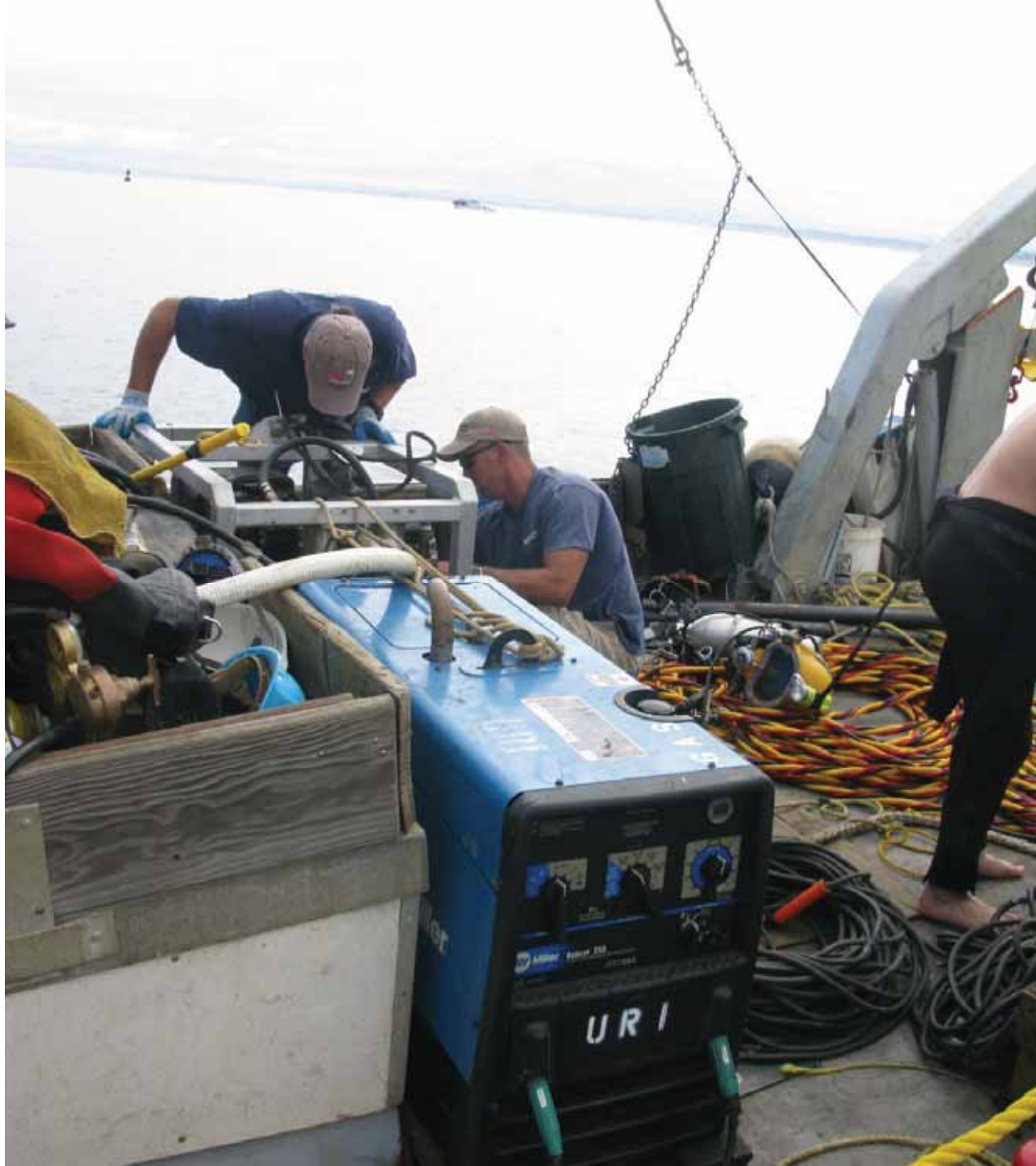














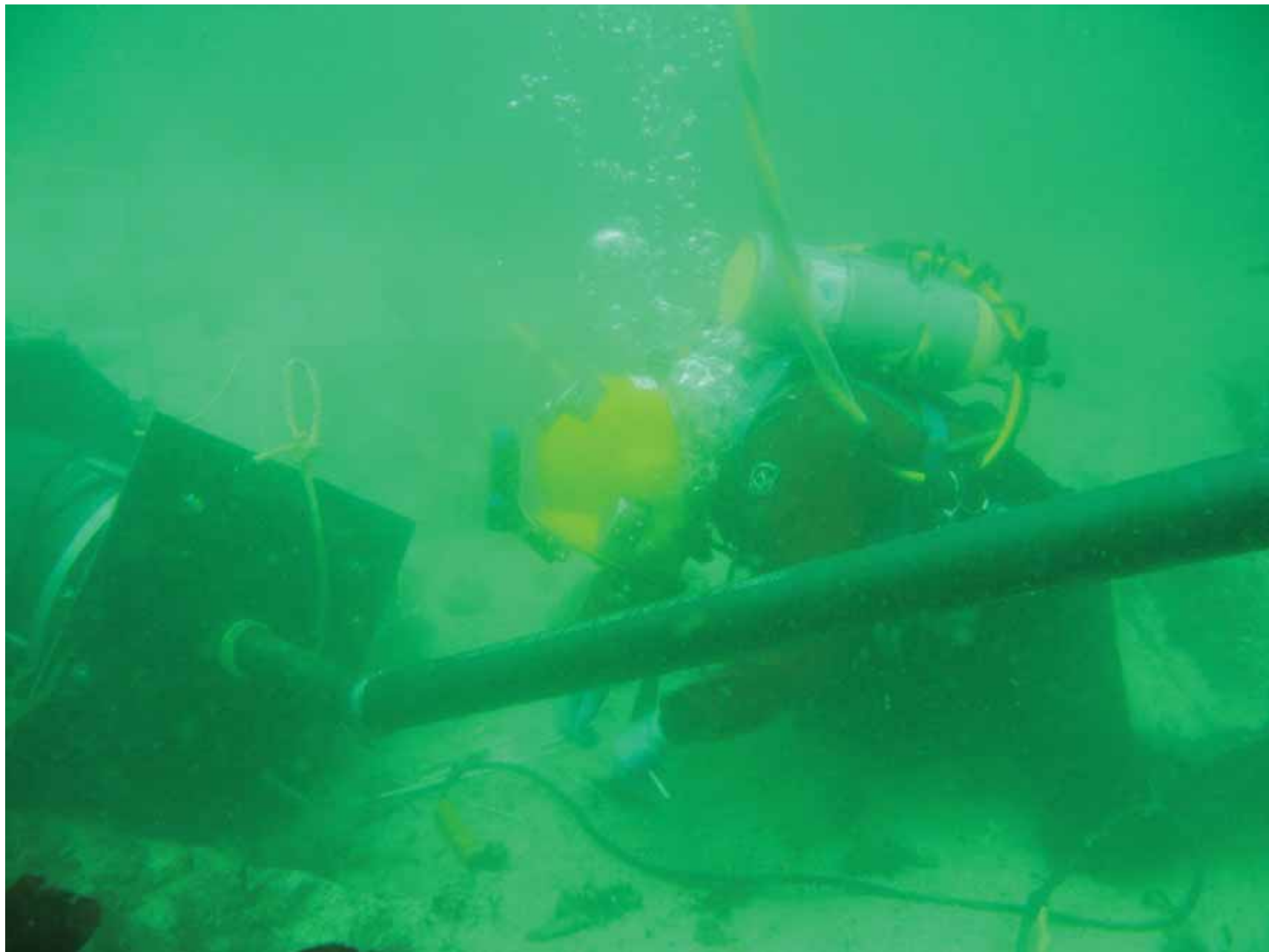






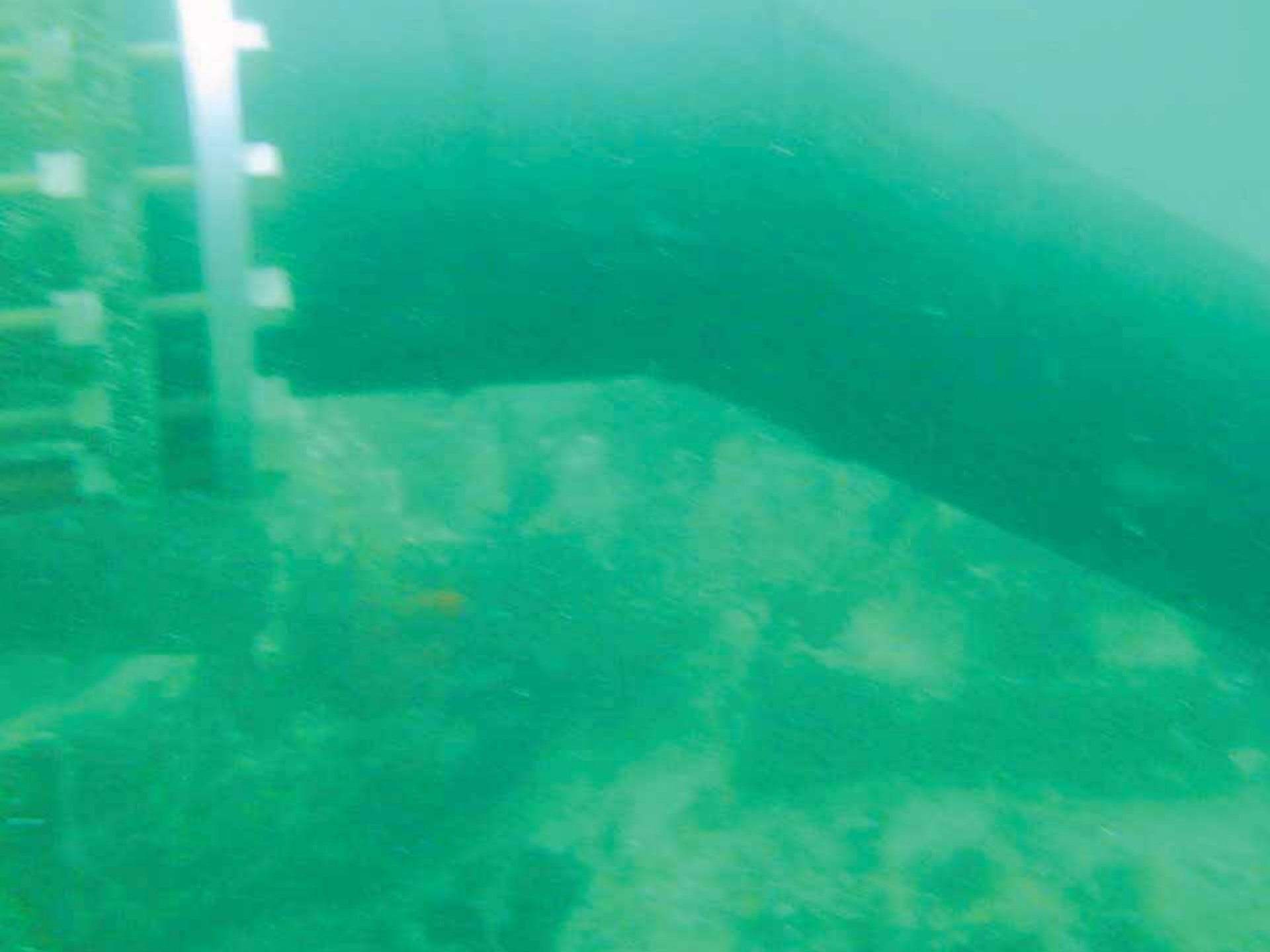










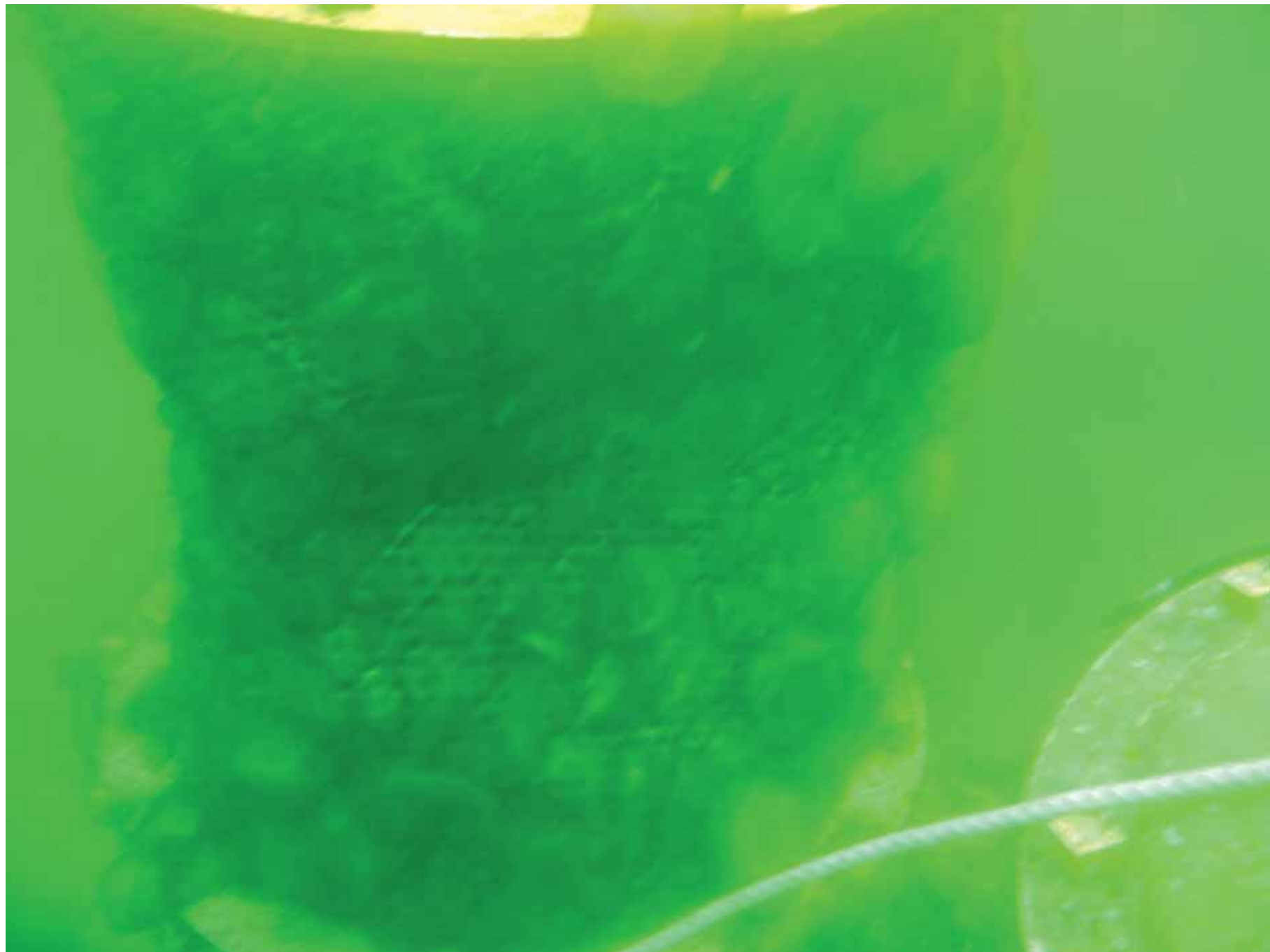


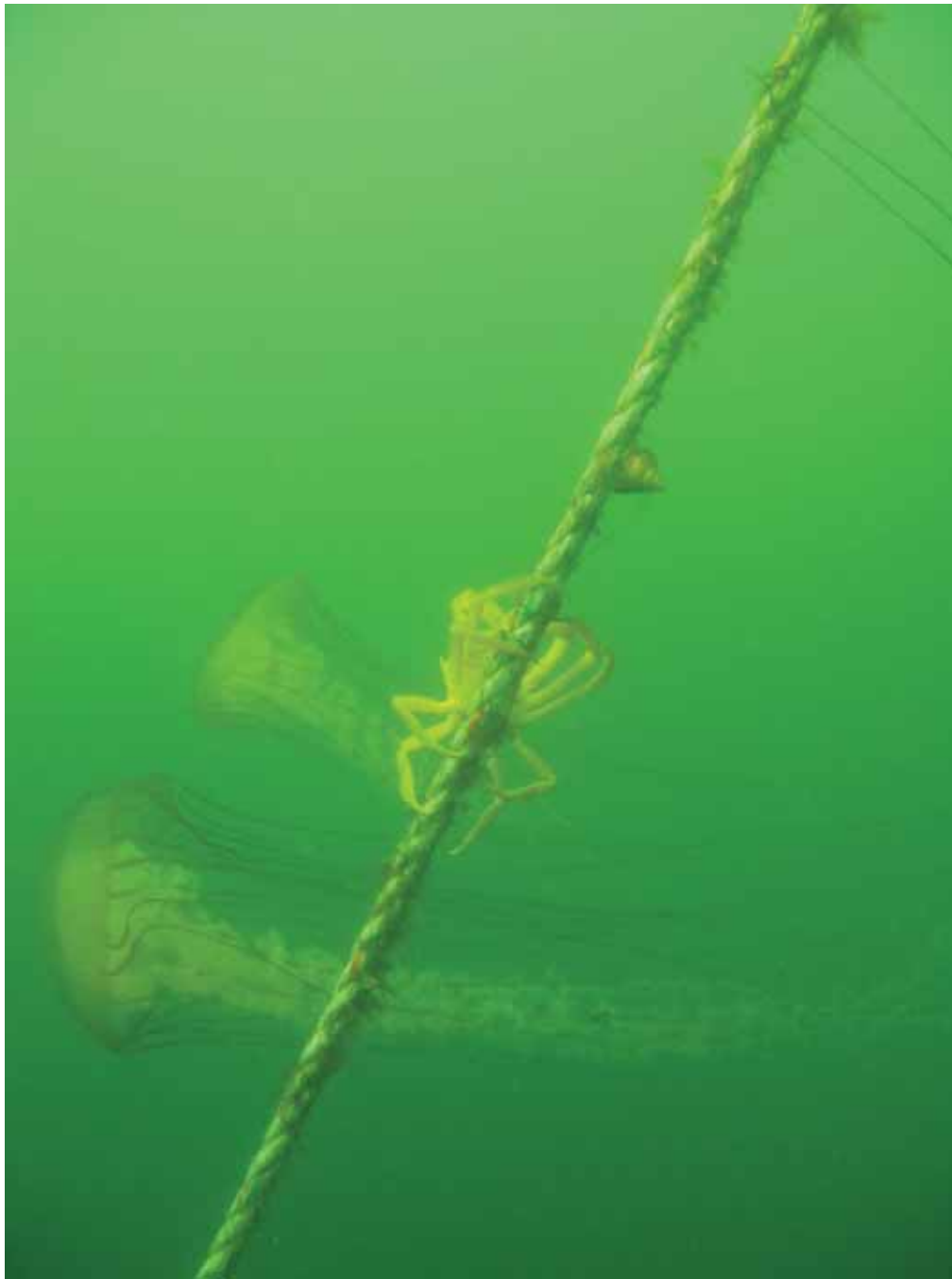
Jelly fish attack emergency













Kiss old dive program
goodbye, welcome
outside contractors.





Questions?