

The Results of UEC-1's First Deployment

15 OCT 98 to 25 NOV 98



UEC-1 was deployed for approximately 6 weeks submarine NR-1

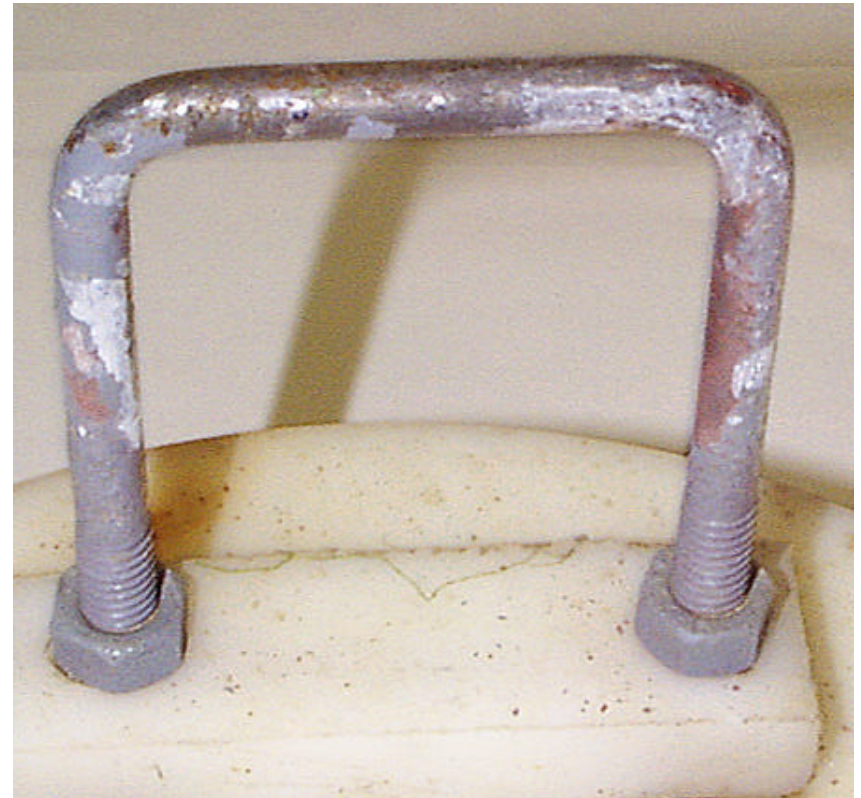
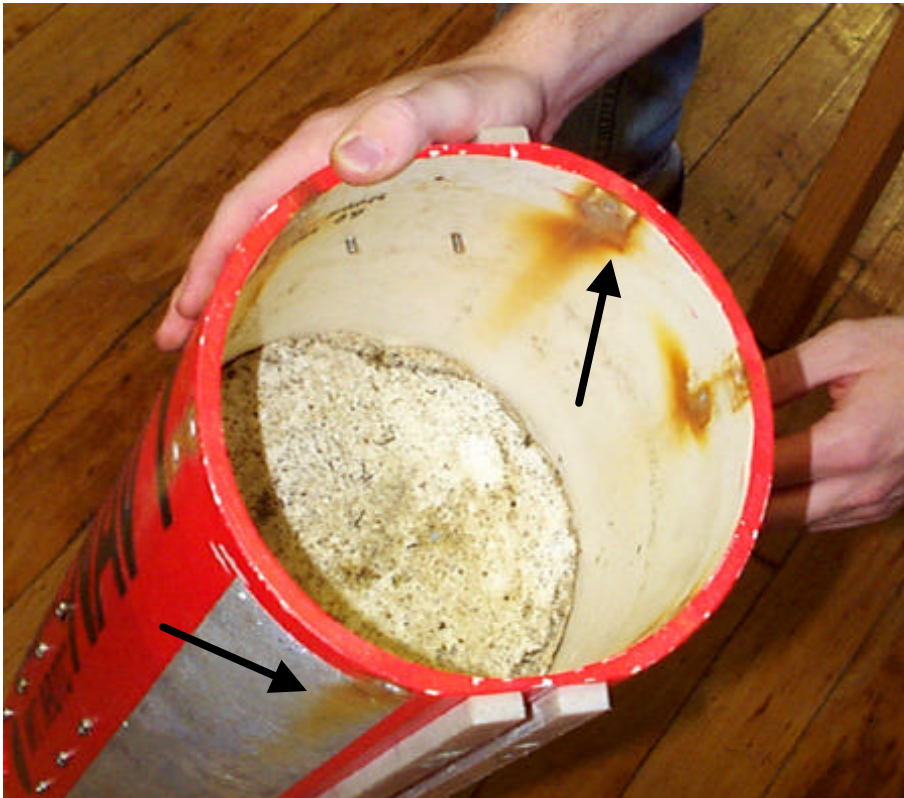
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UEC-1 was found to be in good condition after it's initial deployment.

There was some mild corrosion around the stainless steel screws, and the zinc plated u-bolt.



The crudely made block of syntactic foam survived.

The block measured 2" thick and 8" in diameter.

Notice the large amount of sediment that collected on the top and the sides of the foam block.



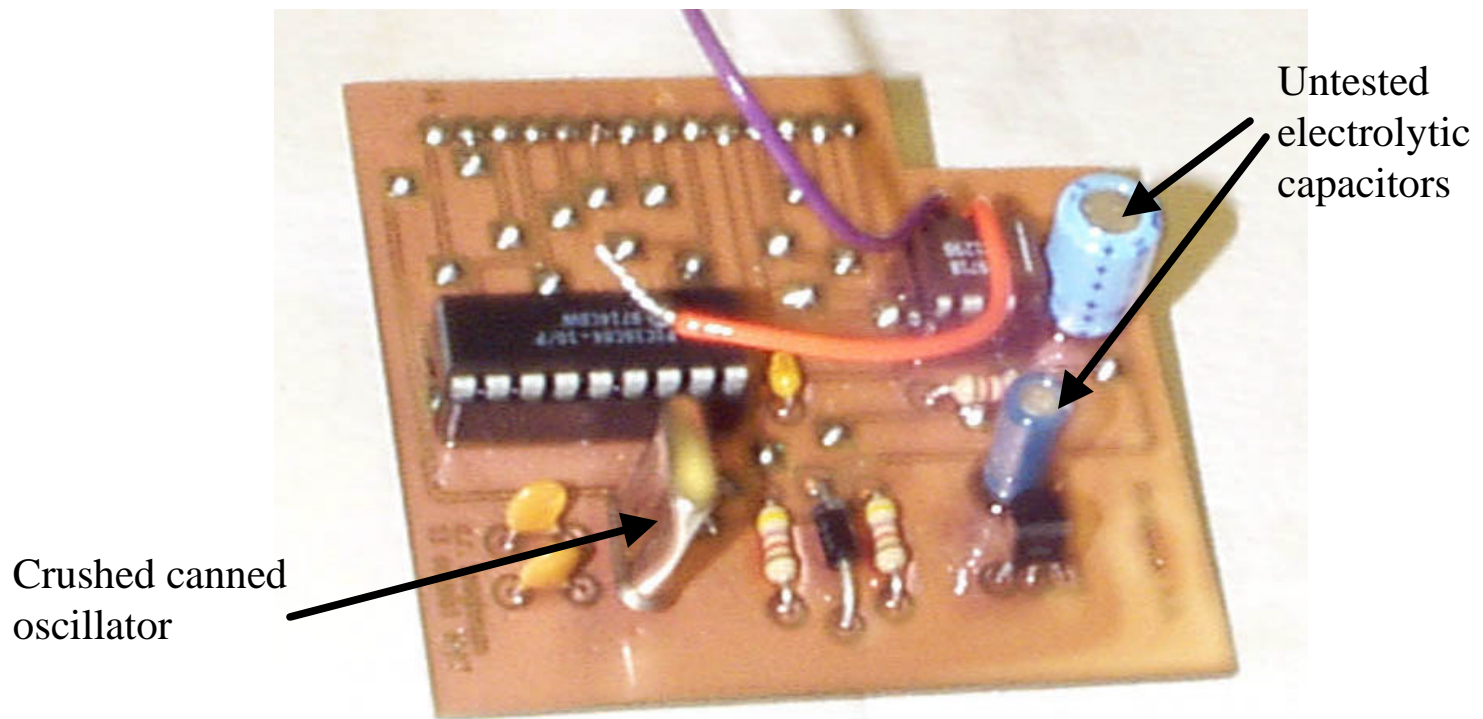
Using the Rubbermaid tupperware as compensated containers for the circuits was not a success.

3 to 5 cc of sea water was admitted to each container.

Each container also had an air bubble in it.

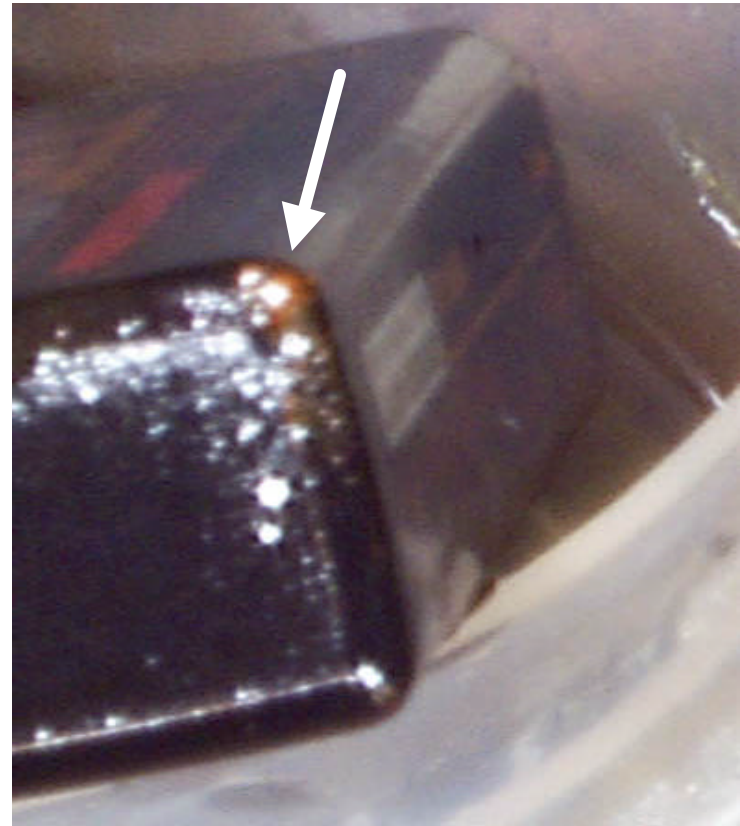


The only electronic components that were obviously damaged were the canned oscillators associated with the PIC's. We are also fairly sure the electrolytic capacitors were affected, however, we have not tested these yet.



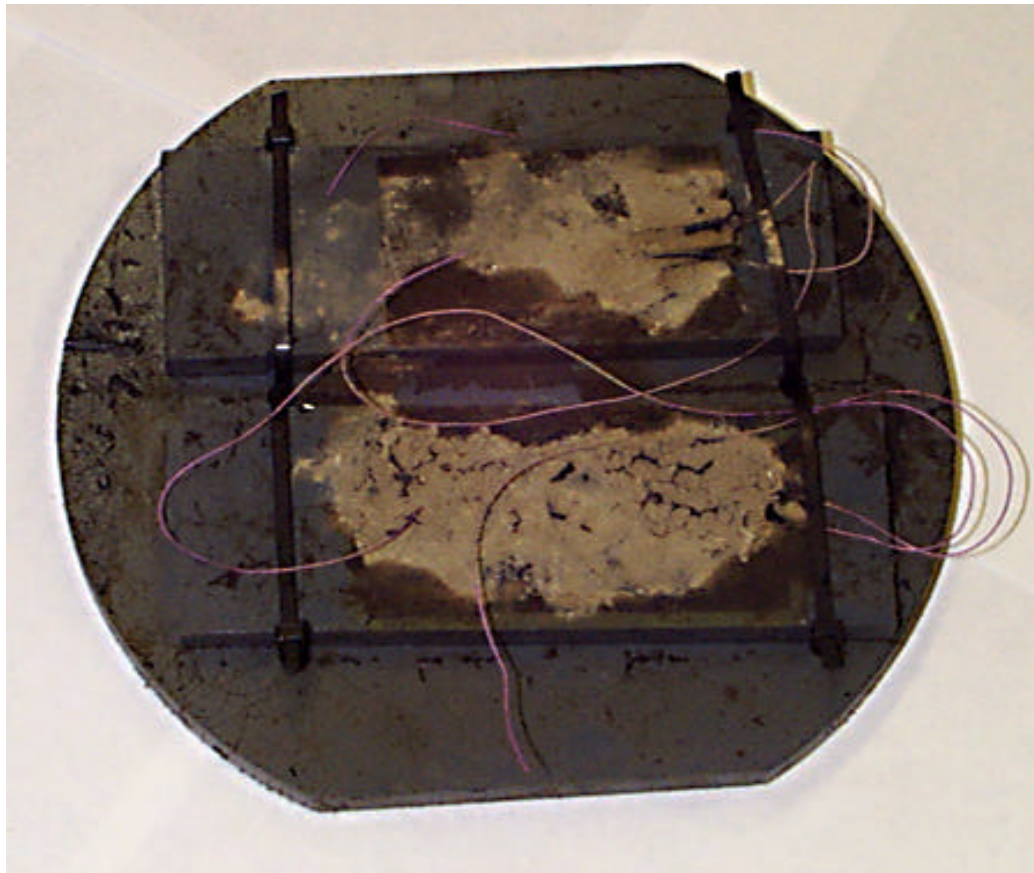
As expected the 9 volt Alkaline batteries were crushed.

Notice the contaminated compensation fluid in the left-hand photo and the corrosion at the corner of the battery in the right-hand photo.

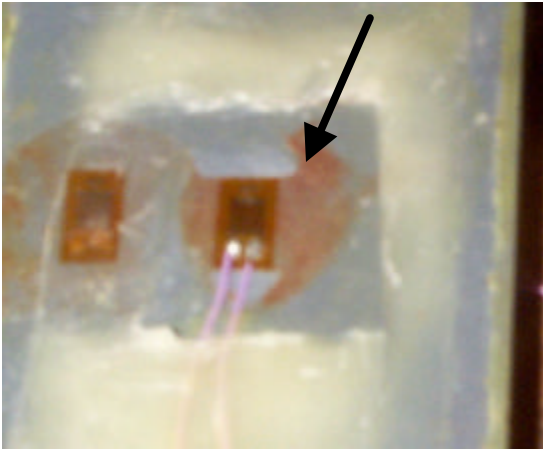


The strain gages have been tested since their return. All three were found to be working correctly.

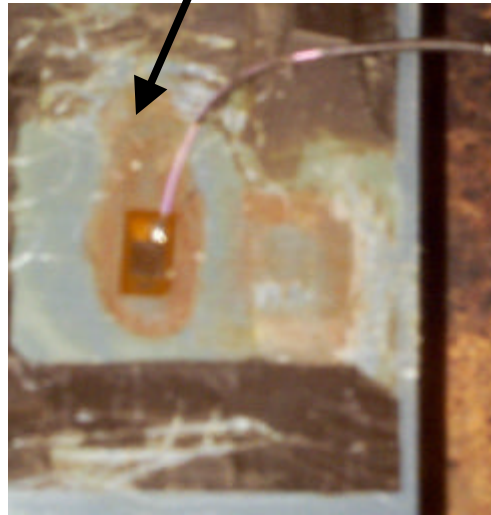
The photo below shows the two gages that were placed on the lowest pallet. Notice the large amount of mud that collected there during the deployment.



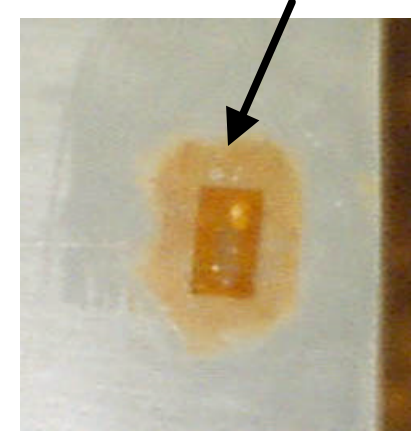
Details of the Strain Gages



Teflon Tape and Wax Coating



Teflon Tape and J Coating



*No Tape and No Coating
(gage and adhesive
exposed to seawater)*

While the strain gages did function well upon their return, we did notice that the adhesive used to attach the gages to the PVC changed color (from clear to a rust brown see photos above). This happened regardless of the coating type.

We are still investigating the cause of this discoloration. The explanations we have thought of to date are:

- It could be a reaction to the pressure.
- Particles from the gage may be sticking to the adhesive.
- These could be rust particles (or other waterborne sediment) that may have become stuck to the adhesive.

This may indicate that seawater did leak under the coating to the gages.

We are still examining the gages and we may have found a very small amount of corrosion on the coated solder joints (the un-coated joints were completely corroded).

Other post deployment observations:

Immersion in cold water caused the cable ties to become brittle, and they were easily broken by hand.

The amount of sediment increased toward the bottom of the UEC. It was blown in from the bottom by NR-1's aft thrusters.

Remaining post deployment tasks to complete:

Detail analysis of circuit failures