

# Waterproofing enhancements put to the test

*(Or, how I tried to love the Apex by abusing it)*

*by Jeff Bartlett*



OK, I admit it; it's no secret I have my complaints about the Apex. Just read the feature on I Hate This Cave in this issue of *Arkansas Underground* and you'll probably have a good idea why. Honestly, when the folks at Princeton Tec – surely nice people who want to put a quality product to market – dreamed the Apex up, I doubt they were thinking about the photo on page 15.

So I'll admit that it's an excellent light. Versatile with the broad flood and the tight spot, great battery life, great light output, very well suited for caving. Fantastic value for the price paid.

But the "Waterproof 1M" silkscreened on the housing itself is kind of a joke. Waterproof, eh? As such, there has been plenty of discussion on the NSS discussion forums and elsewhere about exactly what can be done to improve the waterproofing of the Apex to make it a bit more cave-worthy.

It has been suggested that there are two fundamental problems with the design of the head unit, which can be "upgraded" with a bit of diligence:

*1) While the odd shape of the gasket and its small size don't suggest a tight seal, you can create a better seal by simply coating the gasket with a silicone-based lubricant.*

*2) One of the production issues is that the screws holding the head unit's front and back halves together are a bit too long; they can't be tightened appropriately without cracking the plastic in the head unit itself, so they're not tight enough. The suggested fix is to clip 2-3 millimeters off the end of each screw, so the unit can be tightened better without damage.*

After we got back from I Hate This Cave and I dried my poor, drowned Apex out, I decided to test these methods.

I took my Apex apart, per instructions, and removed the gasket. I then took a pair of wire cutters and clipped the end of each screw – about two threads was just right. Before reassembling the unit, I coated the gasket with a liquid silicone lubricant and carefully resealed it to confirm a good seal with each half.

Since the IPX-7 rating that Princeton Tec claims for the Apex requires the unit to remain underwater for 30 minutes at a depth of 1 meter without a breach in the seal, I thought a 15 minute trial in about 6 inches of water should be a walk in the park. I filled up a glass of water, took note of the clock, turned the headlamp on, and dropped it in. In lieu of a handy

thermometer, I threw a couple of ice cubes into the glass of water for the first minute or two of the test, in an attempt to simulate the 58 degree temperature of cave water in our state.

After 15 minutes, I removed the unit from the glass...

...and it was absolutely filled with water. While I didn't perform the same test with the same unit its stock form, making my tests decidedly unscientific, at this point I would consider this headlamp maybe "dunkable" but certainly not anything more than "water-resistant".

The conclusion? A confirmation of what we already knew, if you need something for extremely wet caving, you may need to look at other lamps. Unfortunately, the suggested "improvements" do not appear to solve the waterproofing issues at hand. So, while we all still continue to use these headlamps and are generally pleased with the result, it's a good idea to pay special attention to keeping your helmet and lamp as dry as possible in some of our wet caves!

