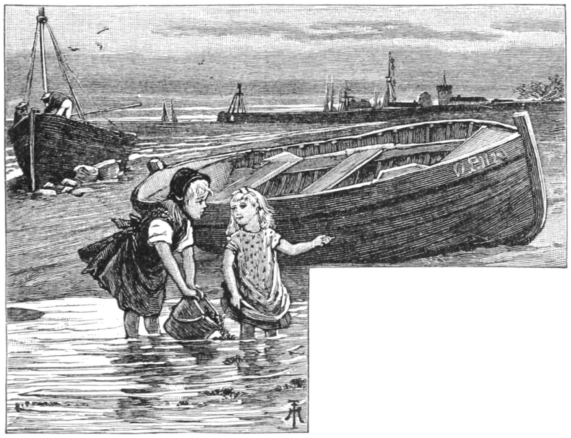
14:01 Let us share some water



Neighbors, please join me in reading this fifteenth release of the International Journal of Proof of Concept or Get the Fuck Out, a friendly little collection of articles for ladies and gentlemen of distinguished ability and taste in the field of reverse engineering and the study of weird machines. This release is a gift to our fine neighbors in Heidelberg, Canberra, and Miami.

If you are missing the first fourteen issues, we suggest asking a neighbor who picked up a copy of the first in Vegas, the second in São Paulo, the third in Hamburg, the fourth in Heidelberg, the fifth in Montréal, the sixth in Las Vegas, the seventh from his parents' inkjet printer during the Thanksgiving holiday, the eighth in Heidelberg, the ninth in Montréal, the tenth in Novi Sad or Stockholm, the eleventh in Washington D.C., the twelfth in Heidelberg, the thirteenth in Montréal, or the fourteenth release in São Paulo, San Diego, or Budapest.

After our paper release, and only when quality control has been passed, we will make an electronic release named `pocorgtfo14.pdf`. It is a valid PDF, ZIP, and a cartridge ROM for the Nintendo Entertainment System (NES).

On page 5, Vicki Pfau shares with us the story of how she reverse engineered the Pokémon Z-Ring, an accessory for the Nintendo 3DS whose wireless connection uses audio, rather than radio. In true PoC||GTFO spirit, she then re-implements this protocol for the classic GameBoy.

Pastor Manul Laphroaig is back with a new sermon on page 12 concerning Liet Kynes, water, Desert Studies, and the Weirding Way.

Taylor Hornby on page 14 shares with us some handy techniques for communicating between processors by *reading* shared memory pages, without writes.

Mike Meyers on page 19 shares some tricks for breaking Windows user-mode keyloggers through the injection of fake events.

Niek Timmers and Albert Spruyt consider a rather specific, but in these days important, question in exploitation: suppose that there is a region of memory that is encrypted, but not validated or write-protected. You haven't got the key, so you're able to corrupt it, but only in multiples of the block size and only without a clue as to which bits will become what. On page 26, they calculate the odds of that corrupted code becoming the equivalent of a NOP sled in ARM and Thumb, in userland and kernel, on bare metal and in emulation.

In PoC||GTFO 13:4, Micah Elizabeth Scott shared with us her epic tale of hacking a Wacom tablet. Her firmware dump in that article depended upon voltage-glitching a device over USB, which is made considerably easier by underclocking both the target and the USB bus. That was possible because she used the synchronous clock on an SPI bus to shuffle USB packets between her underclocked domain and realtime. In her latest article, to be found on page 30, she explains how to bridge an underclocked Ethernet network by routing packets over GDB, OpenOCD, and a JTAG/SWD bus.

Geoff Chappel is back again, ready to take you to a Windows Wonderland, where you will first achieve a Mad Hatter's enlightenment, then wonder what the Caterpillar was smoking. Seven years after the Stuxnet hype, you will finally get the straight explanation of how its Control Panel shortcuts were abused. Just as in 2010, when he warned that bugs might remain, and in 2015 when Microsoft admitted that bugs *did* in fact remain, Geoff still thinks that some funny behaviors are lurking inside of the Control Panel and `.LNK` files. You will find his article on page 37, and remember what the dormouse said!

With the recent publication of a collided SHA1 PDF by the good neighbors at CWI and Google Research, folks have asked us to begin publishing SHA1 hashes instead of the MD5 sums that we traditionally publish. We might begin that in our next release, but for now, we received a flurry of nifty MD5 collisions. On page 46, Greg Kopf will show you how to make a PostScript image that contains its own checksum. On page 50, Mako describes a nifty trick for doing the same to a PDF, and on page 53 is Kristoffer Janke's trick for generating a GIF that contains its own MD5 checksum.

On page 56, the Evans Sultanik and Teran describe how they coerced this PDF to be an NES ROM that, when run, prints its own MD5 checksum.

On page 60, the last page, we pass around the collection plate. Our church has no interest in cash or wooden nickels, but we'd love your donation of a nifty reverse engineering story. Please send one our way.