



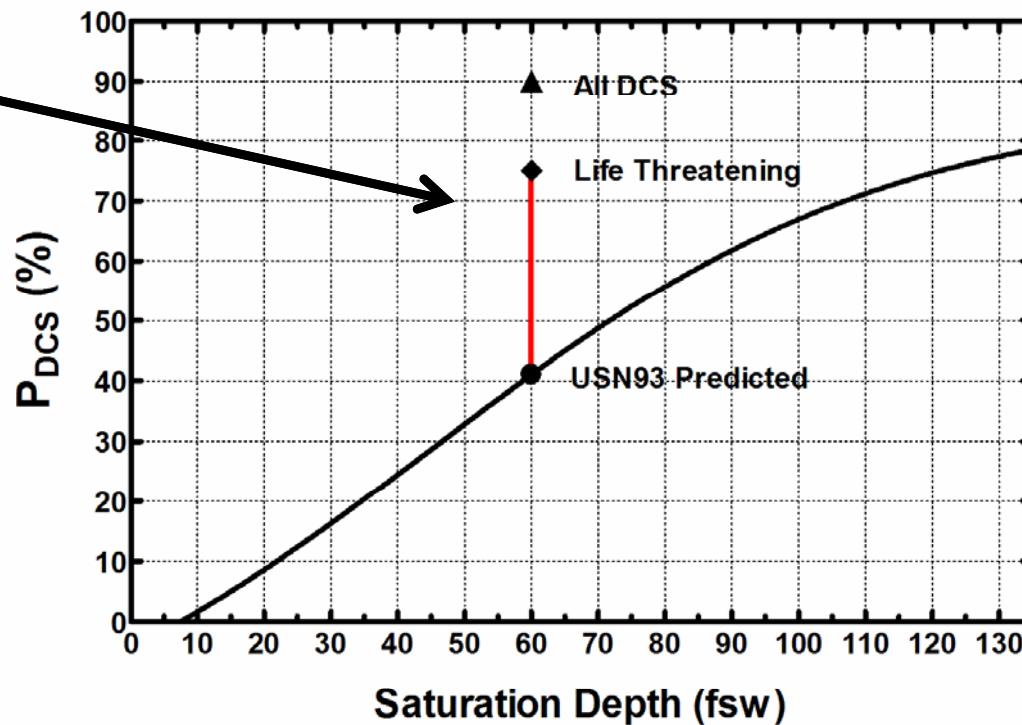
# Improving Prediction for DISSUB Rescue Using 70 kg Swine Dropout Decompression from 30-50 fsw

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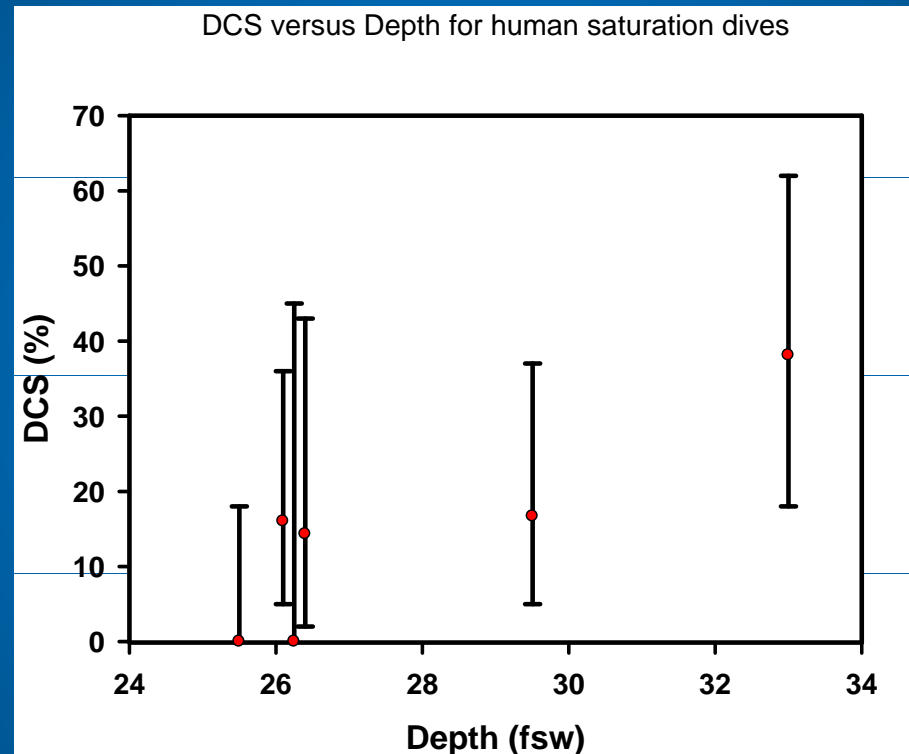
# Background

Large disparity between human saturation models and the observed outcomes in the 70 kg swine

USN93 predicted risk of DCS with direct surfacing from saturation depth and measured outcomes in 70 kg swine.



# Existing human data from 25-33 fsw



Temple DJ, et al, The dive profiles and manifestations of decompression sickness cases after air and nitrogen-oxygen dives, Vol I. Naval Medical Research Center, Technical Report No. 99-02; Bethesda, MD, May 1999

Graphical display of human saturation dropout DCS cases to include “marginal.” Red dots are actual numbers with confidence intervals displayed by bars.



# Objectives

Explore dropout decompression in the 70 kg swine from 30 to 50 fsw saturation. Provide an evidence-based tool for triage and therapy in DISSUB rescue/escape.

## Specific Aims:

- Dropout decompression in the 70 kg swine from 50, 40 and 30 fsw air saturation
- Comparison of 70 kg swine results to existing human data from 25.5-33 fsw



# Methods

Saturation: 22 hours on air at 30, 40 or 50 fsw

Subjects: Male swine, 70 kg

Randomization: in pairs

Target: 20 animals per depth

Ascent rate: 0.91 ATA (30 fsw/min)

Post surface: 2 hour observation period





# Accomplishments

**IACUC – Protocol Approved**

**Engineering and dive plan – completed**

**Diving Underway**

**– 45 animals completed dive to date.**

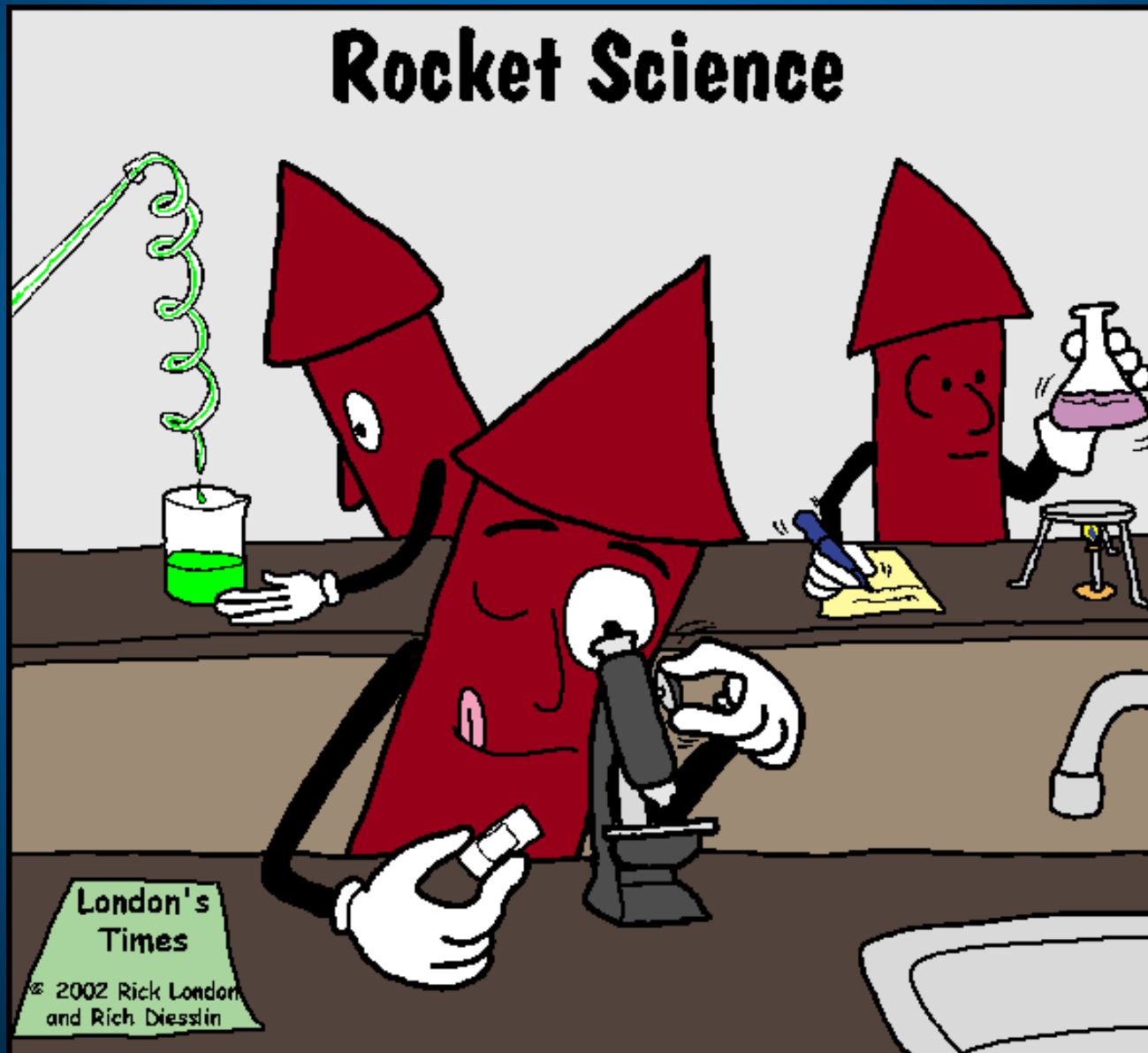
Saturation Depth	N	DCS Type I	DCS Type II
30 fsw	12	0	0
40 fsw	20	12	1
50 fsw	13	8	1



# Goals for next year

- Completion of animal dives
- Comparison of swine to human data
- Manuscript

# This is NOT Rocket Science







# But

- Need to further validate the 70 kg swine model
- Need to have evidence-based DISSUB Guidance



Questions ?