Status of MACRO PMT pressure tests at SAB

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overview

- 150 waterproof MACRO EMI PMT assemblies need to be pressure tested at the SAB. They have already passed performance tests at DGUT.
- We test about 10 PMTs per week (mid-August to December).
- For more information, see doc 5373.

As of October 7, we have passed 60 of 68 tested PMTs.

pressure test results

8 PMTs were tested during the past week (September 30 - October 6).

SN	mass (g)	pressure (psig)	test time (h:m)	result
6502	590.5	12.0	14:45	PASS[1]
7117	600	12.2	8:22	PASS[1]
8727†	574	12.1	87:02	NOT PASS[3]
8819	582.5	12.1	7:51	PASS[1]
6380	616.5	12.7	15:39	PASS[2]
7925	571	12.1	8:07	PASS[1]
7525	630	12.1	14:43	PASS[1]
6796	573	12.1	8:33	PASS[1]

† A hole was found in the jacket of the cable on September 23. It was then repaired with mastic tape and heat shrink tubing and pressure tested again on September 30.

1	Cable dry. No leaks or cracks.
2	1+Some water penetrated the mastic tape seal of the cable strain relief plug, but did not penetrate the UW cable plug.
3	Cable sealing tube still had some water. The way the cable was repaired didn't work well.

signal test results

The operational capability of a PMT is verified after pressure testing:
The PMT is placed in a dark box, connected to a single channel decoupler box, and set to its 2E7 gain voltage, as recorded in the DGUT data. After tens of minutes, the count rate, rise time, and pulse height are recorded. We use a threshold of 3.00 mV, which is roughly 1/4 pe.

SN	Rate (kHz)	DGUT rate (kHz)	Rise time (ns)	DGUT rise time (ns)
6340	9.0	1.62	4.1	3.8
6347	7.0	2.04	4.6	4.6
8866	5.0	1.49	5.1	5.5
8700	1.5	0.43	5.2	7.5
6502	3.0	1.81	5.5	7.1
7117	5.0	3.36	4.6	5.4

- Rates are all below 10 kHz.