

Andy Glasgow

From: Andy Glasgow <andy@tmtlabs.com>
Sent: Wednesday, October 19, 2011 5:28 PM
To: 'Don Peters'
Cc: 'Loral O'Hara'; 'Walter Paul'; gibson, phil (gibson, phil)
Subject: quote for stretch hose testing at tmt, qt#20111019-jag-1

Don,

Sorry this was so long in coming, just a real glut of work lately, which, of course, is a good thing!

Per your email of September 9, expected stretch is 3-5' at 1,000 lb, 7-10' at 3,000 lb, and ??? at 5,000-lb tension. We plan on using two (maybe three!) cylinders in series. First cylinder has 8" bore x 99" stroke that will be used to pull out initial stretch. Second (and third, if necessary) has (have) 3" bore x 48" stroke that will be used for high-cycle-count Test 2. Assuming 5' stroke for Test 2, we should be able to accumulate about 7 tension cycles per minute, 420 per hour, or 6,000 tension cycles in a 14-hour-plus over-night run.

We plan to subject the first sample to the entire test program before swapping in the second sample. We hope to setup up the morning of Day 1 and run Sample 1 Test 1 that afternoon, Sample 1 Test 2 that night, and Sample 1 Test 1 Repeat the morning of Day 2. Then, swap in Sample 2 middle of Day 2 and repeat the program finishing up morning of Day 3 and packing up that afternoon, so nominally 3 days total. Hopefully, the electric company doesn't pull our plug in the middle of the night!

I'm assuming that the sample will arrive with pad-eye flange adapters in place, and all we need to do is connect to the pad eyes. What is diameter of hole in pad eye? We will need close fitting pins, shackles, links, etc. (also assuming strength-bypass cage has ample torsional stiffness) to minimize slop and sample rotation and ensure a good torque measurement. We can usually achieve adequate fit through liberal use of washers and shaft collars to take up space between connection hardware. Let us know the pressure port thread size and style so we can anticipate required hardware for pressure transducer connection. We will measure and record time, tension, crosshead displacement, torque (or rotation, your call), internal pressure, and ambient temperature continuously with a digital data acquisition system. We will measure diameter and center elongation periodically using a pi tape and measuring tape, respectively.

Total cost of the test program is \$13,500. Digital data, pictures, and test logs will be provided as the deliverable. A formal report can be provided for an additional \$2,000. All shipping costs of customer samples, hardware, or instruments are the responsibility of the customer. Please call with any questions, and thanks for your interest in our testing services.

Andy Glasgow, PE
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From: Don Peters [mailto:dpeters@whoi.edu]
Sent: Friday, September 23, 2011 12:05 PM
To: Andy Glasgow; Phil Gibson

Cc: Loral O'Hara; Walter Paul
Subject: Test Plan for Stretch Hoses

Phil, Andy,

Here is a draft test plan outline for our stretch hoses, with some strawman loading profiles. Based on crude assumptions, if it's a half day for the first slow test of two samples, then set up and cycle 2 hoses 24 hours (at 14 seconds per cycle, about 6000 cycles) each, then a half day to slow cycle them again, I could see doing this in 4 days.

Appreciate any input you might have - Walter is also seeing this for the first time, so he can weigh in as well. If we can close in on something good enough for you to provide a quote on, I'd like to get working on a PO for you so we can set this up!

The test hoses are at WHOI now, should be able to ship them to you by the week of October 10.

Regards,
Don

WHOI (week of 9/26)

Prior to shipment, and following TMT testing:

Full length CT Scan both samples

Rigging shop quasi-static pull (to ~8m) with circumference and strain measurement at 20cm un-stretched interval marks to get strain and poisson distribution

TMT Test Program

Test Specimens:

WHOI ship to TMT two 15-ft hoses (need part numbers*) Serial Numbers 072 and 073

Conductors to be daisy-chained in accordance with a wiring diagram for each sample*

Conductors to be fitted with molex or other common modular connectors*

Hoses to be fitted with pull-test clevis plates*

Hose center cavities to be water-filled and plugged

Center cavity plugs to be provided with test ports (IPT or SAE)*

* Information to be provided to TMT by WHOI

Data Recorded:

Time

Load

Torque

Total elongation

Cavity pressure

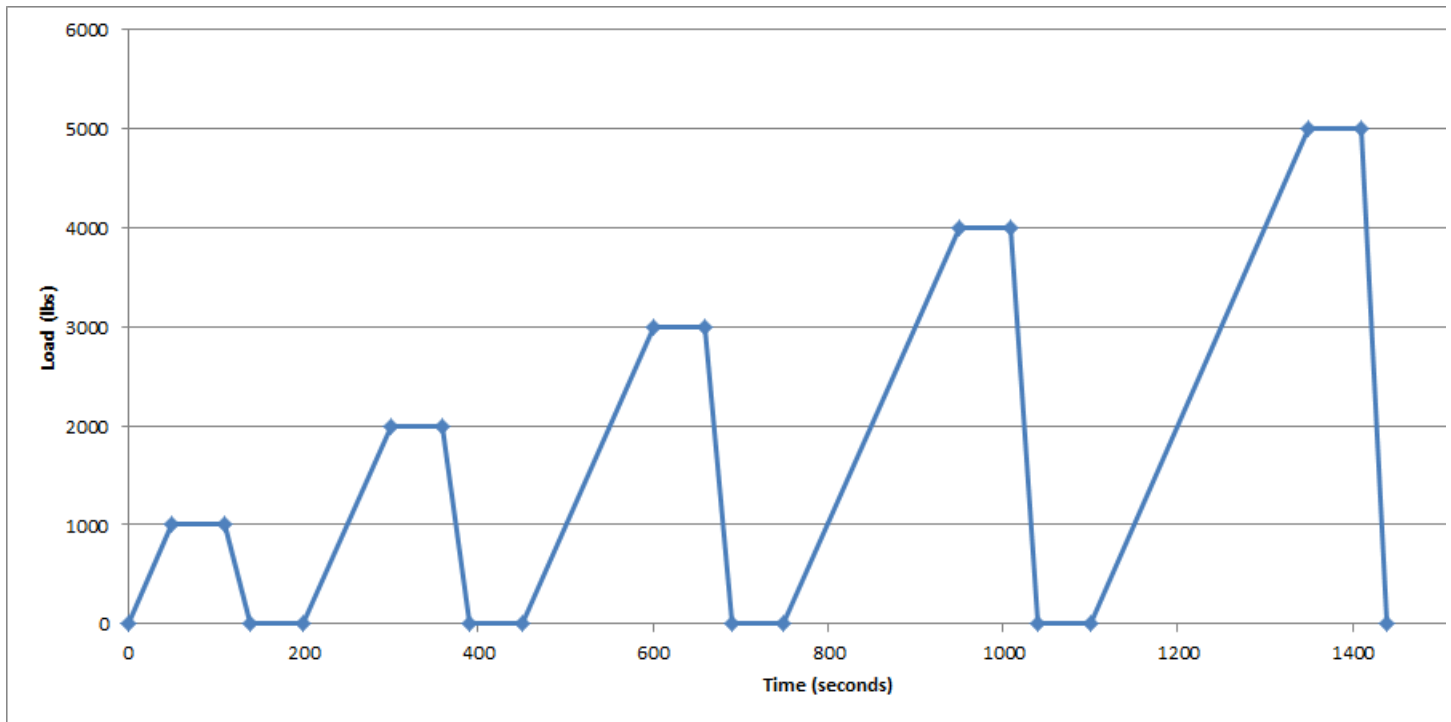
Center elongation, circumference, specimen temperature to be hand-measured as possible

Test both samples as follows (see candidate Test Protocols, below):

Low-frequency Load-Elongation test (new hose) - 2 repetitions, 1 hour minimum rest between (alternate specimens to achieve rest?)

Cyclic test under design service load - Maximize number of cycles - TBD based on allowable time
Low-frequency Load-Elongation test ("used" hose) - 2 repetitions, 1 hour minimum rest between (alternate specimens to achieve rest?)

Test Protocol 1 Low-frequency load test



Test Protocol 2 Service Load Cyclic Test

