FIGURE 2. Best Practices for Uniaxial-Strain Compressibility Test Protocol as Compared to Protocol for Testing of Macondo Samples.

Best Practices	Macondo Practices[23]
1. ***Sample taken from whole core.***	Rotary sidewall core sample.
2. ***Sample size:*** Nominal 1.5-inch diameter by approximately 3-inch length *or* 1-inch diameter by approximately 2-inch length. Preferred L:D ratio of 2:1.	Diameter = approx. 0.92"; Length = approx. 1.1."
3. ***Sample orientation:*** Vertical is preferred, such that the compaction direction matches that in the reservoir.	Horizontal orientation.
4. ***Sample preparation:*** Cylinder ends are ground flat and parallel.	Cylinder ends ground flat and parallel.
5. ***Saturation:*** Can be as-received and topped off with inert laboratory oil or solvent-cleaned and saturated with formation brine and inert laboratory oil.	Extracted and 100% lab oil.
6. ***Jacketing sample with heat shrink Teflon***	Teflon jacketed.
7. ***Calibration:*** Rock Frame calibrated with aluminum billet and jacketed with same material as core samples and under same conditions of temperature, stresses, and loading rates as the sample.	Unknown.
8. ***Test temperature:*** Reservoir temperature.	Ambient temperature.
9. ***Pore pressure:*** The pore pressure is increased to the *in-situ* reservoir pressure condition.	In-situ.
10. ***Stresses at the start of uniaxial strain:*** Reservoir.	Reservoir.
11. ***Apply In-Situ Stress Conditions:*** Increase the pore pressure and the confining pressure simultaneously to their target values at a rate of <1 psi/s (hydrostatic loading - target values are initial *in-situ* reservoir stress conditions). During this loading segment, grain compressibility can be determined. At this point, the confining and pore pressures are held constant while the axial stress is increased at a rate of <1 psi/s to the *in-situ* overburden stress condition (triaxial loading) – bulk compressibility can be determined from this loading segment. Biot's coefficient alpha may be calculated from the grain and bulk compressibility values.	4.2 psi/s.
12. ***Hold at in-situ stresses to stabilize strains before initiating uniaxial strain depletion:*** 4 hr. minimum.	Not done.
13. ***Initiate pore pressure depletion under uniaxial strain:*** Maintaining uniaxial strain boundary conditions (no radial deformation) and constant total axial stress (constant overburden stress), decrease the pore pressure at a rate of -0.1 psi/s to the target value (e.g., the reservoir abandonment pressure). Confining stress will vary due to the imposed uniaxial strain boundary conditions.	0.5psi/s.
14. ***Ultrasonic velocity measurements:*** Tests conducted with concurrent ultrasonic velocity measurements, capture ultrasonic velocity (P-wave and S-wave) waveforms at selected intervals throughout the duration of the uniaxial strain portion of the test.	No velocity measurements.
15. ***Hold at maximum depletion to measure "Creep" for a minimum of 4 hrs.***	Not done.
16. ***Re-pressure back to in-situ stress conditions to quantify in-elastic compaction.***	Not done.

[23] The procedures for the uniaxial strain pore volume compressibility test performed on the Macondo rock samples are contained in Ex. 9053 and 9058. Information about the sample size and dimensions is taken from Ex. 8987 and BP-HZN-2179MDL02394185.