Pipeline Hydrotest Planning Reference

Volume, elevation head and test-planning worksheet

Core calculations

Calculation	Formula / rule of thumb
Pipe internal diameter	ID = OD - 2 x wall thickness
Pipe volume (ft3)	pi/4 x (ID in ft)^2 x length in ft
Water volume (gal)	Volume ft3 x 7.48052
Water volume (bbl)	Gallons / 42
Static water head	Approx. 0.433 psi per vertical foot of fresh water
Pressure difference	Elevation difference (ft) x 0.433 psi/ft
Low-point pressure	High-point pressure + static head difference (non-flowing water)

Planning worksheet

Input	Value
NPS / OD	_____
Wall thickness	_____
Test section length	_____
Target test pressure / reference elevation	_____
Highest elevation	_____
Lowest elevation	_____
Calculated fill volume	_____
Calculated elevation pressure difference	_____
Required pump / test equipment rating	_____
Specified test duration	_____

PHMSA notes that hydrostatic testing fills a pipeline section with water and pressurizes it above normal operating pressure to demonstrate integrity. Actual required pressure and duration are governed by the applicable regulation, code and operator procedure.

Use: Field/office quick reference only. Verify the governing project specification, current code/standard edition, material, temperature, manufacturer data, and operator requirements before design, fabrication, bolting, pressure testing, or valve selection.