KINEMATICS

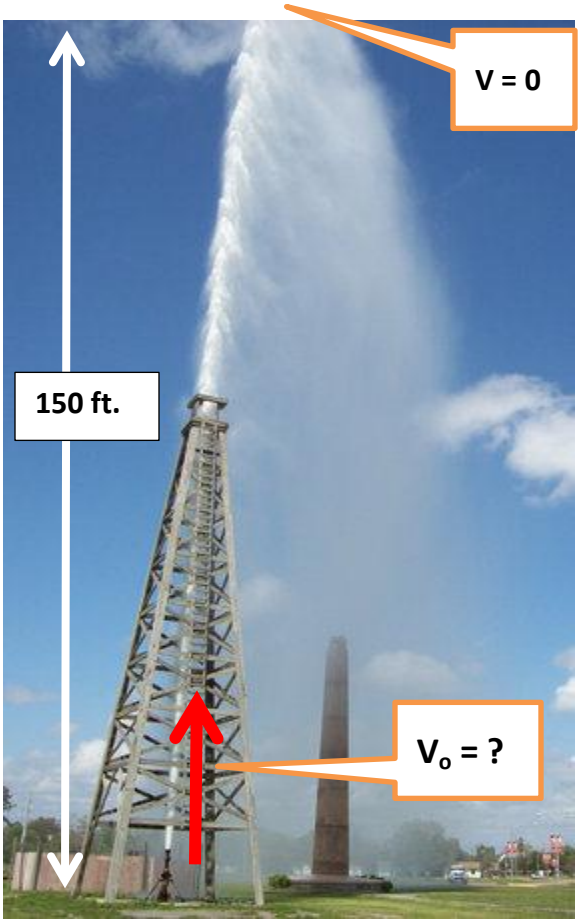
Unit 4 & 5 Dr. John P. Cise, Professor of Physics, Austin Community College, 1212 Rio Grande St., Austin Tx 78701 jpcise@austincc.edu & NYTimes Jan. 11, 2013 by Michael Hoinski im GTT section

BEAUMONT TEXAS

Rain Date

If you stand close enough to the 65-foot-tall replica of the Lucas oil derrick when it gushes at the 112th Spindletop Anniversary Celebration & Reunion, you can feel what it was like on Jan. 10, 1901, when wildcatters struck pay dirt and fortunes were made — except you will be drenched with water instead of actual black gold.

Spindletop-Gladys City Boomtown Museum, Jan 12, 10 a.m., spindletop.org



INTRODUCTION: On January 10,1901, Spindletop oil rig near Beaumont Texas hit a gusher of oil. It was producing 100,000 Barrels/day(4,200,000 gal/day). The oil gushed 150 feet into the sky above ground level.

QUESTIONS: (a) At what velocity(in ft/s & mph did the oil gush from the pipe(see graphic at left) at ground level? (b) How long(t) did it take the oil to reach 150 ft ? (c)To do questions(a) & (b) we assumed free fall without friction. In reality their was air friction on oil droplets. Thus, was the water velocity more or less than predicted and why?

HINTS: $V^2 = V_o^2 + 2ax$, $a=g=-32\ ft/s^2$, 60 mph = 88 ft/s
$V = V_o + at$, $X = V_{ave}\, t$, $V_{ave} = (V + V_o)/2$

ANSWERS: (a) ~98 ft/s or ~66.8 mph, (b) ~ 3.06 s
(c) _____-.