WORK-ENERGY

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Aubrey McClendon, Chesapeake Energy Ex-Chief, Dies Day After Indictment

Aubrey McClendon, former chief executive of Chesapeake Energy, was indicted Tuesday after a federal **into price-fixing, bid-rigging and other anticompetitive conduct in the oil and natural gas industry.**

INTRODUCTION: **The car which hit the concrete bridge at 60 mph was a 5355 lb. Chevy Tahoe. Car crumpled 2.2 ft inward during crash.**

QUESTIONS: **(a) Find mass of car in slugs? (b) Using work-energy concepts (Lost = gained) or ($W = \Delta K + \Delta U$) find force of concrete Bridge on car during the 2.2 ft. crumpled crush?**

HINTS: **$K = \frac{1}{2} m V^2$, $\Delta U = 0$ here (no hills) , 60 mph = 88 ft./s., $W = F X$**

ANSWERS: **(a) 167.34 slugs , (b) ~ 294,518 lb.**

He built a fortune as head of Chesapeake Energy, whose embrace of new production techniques unlocked previously untapped deposits and helped wean the United States from ever-increasing dependence on imports.But late Tuesday, **he was indicted on federal bid-rigging charges accusing him of conspiring to suppress prices for oil and natural gas leases.** And on Wednesday morning, **he died in a crash in Oklahoma City after his car hit a bridge at high speed.** Mr. McClendon, 56, was to have appeared in court later in the day. “He was charismatic and a true American entrepreneur,” said T. Boone Pickens, a legendary oilman himself, who knew Mr. McClendon for 25 years. “No individual is without flaws, but his impact on American energy will be long-lasting.”

An online image showing a fatal car crash involving Aubrey McClendon.

EXTRA CREDIT: **Same question as (b) above, but solve for crumple crush force using Newton’s second law concept.**
First Question (a): Find Δt time of crash?
Second Question(b): Find deceleration during crash? , Final Question: (c) Using Newton’s second law find force of wall on Car causing the 2.2 ft. of crumple crush?

HINTS: **$X = V_{AVE}\, t$, $V_{AVE} = (V + V_o)/2$**

$V^2 = V_o^2 + 2 a X$

$F_{NET} = m a$

ANSWERS: **(a) $\Delta t = 0.05$ s.,**
(b) $a = -1760$ ft./s.^{2}
(c) $F = 294{,}518$ lb.

COMMENT BY AUTHOR: **Note solving for F by either using energy-work concepts or Newton’s second law results in same F.**