COMMON SENSE SCIENCE OF HYPERSONIC LIQUEFACTION, CENTRIPETAL THRUST AUGMENTATION AND NANO HYPERSONICS

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INTRODUCTION: Supersonic and hypersonic flight has been frustrated by the phenomenon of rampant shockwave propagation and propulsive deficiency at speeds in excess of Mach 3. The quest for orbital insertion and space exploration relied on multi-stage rockets to clear the atmosphere expediently in order to accelerate to orbital velocity without shockwave impediment. This resulted in massive rocket launching platforms simply to escape the atmosphere that is seeded with an abundance of oxygen that constitutes 60% of the takeoff weight of multistage rockets. This is the route the 1st satellite was launched in 1957, man went to the moon in 1968, how the Space shuttle functioned and how the International Space station is serviced. The price of multistage rockets is however prohibitive as a 30,000lb rocket is required to place 1,000lb payload in orbit at best. Although SpaceX has succeeded in taking the myth out of rocket science the cost of orbital payload remains prohibitive. The new breed of space tourism (Virgin Galactic/XCOR) only provide up/down pogo rides to the brim of space. http://www.bbc.co.uk/news/science-environment-22344398) Space commerce requires a gigantic leap in the (SCIENCE) of propulsive synergy and reentry dynamics.

COMMON SENSE SHOCKWAVE PIERCING: The Navier Stokes Equations of fluid flow dictates the transformation of shockwave formation. http://en.wikipedia.org/wiki/Navier%E2%80%93Stokes_equations The Navier Stokes equation system defaults into a system of nonlinear partial differential equations which are complex to solve in real time. http://andrew.gibiansky.com/blog/physics/fluid-dynamics-the-navier-stokes-equations/ Common logic dictates that (1) adiabatic boundary layers spawn shockwave formation and (2) that the absence of a boundary layer (OR SUPERCOOLED SLAB) negates shockwave formation. The quest for CRYSONIX piercing started July 2001 when it was determined that given $dT/dt = d(dx)/(dt)^2$ (the elemental NS transformation tensor), $d(dx) = [dT/dt] \times [(dt)^2] = [dTxdt]$; $dx = Txdt$; $dt =$ "infinity"; $dx = T/\text{infinity} = 0$. Therefore given an (extreme) rate of heat transfer (meaning 1/infinity), the boundary layer dx = 1/infinity = zero. However in order to orchestrate/sustain infinite rate of chilling of the boundary layer, the heat transfer in the solid wall [k]x(dT/dx) must likewise equate to infinity with dT/dt = 0 and [k] = infinity.

COMMON SENSE CENTRIPETAL THRUST AUGMENTATION: Introducing a tangential/centripetal velocity vector into a rocket expansion nozzle, an additional STAG (centripetal thrust) component is induced against the nozzle shell. The foundation to the STAG propulsion transformation is vested in a numerocity of (smaller) rocket ejectors directed tangentially against the nozzle bell which generates the centripetal acceleration vector ac = VX^2/R which in turn spawns the centrifugal reaction vector Fcg = mxVX^2/R. The (net) thrust vector is consequentially rendered by Ft = CosϕΘxSinΘxFcg, with Θ the bell divergence angle and VZ = 760xM (the tangential velocity in the Z-plane at Mach-M nozzle). Because kinetic energy spawns STAG thrust gain, common logic again dictates that extreme nozzle pressure and STAG thrust augmentation operates in synergy vs. conventional bell rocket art where over pressure is lost exit kinetic energy $(Ve^2)/2$.

NANOTUNNEL HYPERSONIC CELL: Because M10-15 means is costly and virtually impossible to generate by conformal means, NANOTUNNEL "flashpoint" testing have been devised whereby M10-15 transients may be generated via 5,000psi (micro) blasts. Whereas conformal M10-15 tunnels are prohibitively expensive and virtually non-existent, 21st Century GIGAHERZ data loggers [http://www.dataq.com/products/di-710/] and CFD opened the door to "NANO" hypersonics whereby M10-15 transients may be generated via micro-blasts form a 5,000psi resource into a (mobile) vacuum tank. Given $p/pt = [1 + (v-1)/1M^2]^{(-v/(v-1))}$ [NASA Isentropic Flow] [http://www.grc.nasa.gov/WWW/k-12/airplane/isentrop.html]; $p/pt = [1+0.2x15^2]^{-3.5}$; $pt/p = [1+45]^{3.5} = 46^{3.5} =$ **660,165** and p = 5,000/ 660,165 = 0.0075psi = 1.09lb/SF [atm pressure = 2,117lb/SF]. The presentation will therefore focus via an interactive Power Point show on (1) the elemental Crysonix/SPINNX/STAG/NANO-TUNNEL development steps (2) computational analysis, hardware (old/new), lab/field video clips and testing data (3) applications synergy and (4) 21st Century aerospace firmware. [CEJ/Sept/14 2014]