

GL-6000

GRYPHON

Standard Features:

- 6 Axes of motion (rotary, pitch, roll, yaw, vertical, and horizontal) or:
- 6 Axes of motion (Pitch, Roll, Yaw, Heave, Surge and Sway) or:
- 7 Axes of motion (Pitch, Roll, Yaw, Heave, Surge, Sway and Gs in Gx, Gy, and Gz)
- 360° continuous rotation in 4 axes (rotation, pitch, roll, and yaw)
- ± 3 feet vertical carriage
- + 17 feet of horizontal carriage
- Maximum G ± 3 Gx, Gz and Gy
- FOV: 270° Horizontal by 120° Vertical



AUTHENTIC TACTICAL FIGHTING SYSTEM
ATFS-400

Training Applications:

- Vertical Takeoff and Landing (VTOL)
- Short Takeoff and Landing (STOL)
- Short Takeoff and Vertical Landing (STOVL)
- Conversion to Forward Flight and Hover
- Hover (In Ground Effect (IGE) and Out of Ground Effect (OGE))
- Capable of conversion from forward flight to a hover

Advantages:

- Fully emulates unique motion profile
- Used for Research of training applications



The GL-6000 capsule for NAMRL, as designed, cannot have a lift out, removable module (as in ATFS-400) because the central stirrup is a complete hoop (as opposed to the horseshoe design in ATFS-400). The complete hoop was chosen for both structural reasons, due to the extreme internal spaciousness in the NAMRL design, and because the Navy did not require the interchanging of modules.

Nevertheless, since the front panel is removable, allowing unfettered access to the inside, if the visual display is redesigned to be easily removable, then the remaining components could be swapped in and out fairly easily. This would be more like the "suitcase" concept that we used earlier. With appropriate placement of attachment points within the capsule, we could certainly outfit the cabin to simulate different aircraft. The seat is already designed to be movable and removable.

Free thought: I believe that it could be possible to load a module "cassette" into the capsule, complete with VDS, through this front opening by rolling the capsule into its back (loading in the horizontal position could prove more difficult). This would require the module cassette to be designed so it could easily be rolled from an upright position (when used as a standalone module) to its install orientation. The cassette could be held in the capsule via bolting through the stirrup base and roof (and possibly the sides), all of which are fairly substantial. This would, of course, require more thought and design to become real.



Environmental Tectonics Corporation
125 James Way, Southampton PA, 18966

WWW.ETCTACTICALFLIGHT.COM

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ISO Compliance 9000, 9001-2000, 9003

ATFS-400

COMMON TERMS



Signature Technology – Signature Technology as it applies to the ATFS – 400 PHOENIX product line, addresses inherent mechanical, electrical and software design features which allows the operator to sense the nuances of motion of the machine (motion signature), recall previously learned or practiced skills and effectively apply those techniques. Conversely, by a pilot responding to the particular “Signature” of the machine, a symbiotic man machine interface is created where the machine is more responsive to the pilot input while the pilot is more perceptive in discerning the machine nuances of motion. This resultant Signature relationship elevates the experience between the pilot and simulator, making the experience as close to a real flight experience as can be achieved.

Motion Signature – A motion signature enables the operator to sense the motion of the machine and apply previously learned skills during its operation based on his experience with that vehicle’s motion and performance signature, much like with a sports car.

Frequency Domain Design – Frequency Domain Design is a design philosophy that employs various techniques aimed at addressing the simulator design at a system-level, allowing for requirements to be formulated for interactions between sub-systems that are generally missed or overlooked with a conventional design approach.

With this in mind designing in the Frequency Domain produces an end product that increases the strength, specifically with the ATFS-400 PHOENIX, the centrifuge arm strength. Typically, there is a certain amount of flexion in the arm so that it will not break. However, this flexion is unacceptable for tactical flight training since the requirement

demands a strong arm without flex during acceleration. This is important because when the arm flexes, undesirable motion artifacts are produced, decreasing the realism of the flight. By having a centrifuge arm designed “in the Frequency Domain” an arm with a high bandwidth (for tactical fidelity) is produced which is extremely strong and therefore doesn’t flex during dynamic operation conditions. Thus, with a stiffer arm, cycle lag times are greatly reduced enabling the machine to provide a more rapid response to pilot input, and motion artifacts greatly decreased or abated.

System Bandwidth – A systems bandwidth is essentially the overall responsiveness of a system and takes into consideration the design and ensuing responsiveness of all sub-systems including, electro mechanical, software, etc.

The ATFS-400 PHOENIX is able to produce a bandwidth equal to or greater than that of current 4th and 5th generation aircraft thereby replicating each aircraft’s ultra responsiveness to the pilots actions, ultimately providing a flight simulator which is nearly identical to flying a real aircraft.

G-Pointing – The G-Pointing motion control system controls the high performance motion system and is the key to the realistic simulation of varying G forces. Pilot control inputs are processed by aeromodel to create realistic virtual aircraft responses. Simultaneously, commands are sent to the G-POINTING system to properly position the ATFS-400 gondola, containing the modular tactical aircraft cockpit, and vary the speed of the high performance motion system to precisely create the correct inertial G forces in all three axes. G on-set and off-set rates correspond to those of the tactical aircraft being simulated.

