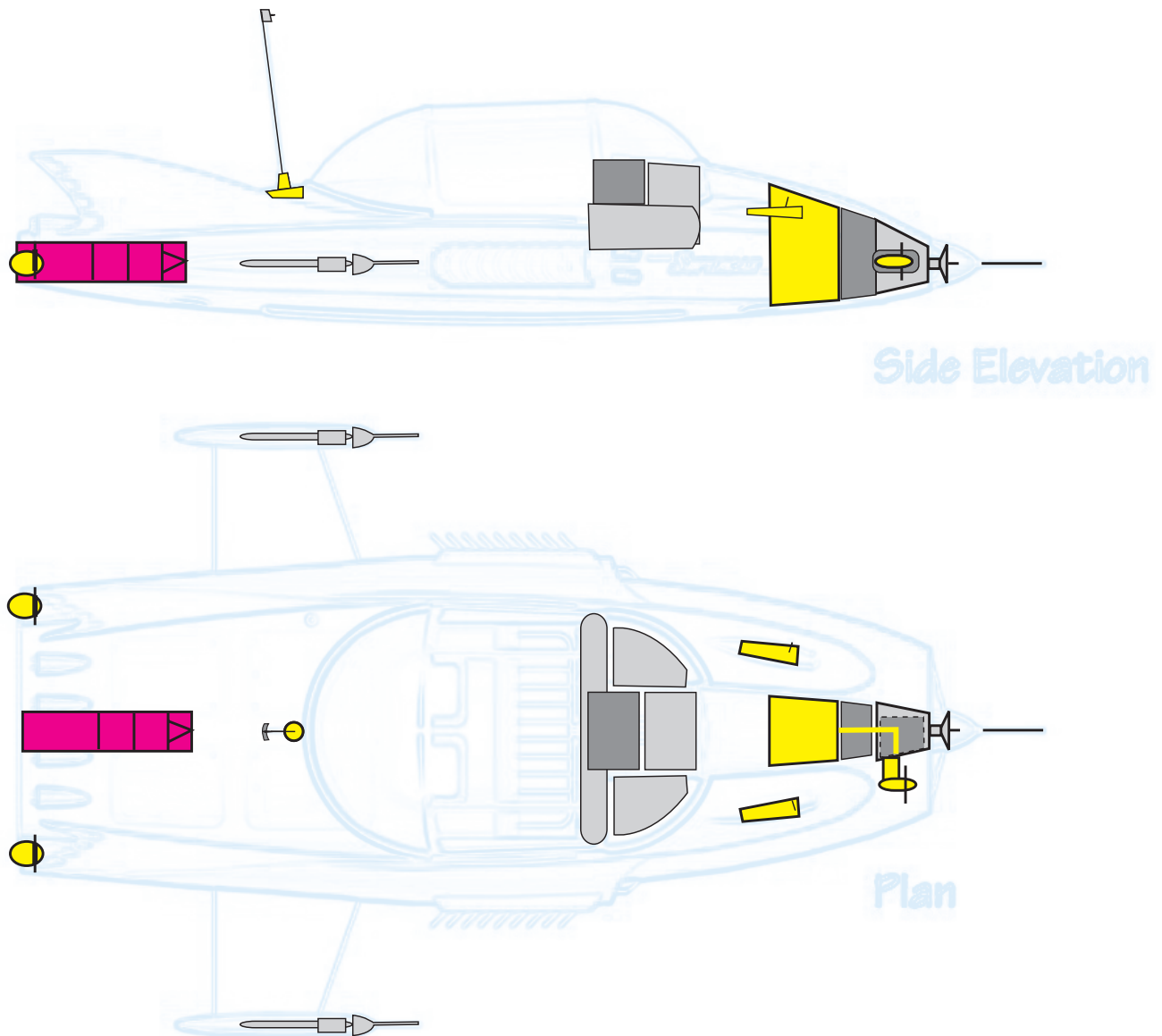


TECH NOTE TO DESIGN TEAM:
AFTER REVIEWING FEEDBACK, WE COULD MOVE OXYGEN SYSTEMS INTO THESE SPACES, ALLOWING INCREASED FUEL CAPACITY TO MAIN FUEL TANKS. - PLEASE ADVISE.

1. **Rear Navigation Lights** (2) Port & Starboard, with rear ballast eject through valve surround.
2. **Twin Hybrid, Vectored Thrust, Stratified Turbine Ramjets** with Afterburners (Turbo Boost), each developing in excess of 19,000 lbs static thrust (total power output classified). **Ceramic Vectored Exhaust Nozzles** (rotatable) and interconnected via thrustaft "Interlock®" transverse driveshafts, gearbox and wastegates in the event of engine failure. Contains oil injectors for **Smoke Screen** deployment.
- 2.1 **APU (Auxiliary Power Unit)** & Highly Classified **EMH® (Electro-Magneto-Hydrodynamic)** 0.5 Megawatt Capacity Powerplant between Ramjets (dark red central unit) which cross feeds and "boosts" the Ramjets for Space Flight, and is a fully self-contained **Water Propulsion Unit**. Also used to electrically charge Supercar's hull plating or send electrostatic charges via the Hi-Band Antennae - see 10.
3. **Vectored Flight Attitude Nozzles** controlling pitch and yaw movement (4).
4. **Ramjet Vectored Thrust Outlet Nozzle** from Ramjet Engines ducted through to Retro Jets and Adjustable VTOL Nozzles (4).
5. **Rear Ballast Tanks** with **Ram Intake Valves** (2), Port & Starboard.
6. **Rear Vectored VTOL Jet Nozzles** (2) interconnected to Fwd. VTOL Jet Nozzles (2), featuring **CAD (Cushion Augmentation Devices)** for added Roll, Pitch control and Ground Effect Mode. Independently computer controlled depending on selected Flight Mode and fed from main Ramjets & **EMH®** Powerplant.
7. **Main Fuel Feed Injector lines** (6), Port & Starboard, to Ramjets with Emergency Cutoff Valves.
8. **Main Fuel Tank** containing Classified **AvGas®** and tapered to airflow ducting. Separate **Liquid Oxygen & Hydrogen Tanks** (Circular units) with built in refrigeration units for Spaceflight & Marine operation. **Auxiliary Fuel Tank** under Luggage Compartment - see also 15
9. **Retractable Wing Box Surround** & hydraulics.
10. Combined **Hi-Band UHF/VHF Antennae** and **ClearVu® Periscope Receptor** (detachable at top of aerial), with Electrostatic discharge coil from **EMH®** unit.
11. **Rear Ballistic Parachute Recovery Pack** (2), Port & Starboard, housed in wing nacelle cones (fired in unison with front mounted unit - see also 28).
12. **Wing Extenuator Engine Pump** & Backup.
13. **Oxygen Regenerators, Pressurisation & Air-conditioning Pumps** (2), Port & Starboard, fed to main pressurised cabin through Rear Bulkhead "Firewall".
14. **Wing Nacelle Multi-mode Avionic & Marine Sensor Probes** (2), Port & Starboard, connected to **ClearVu®** Read outs. Includes **INS (Inertial Navigation System)** aeriels for position fixing and ground terrain sensors for moving map display read-out.
15. **Spit Luggage/Equipment Storage Bay** behind rear folding seats. (Auxiliary Fuel Tank under Luggage Compartment - see 8).
16. Electrically operated **Flexiglass® Canopy** Storage & lifters. (Top Canopy splits into two halves and slides down tracks "inside" side windows). Entire Canopy removable for maintenance.
17. **Oxygen Bottles and Pressurisation** outlet & recirculation systems embedded into Front Seats, fed directly from Oxygen. Pressurisation and Air-conditioning Units in rear - see also 13.
18. **Retro Jet Heat Extractor Vanes** (2) Port & Starboard, containing vectored thrust vents for sideways movement.
19. **Twin Retro Jets** (2), Port & Starboard, fed from main VTOL ducts with **EMH® (Electro-Magneto-Hydrodynamic)** accelerators giving enormous braking power.
20. Main **Flight Avionics Bay** and Marine instruments including triplicated Flight Computer Backups with built in Communication Array. Microphone is simply voice activated from pilot.
21. Multi-mode **ClearVu®** CRT instrumentation, flight data, and systems status read-out.
22. **Main Computer Core Processor Unit**.
23. **Fwd. Ballast Tanks** (2), Port & Starboard with Ram intake valves (front), and bleed pumps into main duct inlets. Closed at front when Ballast Tanks are operational allowing them to be "flooded", drained and trimmed.
24. **Fwd. Pressure Bulkhead "Firewall"**.
25. Fwd. Mounted **Multi-Purpose Optional Equipment Bay**, (which can contain Removable Rocket Gun Mount and armament unit (under), additional Oxygen Supply for Space Flight, etc.).
26. **Navigation/Landing/Search lights** (2), Port & Starboard, with **ILS (Instrument Landing System)** sensor antennas.
27. **Main 24-volt Batteries** (2) with backup, insulated electronics and power coil. Used to initially start APU (which charges each engine).
28. **Fwd. Ballistic Parachute Recovery Pack** (hidden under flush panel).
29. **Main Sensor Probe Circuitry** and **"Remote®" Receiver**.
30. **Fwd. Ram Intake Valvegate** (for air or water feed) can be regulated (opened or closed) for ballast operation. Also cools Avionics Bay.
31. **Emergency Generator**, wind/water driven with folding turbine blades (retractable - shown in extended position, normally housed in centre unit). Used only if other electrical systems completely fail and if *Supercar* has forward motion in atmosphere or water.
32. **Main Radar/Sonar/Sensor Array** and **"Remote®"** pick-up connected to **ClearVu®** Read-out.
33. **Fwd. Flight Instrument and ClearVu® Pitot Boom Antennae**.



Please refer to main diagram on Page 1 for Key Number cross references

Supercar's main power supply originates from two high capacity 24-volt batteries situated in the nose (27). These provide the initial power for the **APU (Auxillary Power Unit)** when away from Black Rock Laboratory or when external power supplies are unavailable.

Electrical power is fed to the **APU** and **EMH®** powerplant (2.1), which charges each **Ramjet** engine (2), port and starboard, up to 15,000rpm when the **Interlock®** mechanism is activated, interconnecting the two engines.

The 0.5 Megawatt capacity **EMH** unit is also the primary electrical "generator", in itself, a highly

advanced **superconducting powerplant**. It is the self-contained marine motor for water operations and boosts the power rating of each ramjet engine for space flight, scooping up hydrogen in the thin atmosphere where oxygen is unavailable.

The **EMH** Unit can also electrically charge *Supercar's* Hull and transmitting the charge via a capacitor to the **High-Band Antennae Aerial** (10), used for frightening off animals or predators which may otherwise damage *Supercar* while on the ground.

The **Avionics Bay** (20) houses complex triplicated Flight computers, connecting vital flight status data via the highly sophisticated **ClearVu® CRT Computer Display** (21).

Sensors in the nose (32), (33) and wing nacelles (14) provide advanced data including radar, sonar, moving map displays, **Inertial Navigation, Remote®** and video link-ups directly to Black Rock Laboratory.

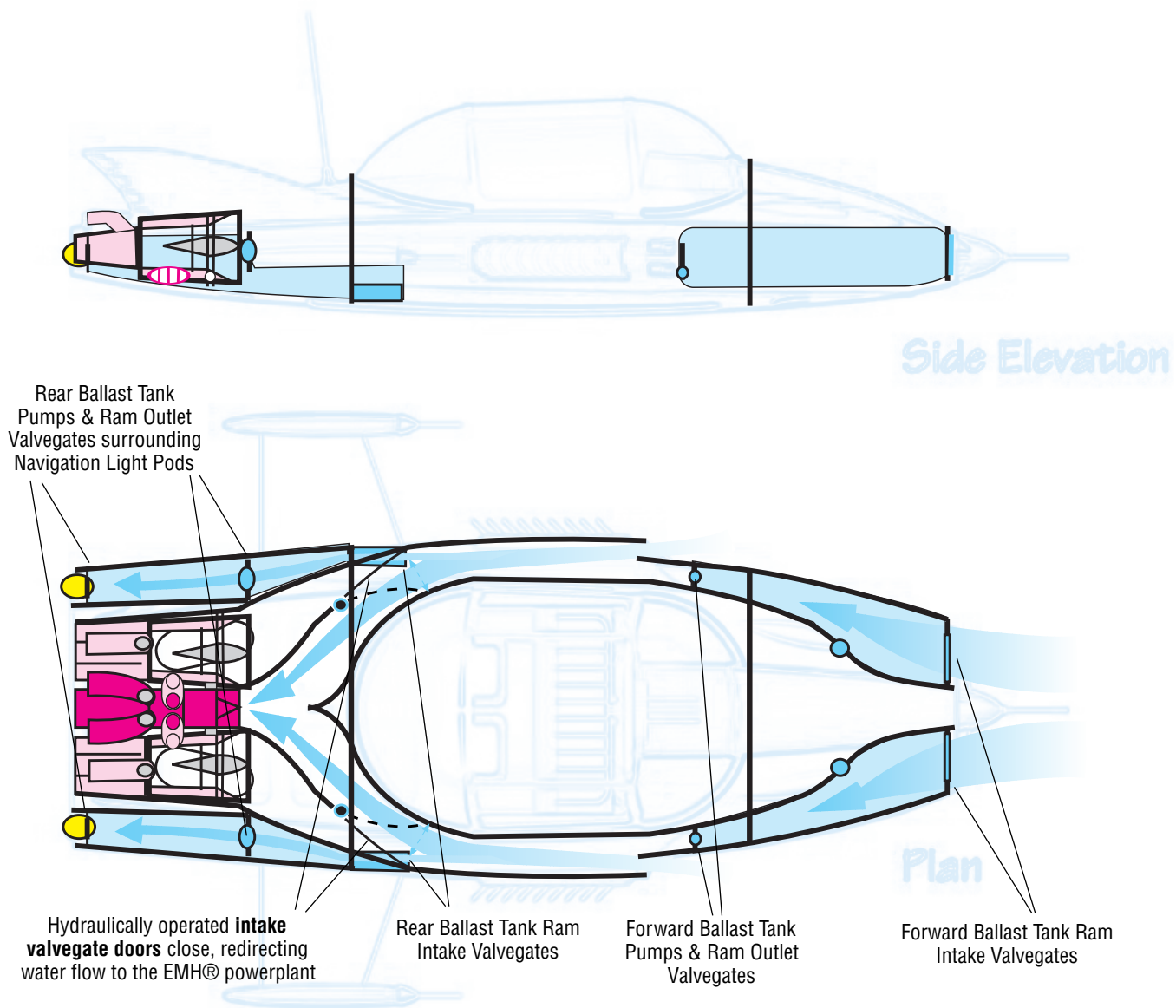
Flight instruments and control readouts are also transmitted to Black Rock Laboratory, and digitally controlled via a sophisticated **FBW (Fly By Wire)** computer system from pilot inputs using a simplified control column which interconnects all pitch, yaw and roll movements.

Depending on selected **Flight Mode**, the onboard **Flight Computer** relays information to sensors built into the engine nozzles providing precise control of *Supercar's* movement, attitude and velocity.

Powerful **Navigation Lights** are

mounted in the rear fuselage (1), with combined front navigation, search and landing lights enclosed in two streamlined fairings (26) forward of the cockpit windscreen. Each of these pods house **ILS (Instrument Landing System)** antennae.

In the unlikely event of catastrophic hydraulic or electrical failure, a back-up wind/water powered **Emergency Generator** (31), folds out from the nose center structure (behind the front intake cowling, shown in the extended position), into the intake cowl slipstream, providing *Supercar* with Hydraulic/Electrical capability provided she has forward movement, enabling her to continue operating safely.



Supercar's ability to become a submarine or high-speed "hoverboat" is achieved with the four ballast tanks (5 & 23) and the EMH® powerplant, or the VTOL Jets in "Ground Effect Mode" respectively.

Just before entering a water environment, the pilot switches from "Flight Mode" to "Marine Mode" using the far left lever on the centre console. This instantaneously shuts down the Ramjets, and valvegates close off both the VTOL and Ramjet exhaust nozzles preventing water from entering.

Hydraulically powered valvagate intake doors mounted within the side intakes, (depicted by dotted lines and blue arrows to the sides and rear of the cabin) close off and seal water from entering the Ramjets, and redirect the incoming water directly to

the EMH® powerplant which now becomes the primary engine. Computers switch the EMH® engine (via the Interlock®), to "Crossfeed," allowing all rear ports to be utilised.

Just before Supercar enters the water, Valvegates at the front cowling (30) and front of the rear ballast tanks (5) are fully opened. Water is instantaneously rammed into these tanks as she dives directly from the air into the sea. The valvegates are closed off and electric pumps independently regulate the capacity in each tank.

Moving the control column conventionally displaces water in each tank altering pitch, roll and yaw, just like it does when Supercar is flying. To dive, the tanks are left fully flooded. To surface, the pumps displace water with oxygen from the air pressurisation system (13).

Oxygen regenerators (13) continue to purify and recirculate pressurised air into the cabin (17).

The EMH® powerplant operates much like a jet, sucking water in and accelerating it out the rear outlet ports. The directional nozzles located in the rear ports not only accelerate Supercar up to 70 knots, but also assist her directional movement, ie, water thrust is directionally vectored.

To launch Supercar directly into the air, the front ballast tanks are pumped dry and the pilot selects Flight Mode. This powers up the Ramjets with direct internal oxygen vented into the Ramjet combustion chambers. Full power is selected for both the EMH® powerplant and Ramjets, the appropriate attitude is selected and Supercar literally launches like a Polaris Missile.

Once airborne, the onboard computers and sensors reopen the Ramjet intakes and valvegates, providing atmospheric air directly to the Ramjets and instantly dumping excess water from the ballast tanks. The EMH® engine returns to "normal" mode.

As a high-speed hover-boat, the pilot can choose to land conventionally or vertically onto the surface. Once on the surface, Ground Effect Mode is selected and the CAD (Cushion Augmentation Devices) are activated. Supercar hovers a foot or so off the surface and is propelled at high speed by the Ramjets. - See VTOL & Vectored Thrust Sections on pages ? & ?.

Conventional or vertical takeoffs can then be selected in the usual way by switching back to Flight Mode.