

Atlantis A320 level 4 retrofit Configuration Device Description and Specification Summary



Photograph courtesy Airbus

- 1. General:** The Advanced Aviation Training Device A320 built by Atlantis, Spirit Airlines use it for 90% of the training in bringing pilots up to proficiency in the A320 level 4 ,before going to the full-motion level D, it save them a considerable amount of money minimizing the time and the full-motion simulator. The original was about \$1.4 million. The retrofit will be refurbished with new computers, software IO system and new visuals.
- 2. Certification Criteria:** the retrofit could be recertified as a level 4 or as an AATD or not certified and used for proficiency training
- 3. Flight Deck:** The cockpit enclosure and area is a realistic replica of the A320 flight deck, made of a metal/fiberglass shell, mounted on a heavy-duty metal frame, with locking wheels, that enable it to be re-positioned with ease. The interior is well finished with A320 style liners, premium carpeting, and pertinent fixtures and markings. The seating consists of rail-mounted dual (Pilot and Copilot) fully adjustable Airbus style pilot seats, with head-rests.
- 4. Panels and Hardware:** All of the cockpit panels are back-lit, and have A320 style hardware installed, with realistic knobs, buttons, and switches. All toggle and push-button switches are heavy-duty, as per FAA specifications, and of the proper type.
- 5. Side-stick Controls:** The dual, side-stick controls are representative of the A320 aircraft, with a complete set of functional buttons and switches, including AP Disconnect, PTT, etc. The controls are heavy-duty, and dampened to provide the pilot with a realistic "feel". They are equipped with a full digital control loading system.
- 6. Rudder Controls:** The dual, interconnected rudder controls are representative of the A320 aircraft, with functional toe-brakes. The rudder pedals are heavy-duty, and dampened to provide the pilot with a realistic "feel". They are equipped with a full digital control loading system. A functional A320 style Rudder Trim panel is provided and installed on the center console, in the appropriate position.



A320 with options projection screen

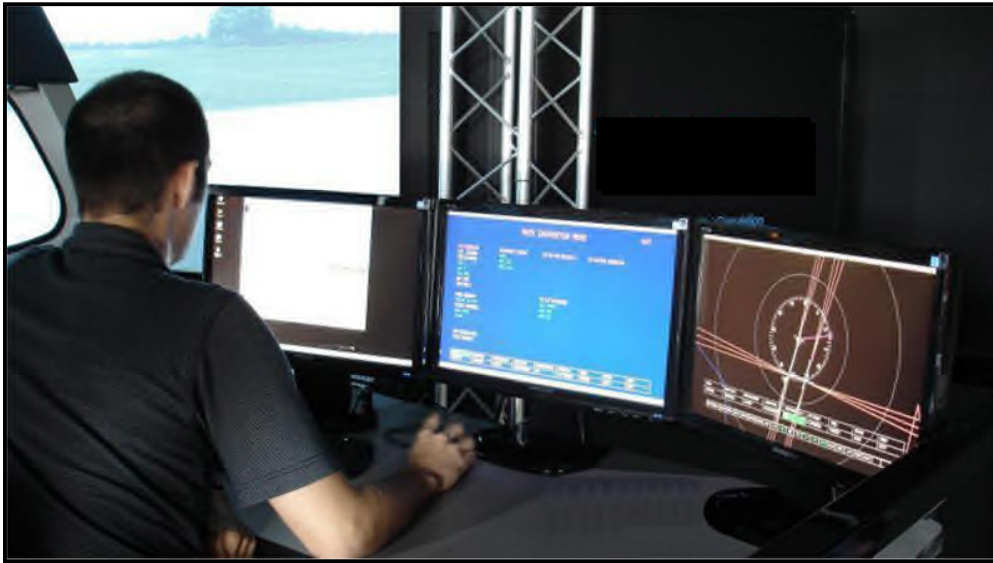
7. **Throttle Quadrant:** The throttle quadrant is a replica of the A320, and is of aircraft quality, with fully functional heavy-duty components, including dual lever throttles with Auto Throttle, TOGA switches, thrust-reversers, spoilers, flaps, and parking brake, and all other relevant buttons, lights, indicators, and switches.
8. **Pitch Trim:** The pitch trim is automatic, and is controlled by the Fly-By-Wire software logic.
9. **Other Controls:** Fully functional A320 replica controls for the landing-gear and nose-wheel dual tillers, are also installed.
10. **Instrument Panels:** All of the panels, including main instrument panel, overhead panel, center pedestal, and side panels, accurately represent the A320 panels, and include all of the instrument displays, FMGCs, controls, and equipment, properly positioned and installed, in a sturdy and secure manner.
11. **Flight Instrumentation and Avionics:** The AATD is equipped with a realistic representation of the A320 "Glass Cockpit", with high-resolution instrumentation graphics displayed on LCD monitors, and realistic representation of the avionics as found in the aircraft. The composite standby instruments (ASI, ADI and Altimeter) are accurately positioned and displayed, as functional replica of the real instruments.
12. **FMGCs:** The dual, integrated FMGCs units represent the Pegasus model as installed in the A320 aircraft, with a world-wide database of nav-aids, fixes, airports, SIDS and STARS, which is user-updatable.
13. **Systems:** The major systems representing the A320 aircraft are supported, including Air Conditioning, Pressurization, Automatic Flight, APU, Communications (simulated radio tuning), Electrical, Emergency Equipment, Fire Protection, Flight Controls, FMGCS, Fuel, Hydraulics, Ice & Rain Protection, Landing Gear, Navigation, Pneumatics, Power Plant, and Warning Systems.



A320 Before Retrofit Configuration

- 14. Flight Model:** The flight model is realistic and adaptable. It is user-adjustable from the Instructor Station to easily accommodate changes in flight conditions, such as weight, CG, configuration, etc. The model allows the performance of the device to exceed the level of certification sought. The data is derived from manufacturer specifications, and represents the general handling and performance qualities of the A320 type of aircraft. A complete Qualification and Acceptance Guide (QAG) and a technical specifications support document are provided.
- 15. Sound:** The sound effects are derived from a digital recording of the A320 aircraft, and are realistically reproduced using a multiple-channel, Bose™ premium sound system, with a high-powered sub-woofer. The EGPWS system is accurately represented, with a complete set of multiple callouts, using digitized recordings. The multiple selection of Warning and Caution messages are accompanied with the proper Auditory Alerts.
- 16. FCU Panel:** The glare-shield is equipped with accurately represented FCU/EFIS panels that include fully functional and integrated Dual Autopilots, with Managed/Selected modes.
- 17. Navigational Database:** The AATD computers are loaded with a current world-wide database consisting of more than 24,000 airports and associated navigational facilities. It includes detailed scenery and terrain reflecting the actual landscape, structures, and hazards of the real environment. The database can be updated by the user.
- 18. Digital Recording System:** A digital audio/video cockpit recording system is provided, capable of recording the entire training session, with play-back capability for debriefing purposes.
- 19. Electronic Flight Bags:** Dual Jeppesen Electronic Flight Bags (EFBs) with LCD touch-screen functions, are installed for the pilot and co-pilot at the appropriate locations on the side panels, as represented in the A320 aircraft.

Specification Summary: Atlantis A320 level 4 retrofit Configuration

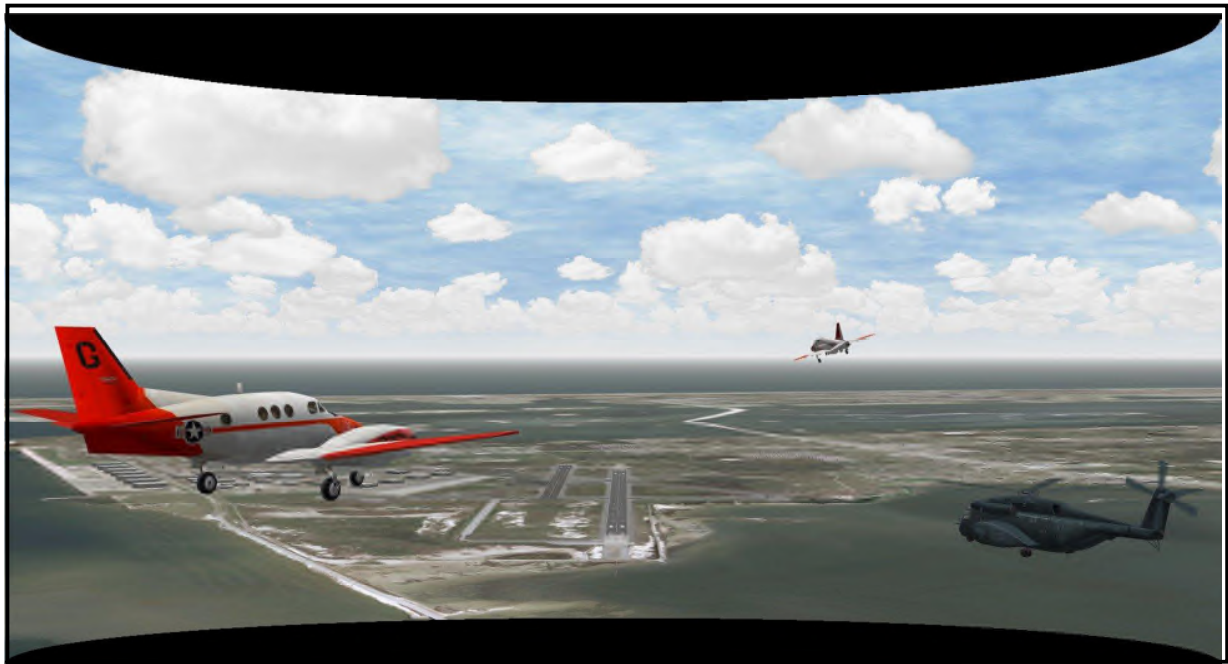


Graphical Instructor Console and Station (GICAS™)

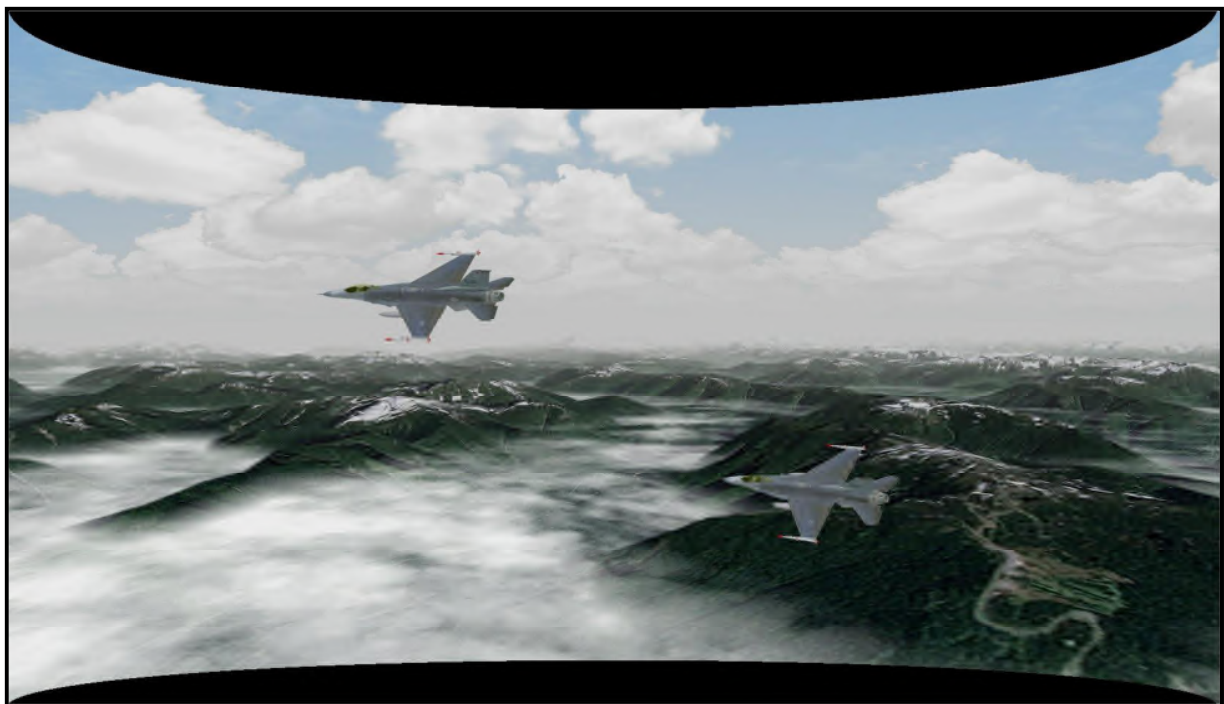
- 20. Instructor Station:** A Graphical Instructor Console and Station (GICAS™) is provided, which also controls the start and shut-down operation of the device. It consists of multiple LCD monitors, a keyboard, and mouse. It allows the instructor to control and monitor the AATD, as per the certification and operational requirements. It is also equipped with a master key switch, and “Hobbs” hour meter, and intercom jacks.
- 21. Visual System:** The visual system may vary depending on space requirements from multi-channel, ultra-high resolution, with a world-wide database, and provides an accurate representation of the terrain. It consists of a compliant Lockheed P 3-D visual software, displaying ultra-high resolution, highly detailed, major US and international airports, with accurate modeling and representation of the airport terminal, ramp, runway, signage, lighting, and surrounding environment. The display system may consist of monitors or an optional 200 degrees horizontal, and 43 degrees vertical coverage, “Wrap Around” curved screen, using multiple HD projectors, with auto image calibration, distortion correction, and edge blending.
- 22. Computer System:** The computer system is installed in a separate, heavy-duty computer Cabinet, with the computers connected through a LAN-based Ethernet system, with dedicated host, IOS, Image Generators, optional EFB, and other supporting computers. The cabinet is mounted on wheels, equipped with a suitable surge-protection and power back-up system, and cooled with multiple cooling fans.
- 23. Documentation:** The retrofit is accompanied with a complete set of Operating and Maintenance Manuals, with provisions for updates and revisions, as required.
- 24. Training:** Upon completion of the delivery, installation, and set-up of the retrofit at the training facility, complete on-site operator and maintenance training is provided for the safe and proper operation of the retrofit.
- 25. Warranty and Support:** Standard Technical Support and Limited Warranty for Parts and Labor for a one year period are included, with an Extended Limited Warranty available as an option.



Center Pedestal



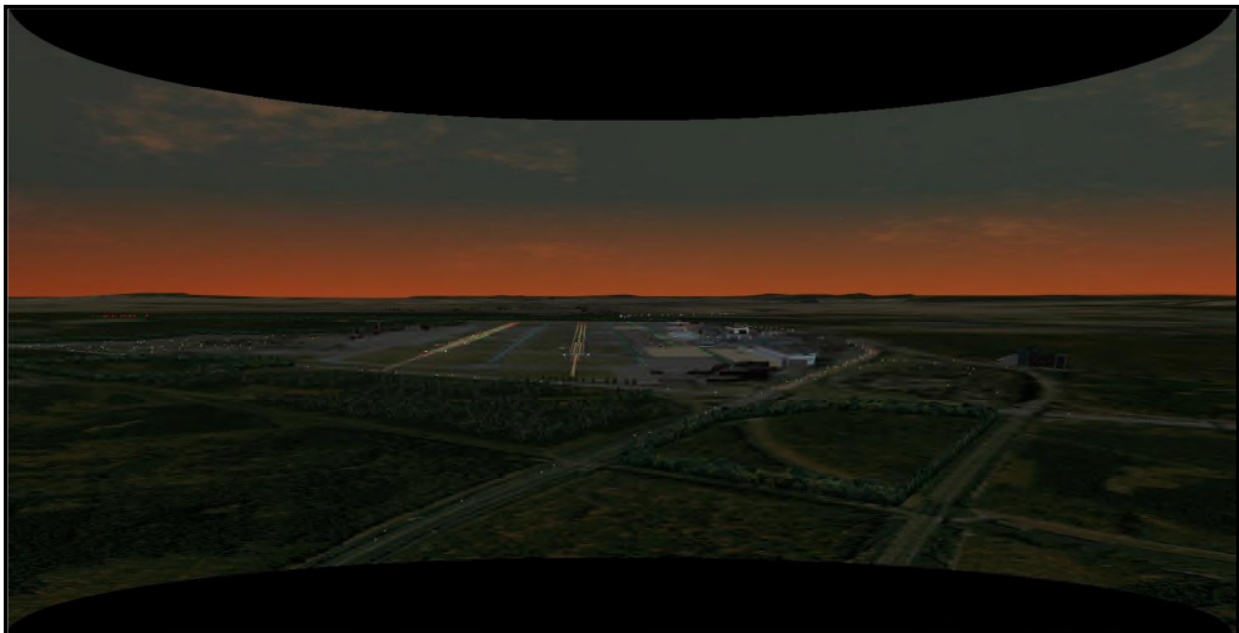
**“Wrap Around” Compliant Visual System
Scene 1**



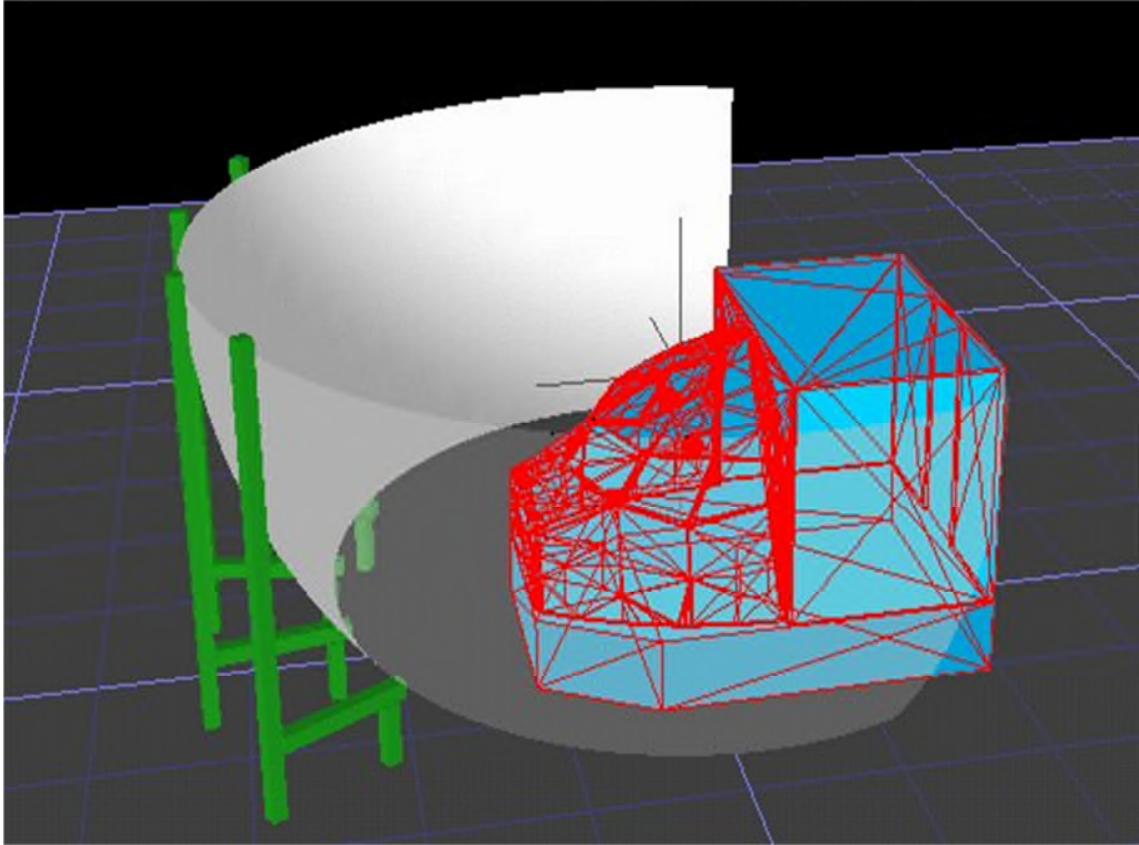
**“Wrap Around” Compliant Visual System
Scene 2**



**Compliant Visual System
Scene 3**



**Compliant Visual System
Scene 4**



Wrap Around” Visual System



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