MAR 2 9 2013

Mr. Mike Altman
CEO, Precision Flight Controls
11340 White Rock Road, Suite 100
Rancho Cordova, CA 95742

Dear Mr. Altman:

The Federal Aviation Administration (FAA) has qualified and approved your airplane model DCX, DCX ProMotion, DCX MAX, and DCX MAX ProMotion as an Advanced Aviation Training Device (AATD) in accordance with Title 14 Code of Federal Regulations (14 CFR) section (§) 61.4(c).

The on-site functionality test conducted on February 20, 2013 verified that the Precision Flight Controls DCX, DCX ProMotion, DCX MAX, and DCX MAX ProMotion meets the FAA Administrator's airplane AATD approval criteria. The Precision Flight Controls DCX, DCX ProMotion, DCX MAX, and DCX MAX ProMotion is approved as an AATD and is authorized for use in satisfying the following sections of 14 CFR parts 61 and 141:

**Precision Flight Controls Model DCX, DCX ProMotion, DCX MAX, and
DCX MAX ProMotion
Single Engine and Multi Engine Land
Advanced Aviation Training Device (AATD)**

- § 61.51(b)(3) – Logbook entries;
- § 61.51 (h) – Logging training time;
- § 61.57(c)(2) – Instrument experience;
- § 61.57(c)(4)(iii) – Instrument experience;
- § 61.57(c)(5)(ii) – Instrument experience;
- § 61.57(d)(1)(ii) – Instrument proficiency check, per the Instrument PTS;
- § 61.65(b)(2) – Instrument rating: up to 20 hours;
- § 61.109(k)(1) – Private Pilot Certificate aeronautical experience: up to 2.5 hours;
- § 61.129(i)(1)(i) – Commercial Pilot Certificate: up to 50 hours;
- § 61.159(a)(3)(i) – Airline Transport Pilot Certificate: up to 25 hours; and
- § 141.41(b) Approved for use under the part 141 appendices as follows:
  - *Appendix B* – Up to 2.5 hours toward the total Private Pilot flight training time requirements;
  - *Appendix C* – Up to 40% toward the total instrument flight training time requirements;

- *Appendix D* – Up to 20% toward the total Commercial Pilot flight training time requirements;
- *Appendix E* – Up to 25% toward the total Airline Transport Pilot flight training time requirements;
- *Appendix F* – Up to 5% toward the total Flight Instructor flight training time requirements;
- *Appendix G* – Up to 5% toward the total Flight Instructor instrument flight training time requirements;
- *Appendix I, Private Pilot Airplane Single Engine or Multiengine Class Rating Course* – Up to 3 hours toward the flight training time requirements;
- *Appendix I, Commercial Pilot Airplane Single Engine or Multiengine Class Rating Course* – Up to 11 hours toward the required flight training time requirements;
- *Appendix I, Airline Transport Pilot Airplane Multiengine Class Rating Course* – Up to 6.25 hours toward the flight training time; and
- *Appendix M, Combined Private Pilot Certification and Instrument Rating* – Up to 25% toward the total flight training time requirements.

This approval is contingent upon the following:

(1)   This aviation training device must continue to maintain its performance and function without degradation;

(2)   A copy of this approval letter must be readily available in a location near the device;

(3)   An authorized instructor must provide and certify the above instructional use;

(4)   Any changes or modifications to this device which have not been reviewed, evaluated, and approved by AFS-800 will terminate the FAA's approval; and

(5)   The FAA reserves the right to revoke this authorization at any time if the Administrator determines that this training device is being used contrary to FAA regulation or safety.

This approval is valid for sixty (60) calendar months from the date of this letter. Renewal requests should be made prior to the expiration (90 days in advance) by letter to AFS-800 and the above contingencies (1) through (5) remain valid. AFS-800 will conduct, at a minimum, a review of the QAG, and verify compliance with the current AC for their approval and use, before a renewal letter of approval can be provided.

The enclosed QAG is marked approved and a copy of this letter and approved materials are retained in our files.

Sincerely,

James A. Viola
Manager, General Aviation and Commercial Division

Precision Flight Controls, Inc.
11340 White Rock Road, Suite 100
Rancho Cordova, CA 95742

Qualification and Approval Guide (QAG)

DCX™, DCX ProMotion™, DCX MAX™ and DCX MAX ProMotion™ Advanced Aviation Training Devices

Figure 1 DCX™ cockpit system with integrated 225 degree 5-channel visual system.

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Purpose Statement

The purpose of this QAG is to provide information to the FAA (AFS-800) for evaluation and authorized use under AC 61-136. The **Precision Flight Controls DCX**^{TM} configurations combined with **X-Plane Professional**^{TM} software has advanced cockpit training capabilities and meets or exceeds the requirements needed for AATD approval. The aircraft modules along with the **DCX**^{TM} configurations listed in this qualification guide are being submitted for approval.

DCX^{TM} Authorized Use

In accordance with Advisory Circular AC No: 61-136 dated 7/14/08 AATD under Title 14 of the Code of Federal Regulations (14 CFR) part 61, § 61.4(c).

DCX^{TM} System Configurations

The **DCX**^{TM} is available with **open or enclosed cockpit design** with instrument panels representing generic aviation or commercial aircraft. The cockpit is constructed from metal.

The cockpit controls, switches, knobs and switch panels in realistic size and in the proper position and distance from the pilot's seated position are representative of the classes of aircraft included in this QAG;

Primary flight and navigation instruments are life-sized that exhibit neither stepping nor excessive transport delay, and arranged so as to observe trends and provide a realistic scan pattern. All instruments are displayed on high resolution LCDs at 1024 X 768 or better resolution in millions of colors;

Integrated digital avionics complete with NAV/COMMS, ADF, DME, GPS, transponder, autopilot, marker beacon display panel, instrument controls and PFC 430W/PFC 530W simulated GPS, or optional Garmin GNS 430/ GNS 530 GPS;

An integrated or external visual system that provides cues in both day and night VFR/IFR conditions to enhance a pilot's visual orientation in the vicinity of an airport. A single or multiple channel visual system consisting of LCD, LED, plasma, HDTV, or overhead projector(s);

DCX^{TM} Cockpit Features

- Single or dual yoke configuration
- Dynamic Control Loading (optional)
- Single or dual linked rudder pedals secured to the cockpit floor structure with proportional toe brakes
- Physical, self-centering, displacement yokes
- Physical, self-centering, rudder pedal(s) with proportional braking
- Physical, interchangeable throttle quadrants

- Engine controls: throttle, prop and mixture for single engine, multi-engine, turboprop (optional) and jet (optional) aircraft
- Physical controls applicable to each aircraft
- Battery switches
- Alternator(s) / generator(s) switches
- Magneto switches
- Engine start switch(s) / ignition switches
- Flaps switch
- Carburetor heat switches
- Fuel boost pump(s)
- Prop sync switch
- Elevator trim switch (yoke mounted)
- CWS switch (yoke mounted)
- Landing, taxi, nav and strobe light switches
- Communication and navigation radios
- Clock /Timer
- Landing gear handle and gear position lighting
- Prop sync switch
- Alternate air switch
- TO/GA switch (with applicable throttle quadrant)
- Hobbs meter
- Push- to-talk switch
- Headset jacks with push-to-talk switch
- Voice activated intercom
- Cockpit 6-way leather seating with ergonomics that can be adjusted up or down, in and out and tilt forward and backward to accommodate the correct spatial orientation for the pilot in relation to the cockpit, instruments rudder pedals and glare shield.
- Center Control Console with the following features/controls
  - Cowl flap levers
  - Fuel Tank Selectors
  - Elevator trim wheel (controlled manually or electrically)
  - Aileron trim
  - Rudder trim
  - Emergency Gear Extension Switch

Software

X-Plane Professional (by Laminar Research) ver 8.xx or higher.

Instructor's Operating Station (IOS) that permits effective interaction without interrupting the flight in overseeing the pilot's horizontal and vertical flight profiles in real time and space.

➢ Oversee tracks along airways, holding entries and pattern, and localizer and glide slope alignment/deviation (or other approaches with a horizontal and vertical track).

➢ Software checks for proper hardware configuration during system startup.

- Invoke failures in navigation and instruments, radio receivers, landing gear and flaps, engine power (partial and total), and other airplane systems by using either a keyboard or mouse.

- ATC communications or a Line-Oriented Flight Training (LOFT) type training scenario in which the instructor can evaluate pilot performance without having to act as ATC.

- Live ATC communication can be provided via PilotEdge (third party service).

- The instructor's station can pause, freeze or reset the simulation anytime and then reposition the aircraft anywhere in flight or on the ground.

Software/Hardware Compatibility Statement

This is to certify that Laminar Research has demonstrated that the operating system and/or functional kernel(s) X-Plane V8 or greater, is fully compatible with Precision Flight Control's DCX™ system and can assure that the communications/transport data latency is not greater than 300 milliseconds. All analog and digital input signals meet the performance criteria established for software performance by the system manufacturer.

Instruments and Indicators

- All aircraft modules have an adjustable altimeter that operates throughout the normal operating range of the aircraft being replicated.

- All aircraft modules have a heading indicator with incremental markings of 5 degrees and display on a 360 degree circle.

- All aircraft modules have an airspeed indicator with incremental markings appropriate to the aircraft being replicated.

- All aircraft modules have vertical speed indicators with markings appropriate to the aircraft being replicated.

- All aircraft modules have a turn-and-bank indicator with incremental markings of 3 degrees per second turn for left and right turns and the 3 degree index is inside the maximum deflection of the indicator.

- All aircraft modules have a skid and slip indicator with coordination information displayed in the conventional skid ball format with markings for the center position.

- All aircraft modules have attitude indicators appropriate to the aircraft being replicated with incremental markings for each 5 degrees of pitch, from 25 degrees pitch up to 25 degrees pitch down, which are appropriate to the attitude indicator being replicated. Left and right bank angles are marked at 10, 20, 30, and 60 degrees of bank respectively.

- All aircraft modules have suction gauges and/or indicators appropriate to the aircraft being replicated that indicate the vacuum pressure for the instruments requiring vacuum.

- All aircraft modules have a flap setting indicator, which displays the current flap setting with appropriate markings as to the aircraft being replicated.

- All aircraft modules have pitch trim indicators with markings for zero trim and appropriately induce the aircraft nose up and nose down trim as would be found in an aircraft.

- All aircraft modules have instruments appropriate to the aircraft including navigation radio displays for VOR/ILS frequency in use and radio display(s) for the NDB frequency in use. Each navigation radio is equipped with an aural identification feature and all aircraft modules have marker beacon receivers.

Avionics:
A digital avionics panel complete with two NAV/COMMS, ADF, DME, transponder, autopilot, marker beacon display panel, instructor controls and PFC 430W or PFC 530W GPS or (optional) Garmin GNS430 or GNS530 GPS. Note: All GPS devices have an integrated NAV/COMM.

Instrument controls: All flight instruments are controlled by rotary encoders located on each side of the main instrument panel or may be controlled with an instrument bezel and include: heading, altimeter, course, RMI, ADF, radar altimeter, OBS1, OBS2 and DG.

Instruments panels include (as per aircraft requirements): airspeed indicator, altimeter, radar altimeter, magnetic compass, OBS 1, OBS 2, ADF, DME, RMI, directional gyro, vertical speed indicator, vacuum, outside air temp, fuel tank gauge(s), alternator amps, bus amps, battery, flaps position indicator, cowl flaps position indicators, flight management annunciator, and altitude pre-select.

Engine instruments (as per aircraft requirements): manifold pressure gauge(s), RPM gauge(s), fuel flow gauge(s), CHT, EGT, oil temp, oil pressure, ITT, TIT and propeller sync.

Aircraft, Flight & Engine Controls

- Yokes, rudder pedals and engine controls are of aircraft quality and representative of piston or turbine powered aircraft.

- Control Inputs: Precision Flight Controls, Inc. has certified that the transport delay between the control inputs to recognizable system response is less than 300 milliseconds for all input controls (pitch, roll and yaw) of this Qualification Guide. The calculated and tested transport delay is approximately 300 milliseconds or less.

- The DCX^{TM} has diagnostic software that can be utilized to run a series of tests and will display confirmation that all controls and switches are working properly. Appropriate warning messages are displayed, if any design parameter is out of tolerance.

Aircraft Modules

The aircraft modules utilized in this qualification guide meet or exceed the requirements of the Advisory Circular. Pictures of the aircraft modules, in their current configurations, are contained in Appendix A of this qualification guide.

Single Engine Land:

- Beech Bonanza A36, and A36TC

- Cessna 152

- Cessna Skyhawk 172S, 172P, 172R

- Cessna Skylane 182T, 182RG, T182RG, T182T

- Cessna Stationair 206H

- Cessna Centurion P210, 210T

- Cessna Caravan 208B

- Diamond DA20

- Piper Warrior II PA-28-161

- Piper Archer III PA-28-180

- Piper Arrow III PA-28R-201 and PA-28R-201T

- Piper Arrow IV PA-28RT-201 and PA-28RT-201T

- Piper Malibu Mirage PA-46-350P

- Mooney M-20J-201, M-20K-231 and Encore 252

- Pilatus PC12

Multi-Engine Land:

- Beech Baron B58 and B58TC

- Beech 95 Travelair B95

- Beech 76 Duchess B76

- Cessna 414 Chancellor

- Cessna 421 Golden Eagle

- Cessna Citation 501

- Piper Seminole III PA-44-180 and PA-44-180T

- Piper Seneca V PA-34-220T

- Piper Cheyenne PA-31T

- Beech King Air C90B

- Beech King Air A100

- Beech King Air B200

- Beech King Air 1900C

Aircraft Navigation Instruments

Beechcraft Baron B58 : Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and one RMI indicator.

Beechcraft Bonanza A36: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and one ADF or RMI indicator.

Beechraft Duchess B76 Magnetic compass, two OBS indicator displaying course and glide slope and one RMI indicator.

Beechcraft Travelair B95: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and one ADF or RMI indicator.

Cessna Caravan 208B: Magnetic compass, one HSI with glide slope, OBS indicator displaying course and glide slope and ADF or RMI indicator.

Cessna Centurion 210: Magnetic compass, one HSI with glide slope, OBS indicator displaying course and glide slope and ADF or RMI indicator.

Cessna 414 Chancellor: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only, an one ADF or RMI indicator.

Cessna 421 Golden Eagle: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only, an one ADF or RMI indicator.

Cessna 172 Skyhawk: Magnetic compass, one OBS indicator displaying course and glide slope, one OBS indicator, displaying course only, and one ADF indicator.

Cessna 182 Skylane: Magnetic compass, one OBS indicator displaying course and glide slope, one OBS indicator, displaying course only, and one ADF indicator.

Cessna 206H Stationair: Magnetic compass, one HSI with glide slope, OBS indicator displaying course and glide slope and ADF /RMI indicator.

<u>Cessna 210 Centurion:</u> Magnetic compass, one HSI with glide slope, OBS indicator displaying course and glide slope and ADF /RMI indicator.

<u>Cessna P210 Centurion:</u> Magnetic compass, one HSI with glide slope, OBS indicator displaying course and glide slope and ADF /RMI indicator.

<u>Cessna Citation 501:</u> Magnetic compass, one HSI with glide slope and one RMI indicator

<u>Diamond DA20 Katana</u>: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF/RMI indicator.

<u>Mooney M20J-201:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF/RMI indicator.

<u>Mooney M20K-231:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF/RMI indicator.

<u>Mooney Encore 252:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF/RMI indicator.

<u>Piper Arrow III</u>: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and one RMI indicator.

<u>Piper Arrow IV</u>: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and one RMI indicator.

<u>Piper Archer III</u>: Magnetic compass, two OBS indicators displaying course and glide slope, one DG and one RMI indicator.

<u>Piper Warrior II</u>: Magnetic compass, two OBS indicators displaying course and glide slope and one DG and one RMI.

<u>Piper Malibu Mirage:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course and glide slope and RMI indicator.

<u>Piper Seminole III</u>: Magnetic compass, one HSI with glide slope, one OBS indicator, displaying course and glide slope and one ADF/RMI indicator.

<u>Piper Seneca V</u>: Magnetic compass, one HSI with glide slope, one OBS indicator, displaying course and glide slope and one RMI indicator.

<u>Piper Cheyenne:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF/RMI indicator.

<u>King Air A100:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF /RMI indicator.

<u>King Air B200:</u> Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF /RMI indicator.

King Air C90B: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF /RMI indicator.

King Air 1900C: Magnetic compass, one HSI with glide slope, one OBS indicator displaying course only and one ADF /RMI indicator.

Pilatus PC12: Magnetic compass, one HSI with glide slope and RMI indicator.

Flight Instrument Attributes

- OBS and HSI indicators are appropriately marked according to the actual aircraft instrument being replicated; with one dot every two degrees left and right of center for a total of 20 degrees and a center circle marking one degree of deviation. The OBS indicators with glide slope have incremental markings at each ½ degree of deviation above and below center for a total of 5 degrees and a center circle marking ¼ degree of deviation. The HSI indicators have incremental markings at each degree of deviation above and below center for a total of 4 degrees.

- ADF indicators have incremental markings of 5 degrees.

- Aircraft modules have magnetic compasses with incremental markings of 5 degrees and display proper lead and lag during turns.

- Aircraft modules have fuel quantity indicators, which display the fuel remaining for each fuel tank appropriate to the aircraft being replicated.

Instrument displays listed above are visible during all flight operations for all aircraft modules being replicated. The update rate of all displays provides an image that:

- Does not appear to be out of focus.

- Does not appear to jump or step to a distracting degree during operation.

- Does not appear with distracting jagged lines or edges.

The display update varies with the speed of the computer processor, memory, and graphics card. If the computer system being used meets or exceeds the programs minimum system requirements, then the refresh rate will be faster than 30 Hz.

Minimum Computer System Requirements

- Multimedia PC with Intel I5 or higher processor with 1 GB 3D video hardware acceleration or better.

- Compatible operating systems, Microsoft Windows XP, Vista, Windows 7, Windows 8 and Linux

- 4 GB memory.

- Super VGA monitor supporting 1024x768 resolution or higher in 32 bit color.

- DirectX 9.0 API or later.

- DirectX 9.0 or later compatible 1 GB memory video card.

- DirectX 9.0 API compatible sound card with speakers or headphones.

- Microsoft Mouse or compatible pointing device.

- Sound card with speakers or headphones required for audio.

Flight Dynamics

Flight performance and flight dynamics data come from:

- Aircraft Operation Manuals

- Type Certificate Data Sheets (TCDS)

- Supplemental Type Certificates (STC)

- Aircraft Flight Manuals (AFM)

- Pilot's Operating Handbooks (POH)

The flight dynamics for each aircraft module are comparable to the aircraft being replicated.
For all aircraft modules, the aircraft performance parameters are comparable to the aircraft being replicated. For all aircraft modules, the vertical lift component changes as a function of bank comparable to the aircraft being replicated. Changes of flap settings for all aircraft modules and changes of retractable gear settings for aircraft equipped with retractable landing gear modules cause changes in flight dynamics comparable to the aircraft being replicated. The presence and intensity of wind and turbulence are reflected in the handling and performance qualities of all the aircraft modules and are comparable to the aircraft being replicated.

Instructional Management / Instructors Operating System (IOS):

The instructor has the ability to **Pause**, **Freeze and Reset** the simulation at any point using a keyboard and/or mouse.

The instructor can manipulate the following system parameters independently of the simulation with the following methods or devices.

- Aircraft geographic location: mouse or keyboard

- Aircraft heading: mouse

- Aircraft airspeed: mouse

- Aircraft altitude: mouse

Weather:

- Wind direction and speed: mouse/keyboard

- Turbulence: mouse/keyboard

- Visibility: mouse/keyboard

- Cloud cover: mouse/keyboard

The system is capable of recording both horizontal and vertical tracks of the aircraft movement. These recordings can be stored and then played back for review using a mouse, keyboard and IOS monitor.

The instructor can manually preset or set failures prior to the beginning of a training session and can simulate failures without stopping or freezing the simulation. Each failure may be set by using the keyboard and mouse via the instructor's station.

Failures include (but are not limited to):

- Vacuum system

- Pitot system

- Static

- Electrical system

- Generator / Alternator

- Landing gear failures

- Primary and multi-function instrument and map displays

Engine failures include (but are not limited to):

- Engine fire

- Oil pressure

- Oil temperature

- Oil quantity

- Cylinder head temperature

- TIT temperature

- Fuel pump / Fuel pressure

- Power Loss

Instrument failures include (but are not limited to)

- AI

- DG

- VSI

- ASI

- TC

- CD/LOC/GS

Avionics failures include (but are not limited to)

- NAV 1

- NAV 2

- COMM 1

- COMM 2

- GPS

- Autopilot

- Transponder

- DME

- ADF

- GPS

- Ground based transmitters e.g. VOR, VORTAC, DME, NDB, ADF and, ILS

The **X-Plane™** Professional software has navigational databases, obtained and compiled from the NIMA's DAFIF data and/or Jeppesen for the United States, ICAO region K. All navigational data is based on procedures as published in 14 CFR Part 97 and is updated and maintained by Laminar Research. The IOS software also contains a "NAV" editor that enables the instructor to update or add any navigation aid as required.

Note: GPS navigation data can be updated with a Jeppesen subscription on a 28 day cycle.

Task requirement list:

Using the PFC™ AATD configurations in this guide, a flight school could incorporate all of the items listed into an integrated ground and flight instrument training curriculum. Course syllabi developed by companies such as AOPA's Air Safety Foundation, ASA, and Jeppesen or by the school itself should be acceptable.

Statements of Compliance

Description:
The following statement of compliance certifies the requirements for an AATD or have been met as demonstrated in accordance with the guidelines published in AC No:61-136

General:

The DCX™ has an ergonomic cockpit design with full scale hardware components designed for basic and advanced flight training. The DCX™ incorporates simulated or actual aircraft hardware with advanced avionics and systems that meets or exceeds all requirements of AC-61-136.

Instruments, equipment, panels, systems and controls installed in the AATD are of sufficient realism (visually, spatially and tactile) to allow for procedures training on all systems identified in paragraph i. below. Actuation of installed switches and controls replicate those installed in a typical aircraft.

The operator will maintain daily preflight log documentation.

The cockpit structure is open or enclosed and sufficient lighting is provided on all panels to permit all training tasks to be accomplished in both day and night simulated environments.

The systems utilize 6 degrees of freedom aerodynamic models and validated data that ensures faithful replication of this class of aircraft in all phases of flight to include effects of thrust and drag, realistic effects of pressure and temperature changes in gross weight and center of gravity throughout the normal flight envelope.

The digital computational system has sufficient accuracy, resolution, spare capacity and dynamic response to simulate the class of aircraft to FAA AATD standards and testing requirements.

Instrument response is completely automatic based on systems simulation of control inputs.

Navigation and communication equipment installed in the system, match the form, fit and function and operate within tolerances of those installed in the class of aircraft being simulated.

The systems provide a sufficiently accurate training environment representing aircraft equipment for procedures training, in accordance with the relevant FARs, in normal, abnormal and emergency conditions.

Pilot seat(s) are provided for the instructor/check airman and FAA inspector. The seats are moveable which facilitate adequate viewing of the cockpit panels and visual displays.

The Instructor's Operating Station (IOS) comprises one or two LCD displays, keyboard and mouse that will allow the instructor to position and configure the simulated aircraft for normal, abnormal and emergency conditions.

A visual system is provided with single channel, three channel or five channel displays. The displays used for the forward and side views represent at least a 30° vertical field of view and 45° to 225° horizontal field of view.

Cockpit instrument response:
The basic iteration rate for simulator programs is 32Hz, yielding a frame time of 1/32= 31.25 ms or better.

The sequence of events for a control input, in any axis is as follows:

- Mechanical input

- Analog to digital conversion

- Communication to controls position

- Aerodynamic computation

- Instrument scaling

Standard Mechanical Control Devices (Yoke and Rudder Pedals)

Yoke   Pitch 12-20lbs at full travel from center with 3″ fwd and 3″ aft for a total of 6″
                 Roll 12-20lbs at full travel 130° movement from full left to right position.

Rudders   Yaw 25lbs force (each pedal) at full pedal deflection with 2.5″ in fwd and 2.5″ in aft
                 travel (from center position) for a total travel of 5″.

Enhanced Dynamic Control Loading Yoke Input Travel and Range

Yoke   Pitch0-60lbs at full travel from center with 6.5″ fwd and 6.5″ aft for a total of 12″
                 Roll 0-60lbs at full travel 180° movement from full left to right position.

Precision Flight Controls, Inc. has certified that the transport delay to recognizable system response is less than 300 milliseconds for all control inputs.

Precision Flight Controls **TM** is a trademark of Precision Flight Controls, Inc. **X-Plane™** is a trademark of Laminar Research.

Contact for Precision Flight Controls, Inc.	Contact for X-Plane
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Appendix A
Aircraft Instrument Panels

Beech Bonanza

Beech Baron

Beechcraft Travelair

Beechcraft Duchess

Cessna 152

Cessna 172

Cessna 182

Cessna 206

Cessna 208 Caravan

Cessna 414

Cessna 421

Diamond DA20

Mooney

Piper Cheyenne

Piper Archer

Piper Arrow

Piper Warrior

Piper Malibu

Piper Seminole

Piper Seneca V

PC-12 Pilatus
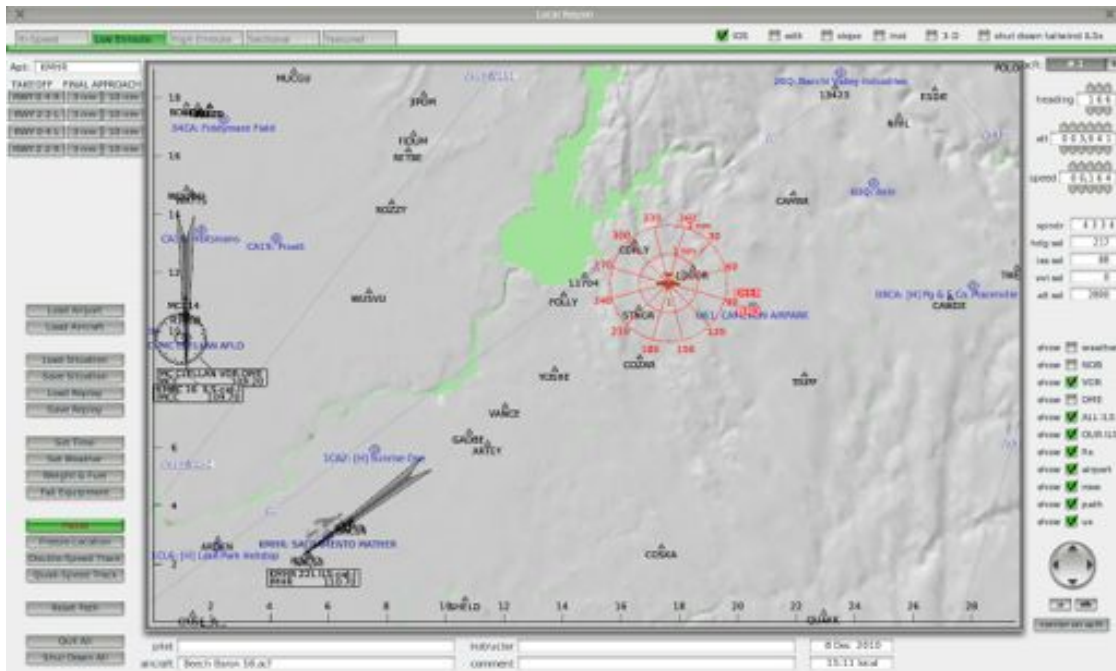

Beechcraft C90
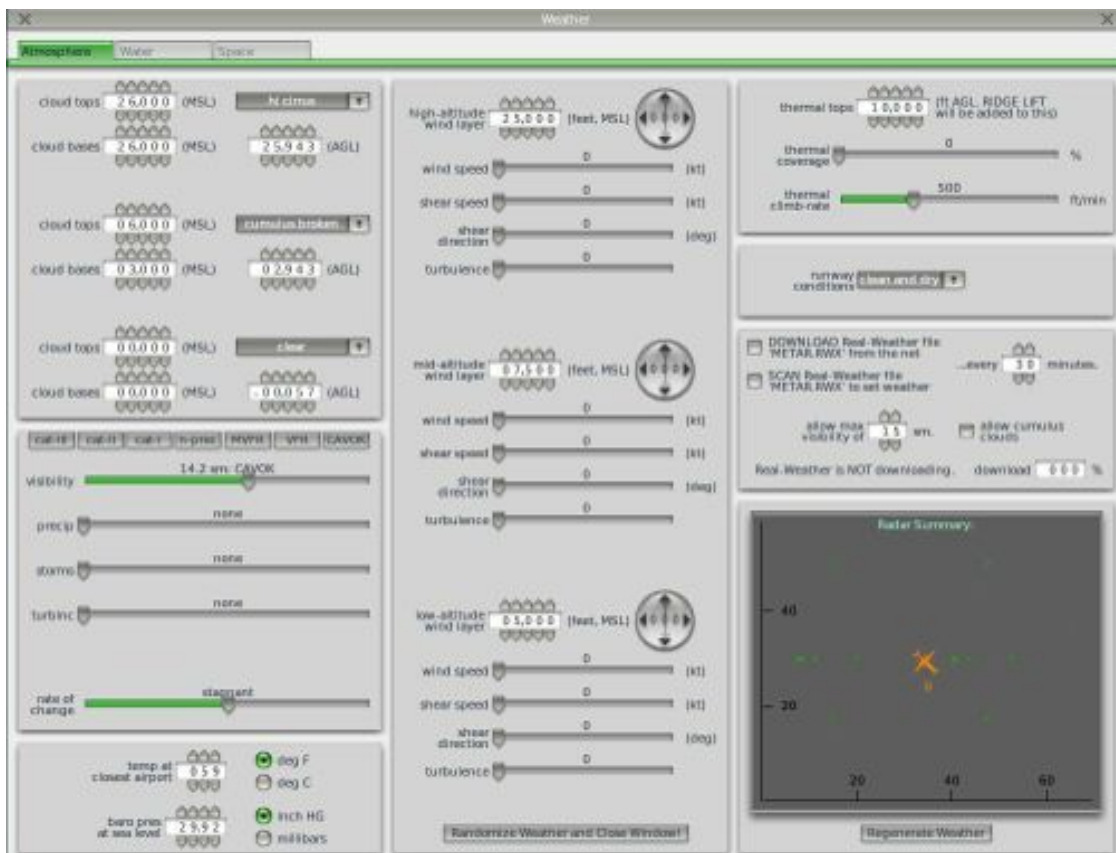
Beechraft A100

Beechcraft B200

Beechcraft 1900C

Cessna 501

Appendix B - Instructors Operating Station (IOS)

Moving Map Display

Weather Management

Appendix C
DCX^{TM} System Components

DCX^{TM} Cockpit with (optional) ProMotion Cueing System

Center Control Console and Rudder Pedals

Instrument Panel and Controls

Hi-Resolution Instrument Screens

Integrated Avionics (Shown with optional Garmin GNS 430 GPS)

Lower Panel with Interchangeable Throttle Quadrant

Ergonomic Control Locations

DCX^{TM} Instrument Controls

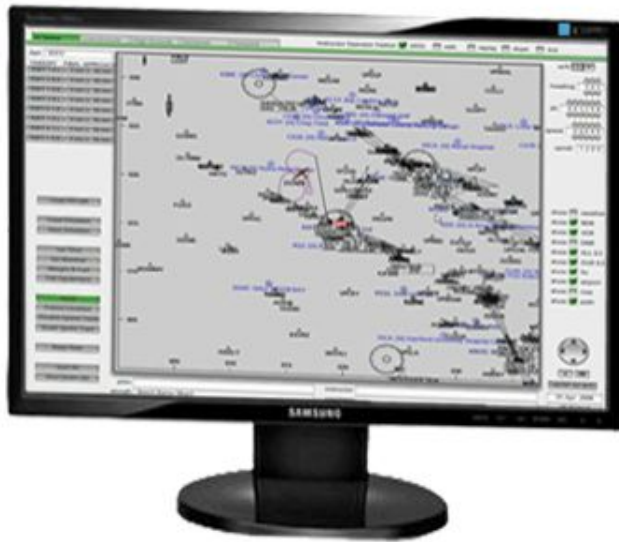**Circuit Breaker Panel**

Avionics shown with PFC 530W GPS

Instrument Controls and Digital Clock

Instructor's Operating System (IOS)

IOS monitor

Typical IOS Desk (may vary)

Rudder Pedals

Cirrus rudder pedals

Professional rudder pedals