C-414A Transition Ground Training Student Guide

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Used with C-414A Transition Flight Training Student Guide

20 Hours

LESSON	SUBJECTS	Hours
1	Standard Operating Procedures, Aircraft General, Engines, Propellers, Flight and Engine Instruments, Normal Procedures, Limitations	2
2	Flight Planning, Fuel System, Performance, Powerplant Management, Autopilot Operations, Automation, Fuel Management, Flight Management, CFIT	2
3	Flight Controls, Wing Flaps, GPS Operation, RNAV Approaches, Flight Profiles, Quiz #1 & Review	2
4	Electrical Systems, Landing Gear, Systems Failure Analysis, Collision Avoidance, Emergency Procedures	2
5	Environmental System, Anti-Ice & De-Ice, Ice Protection, Radar, Hazardous Weather Avoidance	2
6	Performance, Loading, Weight and Balance, STC's	2
7	ADM, Flight Scenarios, Quiz #2 and Review	2
8	SPRM, Runway Incursion Avoidance, Positive Aircraft Control, Passenger Briefings	1.5
9	Security, Hazardous Materials, High Altitude Flight, Oxygen	1.5
10	Risk Management, Oral Review of Aircraft Systems and Limitations	2
11	Final Exam and Review	1

OBJECTIVES: The pilot will acquire the necessary knowledge for understanding the basic functions and use of aircraft systems, controls, indicators, limitations and operational procedures for the aircraft. Upon completion the pilot is ready for supervised operating experience and the continuation of flight training in the aircraft. Training will be tailored by the instructor for the specific avionics, autopilot, displays, modifications and systems installed.

COMPLETION STANDARDS: You show by written record, and will demonstrate through oral questioning that you have acquired sufficient aeronautical knowledge to safely operate the aircraft, with specific makes and models of avionics and automation installed, including understanding the basic functions of aircraft systems, the use of the systems and controls, and the operational procedures. Upon successful completion of both the ground and flight training, you will receive the appropriate endorsements in your logbook. Quizzes are to be reviewed, and corrected to 100% prior to proceeding to the next subject area. Passing test score is 80%

ENROLLMENT PREREQUISITES: Enrollment in this course is contingent on the pilot holding at least a private pilot certificate, an instrument rating or ATP with an airplane rating, a multiengine land rating, and having met the recent flight experience of 14CFR 61.57 for TO & LDGS in the preceding 90 days.

HOW TO USE THIS GUIDE Lesson elements contain bulleted items represented by a double line arrow to the left of each subject:

⟹ Fuel System

The double line arrow serves as a checklist for each lesson element, and is marked solid by the instructor in his copy when that area of knowledge has been completed:

➔ Fuel System

My mission is:

"To inspire excellence in pilot training and evaluation, ensuring that pilots trained and certified are the safest in the world."

To that extent, my intention is to provide you with the kind of training experience, which fully supports the goals of my mission statement: Excellence in training, safety and quality.

It is extremely important that you receive the aeronautical training and experience to completely qualify you to comfortably transition to the Cessna 414. My service goal is to provide you with the best support I possibly can.

As my customer, you are the single most important resource I have for information, suggestions, feedback, and fresh ideas. Please do not hesitate to forward your comments and thoughts to me.

It is my goal to leave you with a sense that you have received the best training available in a positive learning environment. Your continued constructive input allows me to maintain my commitment to the best training possible.

Thomas Gorski
2267082 CFI

Lesson # 1- 2 Hours

Standard Operating Procedures, Aircraft General, Engines, Propellers, Flight and Engine Instruments, Normal Procedures, Limitations

Name_____ Date_____

⇒ Introduction and Welcome Overview of course
⇒ Standard Operating Procedures (Single Pilot, 2 Pilots)
⇒ Departure S.O.P.s (Take-off Planning SE, ME)
⇒ Enroute
⇒ Arrival
⇒ Approach Chart Review (Briefing)
⇒ Altitude Calls
⇒ Landing
⇒ Checklist Usage
⇒ Low Visibility Approaches
⇒ Aircraft General
⇒ Pilots Operating Handbook
⇒ Preflight Inspection
⇒ Airframe
⇒ Instrument Panel
⇒ Overhead Console
⇒ Annunciator Panel
⇒ Fuel
⇒ Oil
⇒ Maximum Certified Weights
⇒ Cabin, Baggage and Entry Dimensions
⇒ Standard Airplane Weights
⇒ Aircraft CG Limits
⇒ Weight and Balance Calculations
⇒ Engines
⇒ Engine Controls
⇒ Throttle Control
⇒ Propeller Control
⇒ Mixture Control
⇒ Quadrant Friction Lock
⇒ Cowl Flap Control
⇒ Alternate Air Control
⇒ Engine Oil System
⇒ Ignition System
⇒ Fuel Injection System
⇒ Cowl Flap System
⇒ Starting System
⇒ Engine Instruments
⇒ Turbo-System
⇒ Operational Elements
⇒ Before Starting Engines
⇒ Starting Engines
⇒ Engine Runup-checks
⇒ Propellers
⇒ Governors
⇒ Centrifugal Latching Pins
⇒ Propeller Synchrophaser
⇒ Operational Elements
⇒ Propeller Governor Check
⇒ Flight and Engine Instruments
⇒ Normal Procedures
⇒ Limitations (see next page)
⇒ Airspeed Limitations
⇒ Engine Limitations
⇒ Weight Limits
⇒ Maneuver Limits
⇒ Flight Load Factor Limits
⇒ Flight Crew Limits
⇒ Operation Limits
⇒ Fuel Limitations
⇒ Maximum Operating Altitude Limit
⇒ Cabin Pressurization Limit
⇒ Required Placards
⇒ Preview of Next Lesson

Cessna 414AW Limitations

TSIO 5120 NB
McCauley 3 Blade C93
Avionics: Garmin GNS530W
Garmin GMX-200 (MFD)
Garmin GMA340
King KT70 Mode "S" Dual Transponders
Color Radar

Cleveland Wheels & Brakes
RAM Winglets
Glass windshield
Rosen Sunvisors
Oil Capacity 12 Qts
Add Below 9Qts
Fuel 1236 #
206 Gal Useable 100LL Min

Max Imbalance 120 Lbs (20Gal) per side
Minimum Fuel for Takeoff 20 GAL /Side
Max Slip Duration 30 Seconds >1/2 Ball
Tire Pressure Mains 70 psi Nose 35 psi
Nominal 5.0 Max Diff 5.3 psi
Suction 4.75 to 5.25

Autoflight 500' Enroute
NONPRECISION=50' Below MDA (verify with 337)
PRECISION=Equal to altitude loss
Max Altitude Loss 120' (verify with 337)

Airframe: S/N 414A0481

KX155 NAV/COM
King HSI

Cessna 800 AP/ IFCS with ALT pre-select & Y/D
GDL69 Receiver (XM Weather)

American Aviation Intercoolers
RAM Vortex generators
Davtron clock
Air Conditioning
Va 151 KTS
Vno 201 KTS
Vne 230 KTS
Vle Vlo 178 KTS

Vfe 15 Degrees 171 KTS

45 Degrees 140 KTS

Vmc 72

Vyse 112 Kts

Vx 90 to 94
Best Glide 120 KTS =2 Miles/1000'
Vxse 100
Max Speed 203 Kts

Autopilot Disengage during:
S.E. Approach, Flaps > 15 Degrees TO, LDG, Go-Around & Starting Missed

Approach, Severe Icing, Severe Turbulence

Avionics Bay 250 (Minus Equip)
Nose Bags 325 (Minus Equip)

Loss of RAIM=Fly 15 Minutes to verify Position

CG Limitations:

Refer To Weight & Balance documentation in aircraft

Turbo Limitations - See Placard

Starter Motor >30 Sec…. 5 Min. OFF

Autopilot POH must be accessible during flight

Wing Lockers 400

Rear Bags A 400

Rear Bags B 100

RAIM Alarm=Loss of signal for short period

MAX Ramp WT
7087

MAX TAKEOFF WT
7087

MAX ZERO FUEL WT
6515

MAX LANDING WT
6750
+3.6 Gear Flaps up -1.44

+2 Gear Flaps Down -0

Low Volt = Lower than 25V

Battery Relay Closes at 17V

Battery 24V 25 Ah

100 Amp Alternators (Anti-ice Package)

Lesson # 2 - 2 Hours

Flight Planning, Fuel System, Performance, Powerplant Management, Autopilot Operations, Automation, Fuel Management, Flight Management, CFIT

Name_____ Date_____

⇒ Flight Planning
⇒ Alternate Airport(s)
⇒ Fuel Requirements

⇒ Fuel System
⇒ Main Tanks
⇒ Auxiliary Tanks
⇒ Wing Locker Tanks
⇒ Fuel Selectors
⇒ Auxiliary Fuel Pump Switches
⇒ Fuel Drain Valves
⇒ Fuel Flow Gage
⇒ Fuel Quantity Gage
⇒ Fuel Low Level Warning Lights
⇒ Engine Driven Fuel- Pumps
⇒ Operational Elements
⇒ Auxiliary Fuel Pump Test
⇒ Fuel Quantity Gauge Check

⇒ Performance
⇒ Takeoff Planning
⇒ Maximum Temperatures/Weights

⇒ Powerplant Management
⇒ Starting Cold
⇒ Hot Starts
⇒ Flooding
⇒ Aux Power

⇒ Autopilot Operations
⇒ Limitations
⇒ A/P Modes
⇒ Abnormal Procedures
⇒ Coupled Approach
⇒ Disengagement

⇒ Automation
⇒ Hazards of Automation
⇒ Recent Incident/Accident Review

⇒ Fuel Management
⇒ Max Power / Max Range
⇒ Cylinder Temperatures

⇒ Flight Management
⇒ Moving Map

⇒ CFIT
⇒ Avoidance
⇒ Accident Reviews

⇒ Preview of Next Lesson

Lesson # 3 - 2 Hours

Flight Controls, Wing Flaps, GPS Operation, RNAV Approaches,
Flight Profiles, Quiz #1 & Review

Name_____ Date_____

⇒ Flight Control Systems
⇒ Aileron System
⇒ Aileron Trim System
⇒ Elevator System
⇒ Elevator Trim System
⇒ Manual Trim System
⇒ Electric Trim System
⇒ Wing Flap System
⇒ Stall Warning System
⇒ Operational Elements
⇒ Electric Trim System Check

⇒ GPS Operation and ADM
⇒ TSO - C129 v. TSO - C145
⇒ GPS Features
⇒ Database Requirements
⇒ GPS Menus
⇒ Automatic Sequencing
⇒ Manual Sequencing
⇒ Standard Operating Procedures
⇒ GPS In Lieu of ADF/DME
⇒ WAAS
⇒ FDE Prediction

⇒ RNAV Approaches
⇒ Terminology
⇒ GBAS
⇒ WAAS
⇒ LNAV
⇒ LNAV + V
⇒ RNP
⇒ LPV
⇒ T-Routes
⇒ Q-Routes
⇒ Performance Based Navigation

⇒ Flight Profiles
⇒ Departure, Enroute, Arrival
⇒ Holding
⇒ Missed Approach
⇒ Engine Inoperative Profiles

⇒ Quiz #1 and Review

⇒ Preview of Next Lesson

Lesson # 4 - 2 Hours

Electrical Systems, Landing Gear, Systems Failure Analysis,
Collision Avoidance, Emergency Procedures

Name_____ Date_____

⇒ Electrical System
⇒ Operational Elements
⇒ Battery and Alternator Switches
⇒ Emergency Power Alternator Field Switch
⇒ Over-voltage Relays
⇒ Voltammeter
⇒ Circuit Breakers and Switch Breakers
⇒ External Power Receptacle
⇒ Annunciator System Test
⇒ Voltammeter Test

⇒ Lighting System
⇒ External Lighting
⇒ Internal Lighting

⇒ Landing Gear
⇒ Brakes
⇒ Landing Gear Position Lights
⇒ Landing Gear Warning Horn
⇒ Landing Gear Hand-crank
⇒ Landing Gear Shock Struts
⇒ Nosewheel Steering System
⇒ Operational Elements
⇒ Landing Gear Positioning Lights Check
⇒ Landing Gear Hand Crank Stowed Check
⇒ Landing Gear Warning Horn Check
⇒ Pilot's Brakes Check
⇒ Parking Brakes

⇒ Systems Failure Analysis

⇒ Collision Avoidance

⇒ Emergency Procedures
⇒ Emergency Checklist

⇒ Preview of Next Lesson

Lesson # 5 - 2 Hours

Environmental System, Anti-Ice De-Ice, Ice Protection
Radar, Hazardous Weather Avoidance

Name_____ Date_____

⇒ Environmental System
⇒ Cabin Air System
⇒ Heating and Defrosting
⇒ Cabin Heat Switch
⇒ Cabin Fan Switch
⇒ Cabin Air Temperature Control Knob
⇒ Forward Cabin Air Knob
⇒ Aft Cabin Air Knob

⇒ Defrost Knob
⇒ Heater Overheat Warning Light
⇒ Heater Operation for Heating and Defrosting
⇒ Heater Used for Ventilation
⇒ Heater Overheat Warning

⇒ Air Conditioning system

⇒ Cabin Pressurization System
⇒ Operating Details
⇒ Pressurization System
⇒ Sea Level Controller
⇒ Cabin Pressure Switch
⇒ Rate Control Knob
⇒ Cabin Climb Indicator
⇒ Cabin Altimeter
⇒ Pressure Differential
⇒ Bleed Air Pull to Dump Knobs
⇒ Cabin Altitude Warning Light
⇒ Oxygen System
⇒ 114.9 Cubic Foot System
⇒ 11.0 Cubic Foot System
⇒ Operational Elements
⇒ Pressurization Check
⇒ Emergency Abnormal Procedures
⇒ Impending Panel or Window Failure
⇒ Cabin Overpressure
⇒ Loss of Pressurization
⇒ Pressurization Air Contamination

⇒ Anti-Ice De-Ice & Ice Protection
⇒ AC Electrical Windshield
⇒ DC Electrical Windshield
⇒ Alcohol Windshield
⇒ Propeller De-Ice System
⇒ Wing De-Ice Boot System
⇒ Operational Elements
⇒ AC Electrical Windshield Limitations
⇒ DC Electrical Windshield Limitations
⇒ Propeller De-Ice System
⇒ Normal Procedures and Limitations
⇒ Emergency Procedures
⇒ Wing De-Ice Boots Operational Check
⇒ Alcohol Windshield Limitations

⇒ Radar, Radar User's Guide
⇒ Hazardous Weather Avoidance

⇒ Preview of Next Lesson

Lesson # 6 - 2 Hours

Performance, Loading, Weight and Balance, STC's

Name_____ Date_____

⇒ Performance
⇒ Performance Envelope

⇒ Maximum Takeoff Weight

⇒ Maximum Landing Weight

⇒ Accelerate Stop Graphs
⇒ Accelerate Go Graphs

⇒ Take-off Distance

⇒ Landing Distance

⇒ Weight and Balance
⇒ Definitions
⇒ Basic Empty Weight
⇒ Useful Load Weights
⇒ Baggage
⇒ Occupants
⇒ Fuel
⇒ Moments Limits vs. Weight
⇒ Weight and Balance Spreadsheets

⇒ Flight Planning Scenario

⇒ Time, Fuel and Distance Climb
⇒ Time, Fuel and Distance to Descend

⇒ Normal Cruise Power
⇒ Economy Cruise Power

⇒ Holding Time Scenarios
⇒ Maximum Holding Time

⇒ Loading
⇒ Loading Graphs

⇒ STC's
⇒ Effects on Performance

⇒ Preview of Next Lesson

Lesson # 7 - 2 Hours

ADM, Flight Scenarios, Quiz #2 and Review

Name_____ Date_____

⇒ ADM
⇒ ADM and Risk Management
⇒ Good judgment can be taught
⇒ Situational Awareness

⇒ The Self-Assessment Profile
⇒ Anti-Authority
⇒ Impulsivity
⇒ Invulnerability
⇒ Resignation
⇒ Indicators of Excessive Stress
⇒ Risk Management Responsibility

⇒ DECIDE
⇒ Unexpected mission
⇒ Human error

⇒ "IM SAFE" Checklist

⇒ Fatigue

⇒ Weather Decisions and Performance Planning Scenarios

⇒ Quiz #2 and Review

⇒ Preview of Next Lesson

Lesson # 8 - 1.5 Hours

SPRM, Runway Incursion Avoidance,
Positive Aircraft Control, Passenger Briefings

Name_____ Date_____

⇒ SPRM
⇒ Human Resources
⇒ Hardware, and Information
⇒ FBO Services
⇒ Weather Briefers
⇒ Maintenance Personnel
⇒ Air Traffic Controllers
⇒ Skill Competencies
⇒ Use of Automation
⇒ Task Management

⇒ Runway Incursion Avoidance
⇒ Resources for Education
⇒ Taxi Operation Planning Procedures
(Taxi instructions, reading back clearances, reviewing taxi routes)
⇒ Pilot Workload during Taxi
⇒ Maintaining taxi, runway position, and SA.
⇒ ATC and Operations Before Takeoff
⇒ ATC and Operations Before landing
⇒ Landing at Controlled and Uncontrolled Airports

⇒ Positive Aircraft Control
⇒ Examples of Aircraft Loss of Control Accidents

⇒ Passenger Briefings
⇒ Smoking
⇒ Emergency Exits
⇒ Fire Extinguisher
⇒ Emergency Equipment
⇒ Use of Seat Belts
⇒ Passenger Distractions
⇒ Passenger Assistance
⇒ Language Barriers

⇒ Preview of Next Lesson

Lesson # 9 -1.5 Hours

Security, Hazardous Materials, High Altitude Flight, Oxygen

Name_____ Date_____

⇒ GA Airport Security

⇒ Hazardous Materials
⇒ Carriage in Aircraft
⇒ Passenger Carriage of Flammable Materials

⇒ High Altitude Flight
⇒ Emergency Descent Planning
⇒ Relationship Between Altitude and Time of UC
⇒ Types of Oxygen Masks

⇒ Oxygen and Physiology
⇒ Causes and Effects of Hypoxia
⇒ Susceptibility Factors
⇒ Symptoms of Hypoxia
⇒ Indications of Hypoxia
⇒ Accident Review
⇒ Strategy for Safety

⇒ Preview of Next Lesson

Lesson # 10 - 2 Hours

Risk Management, Oral Review of Aircraft Systems and Limitations

Name_____ Date_____

⇒ Risk Management Handbook 8083-2

⇒ Defining Elements

⇒ Identifying and Mitigating Risk

⇒ Assessing Risk

⇒ ADM 3P Model

⇒ SRM and 5P Check

⇒ Automation

⇒ Developing an Evaluation

⇒ VFR Scenarios

⇒ IFR Scenarios

⇒ CFIT Checklist

⇒ Personal Assessment

⇒ Oral Review all systems (system description, controls and indicators)

⇒ Limitations

⇒ Memory Items

⇒ Performance Problems

⇒ Preview of Next Lesson

Lesson # 11 - 1 Hour

Final Exam and Review

Name_____ Date_____

⇒ Final Exam and Review