Pre-Training Checklist

Your initial Transition Training is an important step in the process of flying a CIRRUS aircraft. CIRRUS Design prides itself in the quality of training you will receive whether you are training with UND Aerospace, a CIRRUS Standardized Training Center or a CIRRUS Standardized Instructor.

The checklist below provides guidance on how and what to study prior to the start of training. Following the checklist will help you maximize the benefits of your Transition Training and the use of your CIRRUS aircraft. Proper preparation is required to complete the training in the allotted time frame.

Pre-Training Checklist

- ☐ Complete the Workbook found in Section 5 of the Training Guide
  - Reference the Training Guide, POH, Resource CD and CATS for completing the Workbook. Make note of any questions your have for your instructor.
- ☐ Become familiar with the CIRRUS standard operating procedures by studying the Standardization section of your Training Guide.
- ☐ Review Section 1.7 and Appendix D of the Training Guide for information on the syllabus you will follow during your training.
- ☐ Become familiar with the operation of the Garmin GNS 430
  - Read the Takeoff Tour section in the front of the GNS 430 Pilots Guide and Reference.
  - Reference the rest of the manual for expanded GPS operations.
  - Practice GPS operations using the GPS training software.
- ☐ Become familiar with the Avidyne PFD and MFD
  - Study the PFD and MFD manuals
- ☐ If training with UND Aerospace, call 218.788.3217 at least 2 weeks prior to training to schedule your training event.

The time you invest becoming familiar with the aircraft and avionics is well worth your effort. Enjoy and fly safe.

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TRAINING GUIDE

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SR20 Training Guide

Edition 6
Revision 3
May, 2006

This customer training guide which includes the transition training syllabus is accepted by the FAA/Industry Training Standards.

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Record of Changes

No.	Date of Change	Nature of Change	Rev
Original	Sept, 2005		
Section 3	April, 2006	Replaced section with new content	Rev 2
Section 5	April, 2006	Minor Changes to questions	Rev 2
Appendix D	April, 2006	Minor Changes to assessment items	Rev 2
Section 4	May 2006	Standardization updated to include use of percent power	Rev 3
Section 2	May 2006	Weather minimums changed to reflect Category “A” pilot under the “CIRRUS envelope of safety” program.	Rev 3

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SR 22 Training Guide
Edition 6
Revision 3

Table of Contents

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Section 1

How to Use This Manual

Table of Contents

1.1 Introduction

Your training manual is designed to help you get the most from your training and serve as a companion to the Pilots Operating Handbook for your new SR20. It will be used before, during and after your transition training.

NOTE: Updates to this manual are available online by visiting UND Aerospace online at *http://www.aero.und.edu/cirrus* then clicking on HTMLeZ. See Section 1.4: Online Resources/HTMLeZ in this document for more information.

1.2 Disclaimer/Cautionary Statement

The operating procedures and guidelines found in this manual are advisory only and do not supersede the Pilots Operating Handbook or your authority as pilot in command of the aircraft.

1.3 Contact Information/Location

The UND Aerospace flight training center in Duluth is located at the Duluth International airport in the Cirrus Customer Service Building. Our contact information is:

UND Aerospace Foundation 4514 Taylor Circle Duluth, MN 55811	Web: www.aero.und.edu/cirrus e-mail: duluthftc@aero.und.edu Office: (218) 788-3217 Fax: (218) 788-3508

1.4 Online Resources/HTMLeZ (Updates)

HTMLeZ is a web-based program that allows us to keep all customers and instructors up-to-date with training courseware. It also provides a point of reference for all customers looking for answers to training questions.

To start using your HTMLeZ privileges, go to http://www.aero.und.edu/cirrus and click on HTMLeZ. Click on “Cirrus Pilot Owners” and then follow the instructions on the welcome page, which will allow you to **register** and **request access.**
NOTE: It takes 1-2 working days for your request for access to be approved.

1.5 Transition Training Kits

To ensure successful transition of pilots into the Cirrus aircraft, each pilot will need a Cirrus aircraft transition training kit prior to the start of the transition course. This kit includes the following:

1. Training Guide (this binder)
2. Cirrus Aircraft Training Software (CATS)
3. Customer Resource CD
4. Garmin GNS 430 pilots guide and software

We have provided all pilots guides and training materials required for the transition training as a part of the Customer Resource CD and training guide. There are other computer based products that are available to you for additional cost:

- Garmin GNS 530/430 Advanced Training Series
  - *http://www.vflite.com*
- Electronic Flight Solutions, Inc.
  - *http://www.electronicflight.com*

1.6 Schedule of Training

Please note that the average pilot will spend at least three days to complete the transition training program, and each additional pilot that is being trained will take additional time to train. In Section 1.7 you will find a brief description of the transition training course.

The advanced avionics in the Cirrus SR20 are one of the greatest challenges for transitioning owners. If you have little or no experience with the Garmin GNS 430 you should consider scheduling additional training.

Weather and maintenance can play a key role in the training schedule. Please build some flexibility into your personal schedule for any such delays. In the event that unforeseen delays such as weather or maintenance do occur, you will still be billed for any time you spend with your instructor.

Please call UNDAF (see Section 1.3) to discuss your training options and plans. The amount of training needed is dependent on the experience level of the pilot. Many factors, including weather, maintenance, insurance requirements and customer proficiency may extend the training schedule. You can reduce the training time by coming prepared. Additional training resources are available on HTMLeZ.

1.7 Transition Training Course

The Cirrus Transition Training Course is accepted by the FAA/Industry Training Standards. The course is comprised of eight lessons and an optional biennial flight review and/or instrument proficiency check lesson after the transition training has been completed.

> Note: Pilot shall hold at least a private pilot certificate to participate in the transition training.

The amount of time it takes to complete the course for each person is dependent on several factors:

- Experience level of the pilot;
- Overall knowledge of the aircraft and avionics; and,
- Insurance requirements.

The course is a basic VFR course. Minimal instrument procedures are covered within these eight lessons. If more emphasis on instrument operations is requested, more time will need to be scheduled.

Below is a brief outline of the transition training course. You can find the actual course in Appendix D of this manual.

Lesson 1: This lesson is an introduction to Scenario Based Training (SBT) and Cirrus Transition Training. This ground lesson is to ensure that the Pilot in Training (PT) has an understanding of the POH and the contents within, at a level in which the scenario-based training can be conducted efficiently, effectively and safely. This lesson will include analysis of decision making processes, Aeronautical Decision Making (ADM) concepts and risk factors in relation to an accident scenario. This lesson will include an overview of the FAA Industry Training Standards (FITS) and the concepts of a FITS accepted course.

The pilot in training (PT) and instructor will be introduced to the advanced cockpit of a Cirrus aircraft and practice normal checklist use, avionics symbology and functionality, and CAPS training.

Lesson 2: This lesson provides an introduction to normal operations and automation using an aircraft or flight training device. Conducted on a planned cross country scenario, this lesson will include normal operations of critical equipment for flight

in VFR and IFR flight. The PT will generate acceptable solutions and alternatives to normal procedures and ADM while performing automation management during a cross country scenario. The PT will implement normal procedures, including checklists, en route procedures and arrival procedures. The PT will make extensive use of the autopilot to gain proficiency in operating various avionics in the aircraft.

Lesson 3: This lesson is an introduction to operational characteristics and normal operations. This lesson is conducted on a planned cross country scenario to provide practice of normal procedures in a technically advanced aircraft and enhanced aeronautical decision making, information management, risk management and single-pilot resource management skills.

Lesson 4: This lesson is a ground lesson on Aeronautical Decision Making (ADM) through use of scenarios. This lesson includes numerous risk management tools and techniques to reduce the overall risks associated with flying. This lesson includes the use of PowerPoint™ presentation material and other media to introduce and explore scenarios, based upon the certification and ratings of the PT.

Lesson 5: This lesson provides an introduction to abnormal and emergency operations and automation competence using an aircraft or flight training device. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while properly utilizing the automation and avionics available. The PT will demonstrate extensive use of the automation to develop his/her skills relating to workload management and single pilot resource management (SRM) skills.

Lesson 6: This lesson provides additional instruction regarding abnormal and emergency operations, with emphasis on the ability of the PT to safely fly the aircraft without the use of the autopilot. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while using those resources, other than automation, to generate a safe outcome.

Lesson 7: This lesson is to demonstrate ADM and SRM skills during normal, abnormal, and emergency operations, while

demonstrating both automation and manual flying competence. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while effectively using all resources that are available.

Lesson 8: This lesson is the final flight that will take into account previously learned material. Conducted on a planned cross country scenario, the PT will demonstrate knowledge and skill levels that meet or exceed defined desired outcomes.

NOTE: Optional biennial flight review and/or instrument proficiency check training can only be conducted after satisfactorily completing the transition training course

Lesson 9: This lesson is an optional biennial flight review in which an additional half day of training will be necessary to cover the required ground material.

Lesson 10: This lesson is an optional instrument proficiency check in which an additional day of training will be needed to cover the required ground and flight lesson.

1.8 Additional Services and Fees

In addition to regular transition training, UND Aerospace Foundation offers the following additional services and training to Cirrus customers. Please contact us at (218)-788-3217 to schedule all your training needs or view our website for more information at *http://www.aero.und.edu/cirrus.*

- Delivery of your aircraft to your home airport and training at home
- Flight home accompaniment
- Biennial Flight Review (BFR)
    - Extra ½ day required
- Instrument Proficiency Check (IPC)
    - Extra full day required
- Recurrent Training
    One day structured course
- Accelerated Instrument Course
- Custom Training
- Training to fit your needs and requirements

NOTE: It is highly recommended that you come to Duluth to take delivery of your aircraft and complete the transition program. If you decide to take advantage of our additional services, you are responsible for fees associated with training outside of the factory which may include but are not limited to lodging, meals, airfare, transportation, aircraft fuel, charts, and unforeseen delays due to weather and/or mechanical issues.

Please call or visit us online for a current listing of our fee schedule at *http://www.aero.und.edu/cirrus* and follow the links for ”Service/Scheduling” and “Fee/Billing.”

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Section 2

Operational Guidelines for Personal and Weather Risk Assessment

Table of Contents

2.1 Introduction and Overview

As a general aviation (GA) pilot, you are the head of your flight department, and as such, have multiple roles. In general, you are responsible for selecting the proper airplane for the mission, ensuring adequate pilot training, establishing personal weather minimums, and ensuring all maintenance is in compliance. You are the dispatcher responsible for gathering weather and other flight information, planning the flight, ensuring adequate fuel for the mission, and perhaps actually fueling the airplane. You are the pilot in command responsible for the safety of the flight using all available resources to make correct timely decisions regarding weather and possible system malfunctions and failures. In commercial air carrier operations and corporate flight departments, these responsibilities are assigned to different persons. Air carriers are required to have standardized procedures to aid the responsible persons in accomplishing their role, and corporate flight departments typically do the same. Adopting similar safety procedures for non-corporate GA operations would lead to similar safety results.

The Personal and Weather Risk Assessment Guide will assist you in developing your own standardized procedures for accomplishing the dispatch and pilot in command responsibilities of your flight department and will help you make sound preflight and in-flight weather decisions.

2.1.1 Scope

Section 5 is split up in to four areas that build upon similar principles. These principles can be applied to your everyday flying. A brief explanation of each of the areas is described in the following paragraphs:

- *Section 2.2 Initial Operating Experience (IOE)* provides guidance to pilots during the first 100 hours of operation. Guidance is provided to improve safety while you continue to explore your capabilities and those of your aircraft.

- *Section 2.3 Establishing Personal Minimums* provides guidance on establishing personal weather minimums for both before and after the IOE period. Included are forms for compiling your pilot certifications, training, and experience, which assists you in developing appropriate personal weather minimums. Along with a personal assessment sheet, suggested weather minimums are provided to assist you in developing your own personal minimums. Cirrus recommends attaching the completed personal minimums form to your logbook for quick reference.

- *Section 2.4 Preflight Risk Assessment* provides guidance on assessing the risk of a particular flight and planning a safe flight given the weather conditions, and should be referenced before each flight. This section contains two established risk assessment tools which require the assessment of the pilot, the aircraft and the environment for the mission. The first tool, PAVE (Pilot-Aircraft-enVironment-External pressures), allows you to identify the risks associated with the flight. The second tool, (flight risk assessment form), allows you to quantify or measure the relevant risk elements. These tools are presented to improve your decision making skills. It is up to you to apply these tools to your preflight planning.

- *Section 2.5 Best Practices Weather Flight Planning* contains the Best Practices Weather Planning guide. This guide explains how to obtain a weather briefing and develop a plan to complete the flight safely given the weather conditions. This guide stresses the need to have a back up plan, "Plan B," before embarking on any flight.

2.1.2 References

The appendix contains reprints of the appropriate documents described in this section as listed below. Additional copies of these documents are available online under the HTMLeZ section at: *http://www.aero.und.edu/cirrus*.

- Appendix A: Personal Weather Minimums
- Appendix B: Personal Minimums Checklist (PAVE)
- Appendix C: Preflight Risk Assessment Form

2.2 Initial Operating Experience (IOE)

This section provides guidelines during the first 100 hours of operation to help improve the overall safety in Cirrus aircraft. Transitioning into a new aircraft creates unique challenges that need to be considered for safe operation of your aircraft. Guidance is provided for creating personal weather minimums during the IOE period in Section 2.3.

The term IOE is derived from the airline industry and refers to pilots that have completed their initial training but are still in the process of learning a new aircraft and avionics. The IOE starts after you have completed the transition training and should be used for guidance during your daily flight operations. The IOE program is derived from the operating procedures Cirrus Design uses for its company pilots.

NOTE: It is highly recommended you follow the IOE program which is covered in Section 4 of this guide.

2.2.1 Initial Operating Experience Guidance

In order to keep you in a safety mindset and help you make sound decisions during your preflight and daily flight operations, the IOE program is broken down into 30 and 60 day intervals.

2.2.2 30 Day Guidance

On the 30th day of the IOE program, Cirrus recommends that you complete the Practical Risk Management Course developed by John and Martha King. The course can be purchased online at: *http://kingschools.com/.*

2.2.3 60 Day Guidance

On the 60th day or upon completion of the IOE (100 hours in aircraft type), whichever comes first, Cirrus recommends that you fly with a Cirrus Standardized Instructor or UNDAF Factory Instructor. Cirrus recommends that the flight include normal and abnormal flight scenarios with an emphasis on aeronautical decision making, risk management and automation competency. The flight will allow you to refresh and review what was covered during initial training. Guidance will be provided in the development of personal weather minimums.

2.2.4 Annual Recurrent Training

Your training and proficiency have a direct impact on your aviation safety. Recurrent training is a major factor in promoting flight safety. Cirrus recommends that all pilots voluntarily undergo the equivalent of a flight review annually rather than every two years. Additionally, Cirrus recommends instrument rated pilots complete an instrument proficiency check (IPC) every six months.

Because of the technological advancements and safety features available in the Cirrus aircraft, it is important to avoid overdependence upon or overconfidence in the capabilities of your aircraft. Both your capabilities and those of your aircraft, together with the various other factors affecting flight safety, must be taken into account before each flight.

2.3 Establishing Personal Minimums

Each pilot should establish personal weather minimums, which may be, and often are, above FAA legal minimums for a VFR or IFR flight. Airlines and corporate flight departments have personal minimums above FAA weather minimums where pilot experience is limited, and have operations minimums that apply when the aircraft has less than full operation of all systems necessary for dealing with weather. Personal weather minimums are based on an assessment of pilot certification, training, and experience. When you obtain a new certificate or rating, or when your current experience level changes, you should review and, if appropriate, revise your personal minimums. The forms that follow this section are design to assist you to assess your certification, training and experience level so that you can develop your personal minimums. Your completed personal weather minimums should be cut, folded, and placed in your flight bag for ready reference.

Assessment of personal minimums should include, but are not limited to:

- **Pilot Certification** (e.g., commercial, instrument rating).
- **Training** (e.g. flight review - wings or annual training, IPC, time since initial training, variation in equipment, and familiarity with that equipment)
- **Experience** (e.g., total years flying, total flight time, time in type, number of landings in the last year, night time and night landings, experience with high density airports, experience with mountain flying, IFR hours last year, approaches - actual or simulated – within the last year).

On page 2-11 you will find the table “Risk Factors for Personal Weather Minimums.” Simply fill in your score (1-5) based on your experience in the right column and total up you score. Your score will be used to determine into which category you place. A higher score puts you into a higher risk category and a lower score into a lower risk category. This table should be completed and risk category determined prior to developing your personal minimums.

Your personal weather minimums should be a reflection of your experience and background. It is important look at each individual factor to determine your most appropriate score. Identifying factors in which

you scored high is an important step in finding ways to reduce the overall risk of your operation.

Your score will put you into one of three categories: A, B, or C. Based upon the factors to be considered in the chart, a category A pilot has the most amount of experience, a category B pilot has an average amount of experience, and a category C pilot has the least amount of experience. It is important to bear in mind that there are other factors in addition to flight experience that will determine your personal weather minimums.

Example of a Category A pilot:

- Professional pilot (ATP/Commercial/CFI)
- Flies frequently (at least 30 hours per month)
- Flight experience
    - Over 1000TT
    - Over 100 hours in Cirrus
    - Extensive instrument experience (at least 10 hours per month)

Example of a Category B pilot:

- Commercial or Private with Instrument Rating
- Flies somewhat frequently (at least 20 hours per month)
- Flight experience
    - Under 1000TT
    - Under 100 hours in Cirrus
    - Average instrument experience (at least 3 hours per months)

Example of a Category C pilot:

- Private with or without Instrument Rating or Student Pilot
- Flies sporadically (less then 10 hours per month)
- Flight experience
    - Under 500TT
    - Under 100 hours in Cirrus
    - Minimum or no actual instrument experience (under 3 hours per month)

On page 2-12 and 2-13 you will find two suggested weather minimums charts. A chart is provide for your IOE period (first 100 hours in Cirrus) and after IOE (over 100 hours in Cirrus). Utilize these suggested minimums to aid you in development of your own personal minimums. A blank column labeled “Personal Weather Minimums” is provided next to the suggested weather minimums so that you may fill in your personal

ratings. At any time your personal weather minimums are more restrictive than the suggested minimums, use your personal minimums.

Suggested weather minimums are provided based upon the category into which you fall. Remember, these are suggested weather minimums provided to help guide you in the development of your personal weather minimums. Your unique experience and background are significant determining factors when creating your personal weather minimums. For example, Cirrus recommends flying to and from hard surface runways only, for all three categories. Flying to and from grass strip runways is considered a high risk activity, and should only be undertaken by pilots with appropriate training and experience. When determining your own personal minimums, a little common sense will go a long way.

A brief explanation of each factor used to determine your category is outlined below. Cirrus recommends that you do not limit this decision just to the factors outlined in the chart. It is vital to reflect on ALL your flight experiences when determining your personal weather minimums.

- **Age:** According to the automotive industry, people under 25 years old generally accept a higher level of risk, which actually puts them at more risk for an accident. Additionally, as a person ages, sensory acuity and reaction times decline. This factor also increases accident risks for persons over 50 years old.

- **Primary Use of Aircraft:** Strict deadlines increase the amount of pressure felt to complete a flight. This increased pressure may lead to the acceptance of higher risk than normal, thus increasing probability of an accident.

- **Certificates:** The required training and experience gained from each new certificate or rating decreases overall risk.

- **Pilot Error Accidents:** Past history of an accident or incident resulting from pilot error is also an indication of higher risk.

- **Hours in Cirrus, Last 12 Months:** Time in type is an important factor when developing your personal minimums; the more recent the experience, the lower the overall risk.

- **Hours in Cirrus, Last 90 Days**: Recency of experience is an important factor when developing your personal minimums; the more recent the experience, the lower the overall risk.

- **Total Time:** Pilots with more flight experience have a greater base of knowledge from which to draw, for a given situation. However, total time must be weighed carefully against recency of experience.

- **Simulated or Actual Instrument Time in Cirrus:** Instrument proficiency is a use-it-or-lose-it skill. Flying into uncertain or unexpected weather without proper instrument training and experience increases risk.

- **Active Participation in Pilot's World :** Think of your pilot license as a license to learn. One way to lower your overall risk is to commit to a continuous education program.

- **Night Hours, Last 90 Days:** Add the score for this factor to the "Revised Total" on the chart if you are embarking on a night flight. More recent experience with night flight will reduce the overall risk of the flight.

- **Mountain Flying Hours in the Last 5 Years:** Add the score for this factor to the "Revised Total" on the chart if you are embarking on a flight into mountainous terrain. More recent experience with mountain flight will reduce the overall risk of the flight.

The risk categories and suggested weather minimums provided here are only a guide, and do not account for all possible risks or situations. Risk categories are based upon the analysis of experienced UNDAF and Cirrus instructors and take a broad range of pilots and situations into consideration.

Three of the risk categories are specifically about the experience that you have gained in the last 90 days. Each 90-day interval, Cirrus recommends that you take time to update your overall score, which may also change your category. Whenever your category changes, Cirrus recommends that you review and possibly revise your personal weather minimums. Remember evaluate your personal minimums when you experience changes. Don't change your minimums based on the flight at hand.

A flight should be postponed, cancelled, or discontinued at any time the actual weather is below your personal weather minimums. A discontinued flight means a diversion. If the weather turns for the worst in flight, always have a "Plan B" and be ready to execute it. Using all

available weather information is critical in making a well-informed, safe go/no-go or diversion decision. Resources for obtaining weather and flight planning information are provided in Section 2.5.

Appendix A contains additional copies of Risk Factor charts and Personal Weather Minimum charts for future use and/or revisions to personal minimums.

Risk Factors for Personal Weather Minimums Chart

Score each row in the right hand column and total at the bottom. Your score will classify you into a category that will help you develop your personal minimums.

Score	1	2	3	4	5	Your Rating
Age	25-50	N/A	50-70	< 25	> 70	
Primary Use of Aircraft	N/A	N/A	Combo of Business and Pleasure	Business w/out Schedule Demands	Business with Schedule Demands	
Certificates	CFI or ATP	Commercial with Instrument	PVT with Instrument	PVT Pilot	Student Pilot	
Pilot Error	N/A	N/A	N/A	Incident	Accident	
Hours in Cirrus in Last 12 Months	≥ 200	199 – 151	150 - 100	99 – 51	< 50	
Hours in Cirrus in Last 90 Days	≥ 30	29 - 21	20 -16	15 - 10	< 10	
Total Time	≥ 2000	1999-1001	1000 - 751	750 - 501	<500	
Simulated or Actual Instrument Hours in Cirrus in Last 90 days	≥15	14 – 12	11 – 8	8 – 4	< 3	
Active Participation in Pilot's World	Yes				No	
Total						
Complete the following if the flight will be conducted at night and/or mountainous terrain.						
Night Hours in Last 90 Days	≥ 15	14 -11	10 - 7	6 - 4	< 3	
Mountain Flying Hours in Last 12 Months	≥ 30	29 - 20	19 -11	10 - 6	< 5	
Revised Total Use the revised total if the flight is conducted at night and/or in mountainous terrain. These additional factors will increase the overall risk of the flight and should be considered when developing your personal minimums.						

Category C (Higher Risk) Higher risk than normal. Develop higher than normal weather minimums to reduce risk. If available, consult with a Cirrus standardized instructor or more experienced pilot for guidance on developing realistic weather minimums.	≥ 30
Category B (Medium Risk) Somewhat riskier than usual. Develop conservative weather minimums and operating procedures to insure all standards are being met.	19- 29
Category A (Low Risk) No unusual hazards. Develop normal personal minimums and operating procedures.	< 18

IOE Weather Minimums

Suggested weather minimums are provided based upon your category. Use these suggestions while determining your personal weather minimums during your IOE period. A blank column on the right is provided to fill in your personal minimums.

Suggested IOE Minimums (Note: Revert to IOE Minimums if you have not flown within the previous 60 days).				**IOE Personal WX Minimums (Use suggested weather minimums as a guide).**
IOE Duration	**100 hours**	**100 hours**	**100 hours**	
Categories	Category C	Category B	Category A	
*Visibility – Day VFR	10 miles	8 miles	5 miles	
*Visibility – Night VFR	10 miles	10 miles	10 miles	
*Ceiling – Day VFR	5,000 feet	4,000 feet	3,000 feet	
*Ceiling – Night VFR	6,000 feet	5,000 feet	5,000 feet	
Maximum Surface Wind (Including Gusts)	15kts	20kts	25kts	
Maximum Gust Factor	5kts	10kts	15kts	
Maximum Cross Wind Landing	5kts	10kts	15kts	
Minimum Runway Length/Width (Use the higher of the two).	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	
Runway Surface	Hard Surfaced	Hard Surfaced	Hard Surfaced	
Braking Action	Good	Good	Good	
Fuel Reserves	60 Min	60 Min	60 Min	
Thunderstorms Circumnavigating	50 Miles	40 Miles	30 Miles	
Fly with CSIP Instructor After Initial Transition Training	60 days	60 days	60 days	
Instrument Rated Pilots Only				
**Day IFR Approach Ceiling & Visibility	2000ft agl 3 miles	1000ft agl 3 miles	1000 agl 3 miles	
**Night IFR Approach Ceiling & Visibility	Not Advised	1500ft agl 4 miles	1000ft agl 3 miles	

Note: If your personal weather minimums are higher than the suggested weather minimums, use your personal weather minimums.
**An instrument rated pilot should refer to the IFR weather minimums and fly IFR if the weather is below personal VFR minimums.*
***If the approach minimum is higher than the suggested minimum, use the approach minimum.*
**** File IFR anytime the weather is below 3000' / 5sm*

After IOE Weather Minimums

Suggested weather minimums are provided based upon your category. Use these suggestions while determining your personal weather minimums after your IOE period. A blank column on the right is provided to fill in your personal minimums.

Suggested Pilot Minimums After IOE (Note: Revert to IOE Minimums if you have not flown within the previous 60 days).				**After IOE Personal WX Minimums (Use suggested wx minimums as a guide).**
Recommended Minimums	**Risk Category**			
	Category C	Category B	Category A	
*Visibility – Day VFR	6 miles	5 miles	5 miles	
*Visibility – Night VFR	10 miles	10 miles	10 miles	
*Ceiling – Day VFR	3500 feet	3,000 feet	3000 feet	
*Ceiling – Night VFR	5,000 feet	5,000 feet	5,000 feet	
Maximum Surface Wind (Including Gust Factor)	20kts	25kts	35kts	
Maximum Gust Factor	5kts	10kts	10kts	
Maximum Cross Wind Landing	10kts	15kts	Max Demonstrated (See POH)	
Minimum Runway Length/Width (Use the longer of the two).	3000ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3000 ft or2.5 times computed Takeoff or Landing Distance / 75' Wide	3000ft or 2.5 times computed Takeoff or Landing Distance / 50' Wide	
Runway Surface	Hard Surfaced	Hard Surfaced	Hard Surfaced	
Braking Action	Good	Good	Fair	
Fuel Reserves	60 min	60 min	60 min	
Thunderstorms Circumnavigating	50 miles	40 miles	30 miles	
Fly with CSIP Instructor after initial transition training	12 months	12 months	12 months	
Instrument Rated Pilots Only				
**Day IFR Approach Ceiling & Visibility	1000ft agl / 3 miles	800ft agl / 2 miles	500 agl / 1 mile	
**Night IFR Approach Ceiling & Visibility	1500ft agl / 3 miles	1000ft agl / 3 miles	600 agl / 2 miles	

Note: If your personal weather minimums are higher than the suggested weather minimums, use your personal weather minimums.
**An instrument rated pilot should refer to the IFR weather minimums and fly IFR if the weather is below personal VFR minimums.*
***If the approach minimum is higher than the suggested minimum, use the approach minimum.*
**** File IFR anytime the weather is below 3000' / 5sm*
***** Instrument rated (proficient with demonstrated ability to CAT 1 minimums within 60 days) Operate at or above published minimums.*

2.4 Risk Assessment

2.4.1 PAVE (Pilot-Aircraft-enVironment-External pressures)

The PAVE (Pilot-Aircraft-enVironment-External pressures) Checklist (Appendix B) works like any checklist that you would use in your aircraft; however, you should expand the use of the PAVE to your flight planning as well, and make special consideration of each line item before your final decision to fly. The PAVE checklist provides a step-by-step approach to assessing your knowledge; but still leaves the final go/no-go decision to you, the PIC.

Appendix B contains the FAA's PAVE risk assessment form, which contains instructions for use. This form contains a larger number of risk factors. Additional information about risk management and PAVE can be accessed from the FAA's website at: *http://www.faa.gov*.

2.4.2 Preflight Risk Assessment

The "Preflight Risk Assessment" form (Appendix C) assigns a number to various risk factors regarding the pilot, aircraft, and environment. Each element is scored for the flight and the grand total is determined. Advisories on the appropriate course of action depending on the grand total and whether the flight is VFR or IFR are provided. These actions are:

- Go for lowest grand total
- Consider alternate actions
- Consult experienced CFI or mentor
- Do not go for the highest grand total

This form should be completed prior to each flight as a tool for determining the level of risk. The risk categories provided on this form are only a guide, and do not account for all possible risks or situations. It is your responsibility as pilot in command to determine if the level of risk is acceptable for the flight.

2.5 Best Practices Weather Flight Planning

2.5.1 Sources of Information for Flight Planning

There are many sources of weather information and flight planning available. Cirrus recommends the following resources:

- ✈ Free Weather Information
  - Telephone: FSS, 1-800-WX-BRIEF
  - DUATS (weather and flight planning)
    - o *http://www.duats.com/*
  - National Weather Service (NWS)
    - o *http://www.nws.noaa.gov/*
  - Aviation Digital Data Service (ADDS)
    - o *http://adds.aviationweather.gov/*
  - Airline Dispatchers Federation
    - o *http://www.dispatcher.org/qb.php*

- ✈ Private weather services (fees required)
  - Weather Tap
    - o http://weathertap.com
  - WSI
    - o *http://www.wsi.com/solutions/aviation/*
  - Aircraft Owners and Pilots Association (AOPA)
    - o *http://www.aopa.org/*

- ✈ Free Flight Planning Services
  - Enflight weather and flight planning
    - o *http://enflight.com/* (weather and flight planning)
  - FltPlan.com Free IFR Flight Planning for Corporate, Charter, and Business Pilots
    - o *http://fltplan.com/*
  - AirNav.com
    - o *http://airnav.com/*
  - Air Routing International Time/Distance Calculator
    - o *http://www.airrouting.com/content/tdcalc.htm*l

- ✈ Television: weather channel, local and national news

2.5.2 Weather Information and Flight Readiness Review

Review the weather information and your readiness for the flight. Taking adequate time to review all weather information is a critical part of each

flight. Adequate quantity and quality of weather information allows for sufficient planning to avoid inadvertent encounters with:

- IMC conditions
- Icing conditions
- Embedded thunderstorms; or
- Other significant weather hazards

Also take into account the following factors:

- Weather source (e.g., DUATS, FSS, NWS)
- The duration of your flight
- The distance between weather reporting points
- The proximity of the weather conditions to your personal minimums
- Your degree of confidence that you understand the weather situation
- The stability of weather along the route

The consequences of inadequate weather planning could be severe!

2.5.3 Preparing Your Mental Weather Map

You should develop a "weather picture" for the entirety of your intended route of flight.

- Using the weather information you obtained, visualize a picture, both in plan view (from above) and in cross section view (from the side, including terrain) of all the relevant weather along your flight/route. Do not forget to take the passage of time into consideration. Include the following:
  - Terrain (topography that includes natural and man-made obstructions)
  - Cloud bases and tops
  - Icing levels
  - Winds aloft
  - Areas of IMC
  - Thunderstorm movement and development
- Visualize your flight by drawing a "weather picture" of your flight using this procedure:

Step 1: Draw a straight line between your two points.

Step 2: Draw an ellipse on either side of that line. Use the resulting "border" as an estimate of the area where you will need information about weather that may affect your route of flight.

Step 3: Note the weather patterns within the elliptical area.

Step 4: Apply the information to your weather decisions. Construct a route to avoid hazardous weather (given both your own capabilities and that of the aircraft).

2.5.4 Primary Flight Plan

Develop a primary flight plan (Plan A) to conduct your flight safely, using your weather picture and your personal minimums, by considering:

- Your aircraft and its capabilities
- The environment (including weather, and terrain)
- External factors, such as security restrictions (e.g., Temporary Flight Restrictions (TFR's) and Air Defense Identification Zones (ADIZ's)

The plan is defined by:

- The route
- The altitudes en route and time of departure

2.5.5 Alternate Flight Plan

Develop an alternate flight plan (Plan B) to be executed when unexpected weather is encountered en route. Determine under what conditions you will abandon Plan A and execute Plan B.
Recognize when deteriorating weather conditions exceed your personal minimums and activate Plan B. Plan B is defined by:

- The new route
- Changes in altitude
- The new destination

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Section 3

Developing and Maintaining Proficiency:
A personal development plan

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3.1 Introduction and Pilot Responsibilities

Is flying safer than driving? It is common understanding that you are more likely to get into a car accident driving to the airport than get into an airplane accident. This maybe true if you were driving to the terminal for a commercial flight. History has proven that general aviation for many reasons has higher risks and therefore, more accidents than commercial operations.

Do not despair. You have control over the outcome of every flight you embark on. You have the ability to make your flight operations as safe as commercial operations. Unfortunately, it is all too common that pilots end up in bad situations that result in incidents and accidents. The 2005 AOPA Nall Report states that 75.5% of major general aviation accidents and 78.6% of fatal general aviation accidents in the year 2004 were pilot related. A pilot related accident is caused by an improper action or inaction of the pilot.

You have the ability to reduce the GA accident rate by over 75% by recognizing and reacting properly to the various risks that are present before and during every flight. This, in turn, will prevent you from having an accident. The question, “Is flying safer then driving?” is not the right question to ask. The real question, “Is flying with ME safer then driving?”

The purpose of this section is to help you develop and maintain proficiency needed to safely pilot your CIRRUS while maximizing the potential of the aircraft. You owe it to yourself, family and friends to ensure every flight has a successful outcome.

3.2 What is Proficiency

Flying is a skill. It is a learned behavior that encompasses much more than “stick and rudder” skills or the ability to quickly enter a flight plan into the GPS. Flight proficiency is a combination of your level of knowledge, ability to reason, psychomotor skills and psychological makeup. All of these factors contribute to your ability to make decisions and manage the aircraft.

As pilots, our proficiency is subject to evaluation by other pilots at various stages of our flight experience. Private pilot check rides and bi-annual flight reviews are just two examples of evaluations that all pilots are

subject to. These flights are an important part of being a pilot. It is our chance to obtain feedback about or strengths and short comings.

These mandatory flights may not be the proper measurement of your flight proficiency. Regulations dictate that our proficiency must be measured every two years by a flight instructor. Some insurance companies require a check annually. Is it possible that your proficiency may increase or decrease between this time period?

Who's responsible for measuring your proficiency between annual or bi-annual flight checks? You are. A personal evaluation of your knowledge level, ability to reason, psychomotor skills and psychological makeup should be an integral part of every flight. Recognition of your proficiency level is the first step to becoming a safer pilot.

3.3 Measuring Proficiency

When was the last time your passenger said, "nice landing Captain Kangaroo"? After a few chuckles, did you reflect and identify the factors that lead up to the aircraft bouncing down the runway? A self evaluation is an important step in the learning process. Learning from our experiences is how we recognize our short comings so we can increase our proficiency.

You are on the right track if the statement, "I am my worst critic" applies to you. A self evaluation may be painful, but it is a required step in measuring your personal proficiency level. Follow these tips for conducting effective self evaluations:

- Take time for a self evaluation after every flight.
- A thorough self evaluation is best conducted shortly after a flight when your memory is fresh. The car ride home is a good time to reflect on the day's flight.
- Ask yourself if anything unexpected occurred during the flight? How could I foresee these unexpected events? Did I act appropriately to the unexpected?
- Taking notes on longer flights will help you identify areas of weakness. You should not let this interfere with your duty as pilot in command.
- Be honest, it is very important to have realistic expectations of your capabilities.
- Take action on known deficient areas. Periodic flights with a Cirrus Standardized Instructor (CSI) will fine tune those deficient areas.

An effective self evaluation after each flight will help draw a clear picture of your proficiency level and personal capabilities. A safe flight must be conducted within FAA regulations, aircraft limitation and personal capabilities.

Another way to help measure proficiency is a reflection on your personal experiences as a pilot. Section 2 of this manual has a matrix that will help you evaluate your proficiency level. Following the matrix will put you into a category. There are suggested weather minimums that appropriately match the category that you fall into. Keep in mind the suggested weather minimums are just suggestions. It is your responsibility to determine what conditions you are capable of handling.

Finally, when in doubt get a second opinion. There are many highly trained, professional CIRRUS Standardized Instructors and CIRRUS Standardized Training Centers. Write down specific questions and areas that you would like to work on before contacting your instructor. This will allow you to communicate the areas of emphasis needed for your training and will allow your instructor to plan instructional activity around your specific needs. Visit www.cirrusdesign.com/csip to see a list of instructors and training centers closest to you.

3.4 Maintaining Proficiency

Flying puts our knowledge, ability to reason, psychomotor skills and psychological makeup to the test each time we fly. Proficiency is needed in each one of these areas. If you do not regularly exercise these areas your proficiency will degrade. If you lack proficiency in one of these areas the other areas will suffer

3.4.1 Knowledge

Remember the fifty pounds of books you received when you showed up for the first day of private pilot training? You studied long and hard to gain the knowledge required to obtain your private pilot certificate. Congratulations on your accomplishments, but just because you passed a check ride does not mean you can stop learning. A safe, proficient pilot is always learning.

Every now and then, you need a little tune up and some preventative maintenance, just like your airplane. Developing a monthly routine (oil change) will allow you to review previously learned material, you never know, you may learn something new. You will be amazed what happens

if you invest an hour or two a month. Here are some resources to help you along the way:

- Pilot's World is a free online resource provided by CIRRUS Design to help you keep abreast of aviation topics that concern CIRRUS pilots. Topics ranging from; an in depth look at the CIRRUS CAPS system to Advanced IFR Operations are presented monthly. Previous months are archived for your convenience. You will find the online resource engaging, fun and easy to use. CIRRUS encourages everyone to join and spread the word. Follow these steps to login.
    - Go to http://cirrusdesign.com/pilotsworld
    - Create an account, it's free
    - Start learning
- CIRRUS Aircraft Training Software (CATS) is interactive software that explores the inner workings of the CIRRUS aircraft. If you have asked; how does the propeller work? or what happen when if I pull the CAPS handle? this is the software for you. Explore and learn your CIRRUS aircraft like never before! Practice checklist procedures, calculate performance and explore aircraft systems all at the click of a mouse. Tests are provided throughout the program to test your knowledge. Go to: http://www.undaerospace.com/cats to order a copy of CATS.
- HTMLeZ is an online resource center for training materials, publications and other information specific to CIRRUS aircraft provided by the UND Aerospace Foundation. The most up-to-date information will be provided at this site. There is also a forum available for you to ask and answer questions from other CIRRUS pilots and instructors. See Section 1.2 of this manual for information on how to access HTMLeZ.
- The AOPA Air Safety Foundation has a wealth of aviation courses and quizzes which can be found online at: http://www.aopa.org.
- CIRRUS Owners and Pilots Association (COPA) is a not-for-profit membership organization established to educate, promote the safety of and support the owners and pilots of CIRRUS aircraft, which can be found online at: http://www.cirruspilots.org.

3.4.2 Ability to Reason

This is commonly referred to as Aeronautical Decision Making (ADM). It is the process that pilots use to determine the best course of action given a set of circumstances. Your ability to make good decisions is greatly affected by your level of knowledge and pyschological makeup. You have to be informed to make good decisions and your decisions must not

be clouded by external pressures. Follow these tips to maintain and build your ADM proficiency.

- Be aware, an error chain that can lead to an accident is easily started when risk factors go unnoticed. Preflight planning is a common time bad decisions are made. Proper preflight planning that assesses the risks associated with a particular flight is essential. By adopting proper preflight planning practices you can examine all factors that can affect the flight. See section 2 “Operational Guidelines for Personal and Weather Risk Assessment”.
- If you identify a risks that you are unsure how to handle, be conservative. Utilize risk management tools found in Section 2 of this manual and/or consult with an instructor.
- Follow a routine, developing good habits are conducive to good decision making. Always conduct thorough preflight planning and obtain all information pertinent to the flight.
- Maintain good situational awareness and ask yourself “what if” questions throughout the flight to reduce surprises.
- Never let the purpose of the flight affect the decisions made before or during the flight. This is easier said then done. You are responsible for the safe outcome of the flight. You owe it to yourself and you passengers.
- Know your aircraft and its limits.
- Know your capabilities. Do not put yourself into situations you are not capable of handling.

3.4.3 Psychomotor Skills

Remember the beginning of your pilot training and your first few landings. Throttle in your right hand, the yoke in the left hand, your feet pushing on the rudders and your vision rapidly shifting from the airspeed indicator to the runway. Meanwhile, your instructor yelling, “go around, go around!” Good times.

You were learning to coordinate the controls of the aircraft based on perceptions, mostly visual. After some time, and a lot of practice you developed a skill that allowed you to command the aircraft instead of the letting the aircraft command you. Psychomotor skills are “stick and rudder” skills, also, they are skills required to push the buttons and turn knobs in the aircraft.

Maintaining your “stick and rudder” skill and your ability to push and turn the knobs in your aircraft takes practice. Your flying proficiency will

degrade over time if the skills are not used. Is it possible to fly your CIRRUS everyday and still degrade your psychomotor skills? Yes, this is simply done by letting the autopilot have all the fun.

The autopilot system in the CIRRUS is capable flying a majority of the flight. It is a great tool to help you mange workload and fatigue during a flight and should be used to increase situational awareness and passenger comfort. But, if you let the autopilot do all the work each and every flight your "stick and rudder" skills will suffer and soon you will not be able to fly the aircraft proficiently.

Here is your challenge, take advantage of every time possible (within safety) to maintain and build your psychomotor skills. If you are not comfortable doing this by yourself, get an instructor. It is important to maintain your flight proficiency within the standards of your certificate. If you can not fly within those standards, get with an instructor and regain your proficiency.

3.4.4 Psychological Makeup

When was the last time you heard yourself say, "I have to get there"? Every pilot is guilty of saying this from time to time whether we mean it or not. Every pilot is faced with pressure to fly. The pressure can be overwhelming or insignificant. There is a make or break business deal on the line or it is the last day of an all too short ski vacation in the mountains, it is snowing two feet an hour and work can wait.

A safe and educated decision before and during any flight cannot be made if the motivation for the flight is not considered. As a general aviation pilot, there is no circumstance where you truly need to get there. How will the business meeting go if you choose to launch into weather you or the aircraft is not capable of handling?

When in doubt, be conservative. If risks can not be reduced to an acceptable level for the flight, do not go. A second opinion from someone who knows you and your capabilities can be helpful, but the final decision is up to you.

Psychological makeup also determines the way each individual handles stress. Some levels of stress can actually increase performance. Most of the time stress degrades performance by limiting your perceptions. Risk factors that lead to an error chain can easily go unnoticed when perceptions are narrowed. Everyone knows what an error chain can lead to.

Stress affects your psychological makeup. A lot of the time stress during flight is caused by something that is unexpected, such as a change to an instrument approach clearance. This type of stress can be reduced by simply having a high level of knowledge, ability to reason and proficient psychomotor skills. Being proficient will reduce the stress associated with flying and will increase you confidence as a pilot. It is amazing how all this is tied together.

Sometimes stress or anxiety is caused by an emergency or abnormality. A column of smoke rising from the CB panel that does not smell like BBQ is a stressor. Training and rehearsal is the best way to deal with these types of stressful situations. Utilizing an instructor will allow you to rehears these situations in a safe environment. You can also mentally rehearse various system malfunctions and emergencies during periods of low work load. Ask yourself some of the following questions:

- What if my engine quit right here?
- What if my alternator 1 quit working?
- What if the aircraft started to accumulate ice?

Stress will be greatly reduced in the unlikely event abnormal/emergency situations arise if you have rehearsed them in the past.

3.5 Proficiency after Transition Training

The objective of the transition training course is to allow you to safely fly a CIRRUS aircraft in VFR weather conditions within the aircrafts limitations, FAA regulations and your personal capabilities. The proficiency developed after completing transition training is the baseline level. You will have to make the determination if you proficiency regresses or drops below the base line level. If this happens, a flight with a CSI would be needed to regain your proficiency.

VFR Rated Pilots

FAA regulations allow pilots to fly under visual flight rules in very low ceiling and visibility conditions. The risk of an accident is too high when VFR and IFR rated pilots attempt to fly visually in marginal VFR or instrument conditions. The 2005 AOPA Nall report states that 90.4% of weather related accidents in 2004 were caused by VFR into instrument conditions. You need to understand that this amount risks is too high, no matter how capable the aircraft may be. To reduce your risk of a weather related accident either; do NOT fly in marginal VMC or instrument conditions or get an instrument rating and maintain the proficiency needed to fly in instrument conditions. If you do not have an instrument

rating, doing so will not only increase your proficiency but allow you to get more utility from your aircraft.

IFR Rated Pilots
The transition training is designed to develop a VFR level of proficiency. Extra training is required to develop proficiency to fly under instrument conditions. The transition training course is flexible enough to allow for some instrument training, but usually requires additional time to be proficient under instrument conditions. The extra time and money is an excellent investment. You should complete an instrument proficiency check, after or during your transition training to be proficient under instrument conditions. Seek recurrent training anytime your proficiency drops below the levels outlined in the Instrument Practical Test Standards (PTS).

3.5.1 30 and 60 Days After

The first few months and 100 hours in type after completing transition training is a critical time in the development of your proficiency level. It is possible to experience rapid increases in proficiency by following the recommendations in this section. It is also possible to experience rapid decreases in proficiency after training, usually due to periods of inactivity or lack of effort to exercise and expand what was learned during transition training.

It is highly recommended to fly with a CSIP instructor at the 30 and 60 day anniversary of completing transition training. You will receive two benefits from these recurrent training events. First, it confirms that you have retained the information and skills required to safely operate the aircraft. Second, the recurrent event will allow you to increase your proficiency because you will have more experience in the aircraft to build upon. These checks are also a good time for IFR rated pilots to receive an Instrument Proficiency Check (IPC).

As a part of the 30 and 60 day check, reexamine your personal weather minimums which you set at the completion of transition training. Having instructor input while completing your weather minimums will help you make realistic minimums. Remember, the pilot in command has the final authority.

3.5.2 Annual Recurrent Training

Airline travel is considered one of the safest forms of travel in the world. One reason airline travel is safer then general aviation is because of the

proficiency level of the pilots. Airline pilots have to meet minimum experience levels, receive extensive training and pass rigorous recurrent evaluations. An airline pilot's motivation to maintain a high level of proficiency stems from their desire to be employed. Your motivation to maintain a high level of proficiency should stem from not wanting to put you or your passenger's life in jeopardy.

Airline pilots go through an extensive evaluation of their proficiency level every six months. These are professional pilots with thousands of hours of experience that fly everyday in all types of weather conditions. Why would a general aviation pilot think they can go up to two years without a recurrent/evaluation event and still maintain a safe level of proficiency? One of the best ways to maintain and build your proficiency level is to go through regular recurrent training and evaluations. Some insurance companies require some type of recurrent training annually. Take it upon yourself to go through recurrent training every six months, or after long periods of inactivity. Below are some resources available for recurrent training.

- UND Aerospace Foundation. Go to www.cirrus.aero.und.edu for information on how to schedule recurrent training with UND Aerospace Foundation.
- CIRRUS Standardized Instructor (CSIP) or CIRRUS Standardized Training Centers (CSTC). Go to www.cirrusdesign.com to find a CSIP or CSTC closest to you.
- CIRRUS Owners and Pilots Association (COPA). COPA organizes CIRRUS Pilots Proficiency Programs (CPPP) events during the year in many locations throughout the country. Go to www.cirruspilots.org for more information.

Section 4

Standard Operating Procedures

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4.1 Introduction

This section describes the Standard Operating Procedures (SOP's) recommended when operating the CIRRUS aircraft. These procedures serve as a framework for aircraft management and pilot decision making. The standard operating procedures were created and are used by pilots at CIRRUS Design. The procedures are considered the best operating procedures for the CIRRUS SR20 aircraft; however CIRRUS recognizes there are other procedures and ways to complete a particular task in the aircraft.

This section outlines proper checklist procedures, aircraft configuration, avionics setup and execution for the various phases of flight, including instrument approach procedures.

Utilizing these standard operating procedures will enhance the situational awareness of the pilot, in both single pilot and crew situations. Adhering to these procedures allows the pilot to take full advantage of all of the aircraft's capabilities while maintaining a high level of safety.

Note: These operating procedures are advisory only and do not supersede the procedures or limitations outlined in the POH or the operating handbook for each piece of equipment.

4.2 Checklists

Standard Operating Procedures (SOP's) are heavily dependent on the effective use of checklists. When used properly, checklists serve several functions. Checklists enhance safety of flight by confirming the aircraft is appropriately configured for the flight condition. At the same time, checklists expedite the completion of procedures that are necessary to transition to subsequent phases of flight.

The electronic checklist in the MFD should be used anytime the MFD is running. Using the electronic checklist will help keep the cockpit organized and functional. Use a paper checklist whenever the MFD electronic checklist is not available.

4.2.1 Classification of Checklists

All checklist procedures can be assigned one of three classifications:

Normal Procedures: Procedures used during normal flight operations.

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Abnormal Procedures: Procedures used in response to system failures and malfunctions that, while not immediately threatening, may affect safety of flight if not addressed.

Emergency Procedures: Procedures used in response to system failures and malfunctions that are an immediate threat to the safety of flight. Emergencies require immediate action by the flight crew to ensure a safe outcome.

4.2.2 Checklist Completion for Normal Procedures

Normal procedure checklists can be appropriately completed by using one of the following two methods. The appropriate method of checklist completion for each normal procedure is indicated in this section.

Do-List: A do-list is a checklist which is executed in a conventional manner of reading the checklist item and selecting the appropriate condition of the item. Do-lists are used when procedure sequence and/or item condition is critical to completion of the procedure.

Flow Pattern: Flow patterns take a do and verify approach to checklist completion. The term “flow pattern” refers to the path through the cockpit the pilot moves along during the execution of the checklist. The items and their conditions are memorized and executed without reference to the written checklist. Following completion of the flow pattern, the checklist is immediately referenced to ensure procedure completion.

UNDER NO CIRCUMSTANCE SHOULD A NORMAL PROCEDURE BE COMPLETED SOLELY FROM MEMORY! When used properly, flow patterns allow timely configuration of the aircraft for the appropriate flight condition. Flow patterns are used when procedure sequence and aircraft condition is not critical and there is an operational advantage to executing the checklist items and verifying with the written checklist when cockpit work load permits.

4.2.3 Checklist Completion for Abnormal Procedures

Checklists which do not contain memory items are abnormal procedures. Completion of abnormal procedures should be done using the do-list method. The checklist should be directly referred to and each item should be completed in the order prescribed.

4.2.4 Checklist Completion for Emergency Procedures

Emergency checklists should be completed as a flow pattern from memory. Execution of these procedures is considered time critical and is done without reference to a checklist. The checklist should only be referenced during an emergency if time permits.

4.3 Single Pilot Operations

Single Pilot Resource Management (SRM) – The art and science of managing all the resources (both on-board the aircraft and from outside sources) available to a single-pilot (prior and during flight) to ensure that the successful outcome of the flight is never in doubt.

The majority of CIRRUS aircraft operations are conducted single pilot. The work load associated with configuring and monitoring avionics, communicating with air traffic control, and decision making can be overwhelming at times. The following SRM procedures have been adapted from cockpit procedures common to dual pilot transport category aircraft.

As a Part 91 operator a great deal of latitude exists for how you manage and operate your aircraft. To ensure the highest levels of safety it is strongly recommended that these single pilot operating procedures be incorporated into how you operate your aircraft.

4.3.1 Cockpit Organization

The task of cockpit organization is a task which is constantly recurring in all phases of flight, from the preflight to the postflight. The following are guidelines to create an organized and efficient cockpit.

4.3.2 Aeronautical Charts

The appropriate flight data should be organized in a way that will allow immediate access to the chart pertaining to the current flight condition. Additional charts should be made available should the need arise to proceed via alternate routing or to an alternate destination.

The CMax approach charts in the MFD will reduce work load and clutter in the cockpit. Verify the CMax database is current and available.

Users of electronic flight data systems should ensure that the chart data is current for the flight to be conducted and that the appropriate charts can be called from the database. Users of such systems should ensure that power will be available to the device for the duration of the flight. Battery power should only be used in the event of an onboard system malfunction.

4.3.3 Radio Tuning and Communication

To avoid confusion in flight with regard to radio frequencies the following frequency configuration is recommended:

Nav/Comm 1:

Comm Primary communication frequencies (Tower, Approach/Departure, Center, CTAF/UNICOM)
Nav Select appropriate VLOC or GPS course-verify CDI indications

Nav/Comm 2:

Comm Secondary communication frequencies (Clearance Delivery, Ground, Flight Service, CTAF/UNICOM)
Nav Select appropriate VLOC or GPS course-verify CDI indications

4.3.4 Autopilot

The use of any automatic flight control system should not be substituted for pilot proficiency and currency. It is, however, a tool available to manage the work load associated with normal and abnormal flight operations. When using the autopilot it is important to monitor the aircraft for any abnormal conditions which may develop and to ensure that the limitations associated with the operation of the automatic flight control system are observed.

Note: Both the lateral and vertical modes of navigation should be used together anytime the autopilot is in use. Using a lateral mode (HDG, NAV) with no vertical mode (ALT, VS) may create confusion in the cockpit and should be avoided.

There are three levels of automation that may be used when flying a CIRRUS aircraft. Listed below are the three levels, a brief description, and recommended usage.

Level	Description	Usage
Pilot Controlled	Autopilot Off Flight Director Off	During periods of light work load. Use to help maintain and build flight proficiency. (Initial climb, cruise, initial descent)
*Pilot Controlled / FD Guidance	Autopilot Off Flight Director On	During periods of work load that allow the proper mode selection on the autopilot and PFD. Use for increased situational awareness during all phases of flights (climb cruise, descent, instrument approach procedures)
Autopilot Control (Pilot oversight)	Autopilot On Flight Director On	During periods of high work load (Completing checklists, briefing approaches, flight plan modifications, reducing fatigue on extended flights, disorientation, abnormal situations as appropriate)

*The flight director is subject to the same limitations as the autopilot.

4.3.5 Stabilized Approach Criteria

A stabilized approach is critical to a safe successful landing. If a stabilized approach is not attained by 200 ft. AGL a go-around must be executed.

The criteria for a stabilized approach include:

- Proper airspeed
- Correct flight path
- Correct landing configuration
- Power setting appropriate for aircraft configuration
- Sink rate is not abnormal
- All checklists are complete

4.3.6 In-Flight Briefings

In-flight briefings are a conscious situational review of the operation which is about to be conducted and are also a planning tool for abnormalities and emergencies which may occur during high work load and time critical periods in the cockpit. A proper approach briefing is crucial for a successful outcome of that procedure. Follow the guide below for a recommended approach briefing.

- Standard Terminal Arrival Procedure (STAR) if applicable
- Approach procedure
    - Type of procedure
    - Transition to final course (IAF or vectors to final)
    - Approach frequencies
    - Inbound course
    - Target airspeed
    - Flap setting
    - Stepdown fixes
    - Final approach fix
    - Missed approach point
    - DH/MDA Altitude
    - Missed approach procedure

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4.6 SR20 Flight Profiles and Avionics Standardization

4.6.1 Introduction

This section outlines the best operating procedures for proper checklist usage, aircraft configuration, avionics setup, execution, and considerations for normal operations in a CIRRUS SR20. These procedures serve as a framework for standards to enhance the situational awareness and reduce the work load of the pilot. The operating procedures outlined reflect a fully loaded CIRRUS SR20.

Standardization does not replace pilot proficiency that comes from continual practice, quality instruction and recurrent training by a CSIP instructor.

The standardization given does not address all the functions or capabilities of your avionics, only the common features. Consult the pilots guide for that piece of equipment or aircraft pilots operating handbook for specific functions or capabilities of the avionics.

Note: These operating procedures are advisory only and do not supersede the procedures or limitations outlined in the POH or the operating handbook for each piece of equipment.

In each area of operation you will see the following:

- *Checklist:* Covers checklist items that must be accomplished throughout the flight segment / maneuver event
- *Aircraft Configuration:* Covers the proper aircraft configurations for a specific flight segment / maneuver including airspeeds, power settings, and flap configurations. Power settings are given in percent power and manifold pressure. Percent power should be the primary source of power information when available and displayed on the PFD. Power settings may vary from recommended due to changing flight conditions. Percent power may change +/- 10% and manifold pressure may change +/-2 inches. The suggested power settings should be used as a starting point and power should be adjusted as necessary to attain the appropriate airspeed.
- *Avionics Setup and Execution:* Covers the preferred set up for the individual avionics, and the proper step by step execution of the flight segment / maneuver.
- *Considerations:* Covers important information regarding special emphasis areas helpful hints and common user errors to help prevent loss of situation awareness, automation surprise, or an unsuccessful outcome of the flight segment / maneuver.

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Reference Materials
The manuals listed below will be referenced in the document. Please refer to these manuals for more information regarding procedures outlined in Section 3.6.

- SR20 Pilot Operating Handbook (POH)
- PFD manual
- MFD manual
- S-Tec 55X Autopilot manual
- TAWS manual
- SR20 Training Guide

The avionics standardization manual for each in-flight procedure assumes the highest level of automation (autopilot controlled) is used. The level of automation for each phase and maneuver can be adjusted for personal preference. A combination of all three levels should be used during a single flight to maintain and build flight proficiency.

4.6.2 Before Starting Engine

Checklist

- Use the paper checklist to complete the Before Start checklist items as a do-list prior to engine start.

Aircraft Configuration

- The aircraft should be configured as specified in the Before Starting checklist.

Avionics Setup and Execution

- Avionics should be off for this flight segment.

Considerations

- Consider all items that should be included in a proper and legal passenger brief.
    - CAPS
    - Seatbelts
    - Emergency exits and Hammer
    - Fire extinguisher
    - No Smoking

4.6.3 Engine Start

Checklist

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- Use the paper checklist to complete the Engine Start checklist items as a do-list after starting the engine.

Aircraft Configuration
- The aircraft should be configured as specified in the aircraft checklist.
- The starting procedure will vary based on the current conditions. (normal, hot, flooded) See the Normal Procedures section of the POH for proper starting procedures.

Avionics Setup and Execution
- Avionics will be turned on after the engine has been started.
- Use the electronic checklists once the MFD has been initialized.

Considerations
- Avionics should be off during the engine start.
- See the Normal Procedures section POH for proper priming and engine start procedures.
- Do not overprime the engine.
- Limit cranking interval to 20 seconds with a 20 second cooling period.

4.6.4 Before Taxi

Checklist
- Use a flow pattern to complete the items in the Before taxi checklist before the aircraft is taxied. Reference the electronic checklist after completing the flow pattern to verify the checklist is complete.

Aircraft Configuration
- The aircraft should be configured as specified in the Before Taxi checklist.

Avionics Setup and Execution
MFD
- Verify the MFD databases are current and push any side bezel key.
- Enter the appropriate fuel into the fuel page.
- Scroll the Checklist page and select the Before Taxi and After Taxi checklist.

Garmin 1
- Verify the Garmin database is current and press the ENT button.

- Verify the Garmin self test is correct by comparing the criteria on the Garmin self test page to the navigation information displayed on the PFD HSI. Push the ENT button once more to initialize the Garmin.
- Use the Nav Frequencies page (NAV 5) to select the appropriate Comm 1 frequencies (Approach and Tower).
- Press the FLT button to enter the appropriate departure procedure, waypoints, navaids and airports for the intended flight into the flight plan and verify the information is transferred to the PFD HSI and MFD.
- Select the Default Nav (NAV 1) page after the frequencies and navigation has been entered.

Garmin 2

- Follow the same initialization steps outline for Garmin 1.
- Use the Nav Frequencies page (NAV 5) to select the appropriate Comm 2 frequencies (ATIS / AWOS, ground clearance delivery).
- Verify the Flight Plan waypoints were cross-filled from Garmin 1.
- Select the Traffic Avoidance page (NAV 3) after the navigation and communication has been entered.

Comm 1

- Enter the appropriate tower, departure or CTAF frequencies into Comm 1. Frequencies can be obtained from the Garmin 1 Frequencies page (NAV 5).
- Verify and adjust the Comm 1 volume by selecting Comm 1 MIC on the audio panel and pushing in the Comm 1 squelch.

Comm 2

- Enter the appropriate ATIS / AWOS, Clearance Delivery and Ground frequencies into Comm 2. Frequencies can be obtained from the Garmin 2 Frequencies page (NAV 5).
- Verify and adjust the Comm 2 volume by selecting Comm 2 MIC on the audio panel and pushing in the Comm 2 squelch.

Audio Panel

- Select Comm 1 or 2 for the desired frequencies by pressing the Comm 1 or Comm 2 MIC buttons.

MFD

- Select the CMax airport diagram page for situational awareness on the ground after the Before taxi checklist is complete.

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PFD
- Verify the PFD is aligned with no flags.

Note: A red 'X' will be present over the HSI until navigation is entered into Garmin 1.

- Verify the active waypoint, Desired Track (DTK) and distance is correct.

Autopilot / Flight Director
- Verify autopilot is initialized noted by the A/P RDY annunciator on the PFD and the RDY annunciator on the autopilot.
- An autopilot test should be conducted if planning to use the autopilot in flight. See the S-Tec 55X or appropriate manual for preflight autopilot test procedures.

Transponder
- Verify the Transponder is in Standby (STBY) and the assigned squawk code is entered.

Considerations
- Consider the hazards of flying with expired MFD and Garmin databases.
- Be careful to enter the correct amount of fuel into the MFD fuel page. Most discrepancies in the MFD fuel planning can be traced back to the pilot not entering the correct amount of fuel during the MFD initialization.
- Adjust the MFD map page range into 1 NM to increase situational awareness on the airport if the aircraft is not equipped with CMax.

4.6.5 Taxiing

Checklist
- Use a flow pattern to complete the items in the Taxiing checklist during the taxi. Reference the electronic checklist after completing the flow pattern to verify the checklist is complete. Stop the aircraft prior to referencing the electronic checklist.

Aircraft configuration
- The aircraft should be configured as specified in the Taxiing checklist.

Avionics Setup and Execution

MFD

- Maintain situational awareness on the airport with the help of the CMax airport diagram.

PFD

- Cross reference the PFD airspeed to the standby airspeed indicator.
- Cross reference the PFD altimeter to the standby altimeter.
- Cross reference the PFD attitude indicator to the standby attitude indicator.
- Cross reference the PFD heading to the magnetic compass.
- Verify the turn coordinator is functioning.

Comm 2

- Monitor and comply with ground control clearances.

Considerations

NOTE: Because CIRRUS aircraft rely on differential braking for directional control while taxiing, proper braking practices are important.

A cause of brake failure is the creation of excessive heat through improper braking practices. Riding the brakes while taxiing causes a continuous build up of energy which may lead to excessive heat. Excessive heat causes warped brake rotors, damaged or glazed linings, damaged o-rings, and vaporized brake fluid. To avoid brake failure, please observe the following operating and maintenance practices:

- Use only as much power (throttle) as is necessary to achieve forward movement.
- Avoid unnecessary high speed taxiing. High speed taxiing will result in excessive demands on the brakes, increased brake wear and the possibility of brake failure.
- Use the minimum necessary brake application to achieve directional control.
- Do not ride the brakes. Pilots should consciously remove pressure from the brakes while taxiing. Failure to do so results in excessive heat, premature brake wear, and increased possibility of brake failure.
- Refer to the maintenance manual or Handling, Service and maintenance section of the POH for recommended maintenance and inspection intervals for brakes.
- Refer to Normal Procedures section of the POH for preflight inspection of wheels and brakes.

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BRAKE FAILURE WILL RESULT IN LOSS OF DIRECTIONAL CONTROL AND POSSIBLE AIRCRAFT DAMAGE OR PERSONAL INJURY.

4.6.6 Before Takeoff

Checklist

- The Before Takeoff checklist should be completed as a flow pattern at the end of the runway or appropriate run-up area on the airport. Reference the electronic checklist to verify the checklist is complete.

Aircraft Configuration

- Boost pump on
- Mixture full rich
- Flaps 50%
- Landing light on
- Pitot heat as required
    - (pitot heat should be used when flying in visible moisture)

Avionics Setup and Execution

Transponder

- Verify assigned ATC squawk code

Autopilot / Flight Director

- Verify disconnected and ready

Garmin 1

- Default Nav (Nav 1)
- Verify GPS or VLOC mode is selected for desired or assigned navigation.

Garmin 2

- Traffic Avoidance page (Nav 3)
- Verify the GPS or VLOC is selected for desired or assigned navigation.

Audio Panel

- Select Comm 1 with the appropriate tower with the assigned departure frequency in standby.

MFD

- Select the Engine page to monitor the engine during the takeoff and initial climb.

PFD

- Set the HDG bug to the runway heading or initial heading assigned by ATC.
- ALT bug set to the initial altitude assigned by ATC or desired cruise altitude.
- VS bug set to the desired climb rate.
- Set the Baro Set to the local setting or known field elevation.
- HSI set to 360º with or without the moving map overlay.
- Select the desired mode of navigation either GPS 1 or VLOC 1.
- Verify desired course is selected.
- Bearing and Aux functions off.

Considerations

A takeoff briefing should be completed prior to every departure to ensure the highest level of safety is achieved by enhancing your situational awareness for this critical phase of flight. The takeoff briefing should include the following elements:

- Runway length
- Runway conditions
- Takeoff distance
- Initial heading
- Initial altitude
- Departure procedures
    - Instrument DP's
    - Noise Abatement
- Emergency procedures

Sample Takeoff Briefing: "We're holding short of runway ___ for takeoff. The available takeoff distance for this runway is _____ and we have a takeoff distance of _____. Initial heading and altitude as assigned by ATC. In the event of a loss of directional control, annunciator illumination, engine failure or system malfunction prior to V_R I will abort the takeoff. If an engine failure occurs after V_R we will land the airplane straight ahead, maneuvering around obstacles as necessary. Any other malfunction after V_R we will plan to return to runway ___ for a visual / instrument approach."

The potential for an aborted takeoff should be considered before every takeoff, and the actions taken decided prior to beginning the takeoff roll.

- Reference the Normal Procedures of the POH for cold and hot weather operations

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- Alternator 2 comes online at approximately 1700rpm.

Note: If Alternator 2 is not online at 1700rpm increase the RPM up to 2200 to verify it is functioning properly

- Setting up all the PFD bugs prior to takeoff for the autopilot will greatly reduce the cockpit work load once airborne.
- Doors should be verified closed prior to departure. It is easier to close the doors with the power at idle and little slipstream over the doors.

4.6.7 Takeoff

Checklist

- The Takeoff checklist should be reference prior to takeoff as a do-list. The Takeoff checklist can be used to assist the takeoff briefing.

Aircraft Configuration

- Aircraft should be configured as specified in the Before Takeoff checklist
    - Flaps 50%
    - Full Power
    - Boost pump on
    - Mixture full rich

Avionics Setup and Execution

- All avionics should be configured as described above in the Section 4.6.5
- The recommended flap setting for takeoff is 50%. However, takeoffs are approved with 50% or 0% flaps.
- Discontinue the takeoff roll at any sign of a rough engine or sluggish acceleration. Consider the amount of runway remaining for stopping distance.

Normal/Crosswind Takeoff

- Flaps 50%
- Rotate at Vr (67 KIAS with 50% flaps)
- Retract flaps to 0% after
    - 85 KAIS
    - Positive rate of climb
    - Clear of obstacles and terrain
- Pitch for Vy (91-96 KIAS) or a cruise climb speed (95 -105 KIAS)
- Above 1000’ AGL complete Climb checklist

Note: If warm or hot fuel is suspected leave the boost pump on above 6000' pressure altitude.

Short Field Takeoff

- Flaps 50%
- Rotate at Vr (65 KIAS)
- Pitch for Vx (75 KIAS) until over obstacle
- Reduce pitch to regain airspeed
- Retract flaps to 0% after
    - Above 85 KIAS
    - Clear of obstacles and terrain
    - Positive rate of climb
- Pitch for Vy (91-96 KIAS) or a cruise climb speed (95-105 KIAS)
- Above 1000' AGL complete Climb checklist

Soft Field Takeoff

- Flaps 50%
- Hold back pressure through the takeoff roll to remove the weight off the nose wheel. Gradually decrease the backpressure to maintain the same angle of attack through the takeoff roll until the aircraft is airborne
- Maintain ground effect until Vx (81-85 KIAS) or Vy (91-96 KIAS)
- Climb out at Vx or Vy
- Retract flaps to 0% after
    - 85 KIAS
    - Clear of obstacles and terrain
    - Positive rate of climb
- Pitch for Vy (91-96 KIAS) or a cruise climb speed (95-105 KIAS)
- Above 1000' AGL complete Climb checklist.

Considerations

- Reference the Normal Procedures section of the POH for recommended maximum power leaning procedures for takeoffs at higher pressure altitudes.
- Use all available runway when able
- Recommended runway length is 2.5 times the calculated takeoff distance.
- Consider the effects that weight, CG, density altitude, runway surface, runway condition, runway slope, and wind have on the takeoff distance.

4.6.8 Climb

Checklist

- The Climb checklist should be completed as a flow pattern at 1000 AGL. Reference the electronic checklist to verify all items are completed when time and work load permits.

Aircraft Configuration

- Retract flaps to 0% after
    - 85 KIAS
    - Clear of obstacles and terrain
    - Positive rate of climb
- Climb at Vy (91-96 KIAS) if no obstacle is present.
- Climb at Vx (81-85 KIAS) to clear an obstacle.
- Transition to cruise climb when desired (95-105 KIAS).
- Autopilot may be engaged above 400 AGL.

Avionics Setup and Execution

PFD

- Adjust HDG bug to assigned ATC vector or desired heading.
- Adjust ALT and VS bugs for the desired or assigned altitude and rate of climb.

MFD

- Use the electronic checklist to verify the Climb checklist is complete. Once complete, setup the Cruise checklist to have it readily available when needed.
- Select the Map page when completed with the Climb checklist for increased situational awareness.
- TAWS page maybe referenced during the climb to ensure proper terrain and obstacle clearance.

Autopilot / Flight Director

Note: Autopilot may be engaged after 400 AGL

- To engage the Flight Director only push the AP Off / FD On button prior to pressing the buttons on the autopilot

- To engage the heading mode verify the HDG bug on the PFD is set to the desired heading and push the HDG button

- To use the autopilot to navigate a GPS course push the NAV button twice to select GPS Steer.

- To use the autopilot to navigate a VOR course push the NAV button once.

Note: GPS Steer is used to track any GPS course or flight plan.

Note: Always verify the navigation has been set as desired prior to engaging any navigation modes.

- To intercept a course at an angle other then a 45º angle, set the HDG bug on the PFD to the desired intercept heading and arm the navigation mode.
    - Set the desired intercept heading in the PFD heading bug.
    - While holding the HDG button press the NAV button twice to arm the GPS Steer navigation mode.

Note: A HDG or NAV mode must be selected prior to engaging an ALT or VS mode.

- Verify the PFD ALT and VS bugs are set to what is desired and engage the altitude pre-select.
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

Caution: Hitting the ALT button will capture the aircraft's current altitude, reset the ALT bug and set the VS bug to 0 fpm.

Note: The altitude pre-select will taper off the climb or descent rate when the aircraft approaches the selected altitude for a smooth level off.

Note: The altitude and vertical speed bugs can be changed while the altitude pre-select is engage and the autopilot will follow where the bug have been moved. Once the autopilot captures the selected altitude the VS bug goes to 0 fpm. To change altitudes reset the PFD ALT and VS bugs and engage the altitude pre-select.

Caution: Always monitor and verify the autopilot has been engaged properly and is functioning as desired. Disengage the autopilot anytime it is not functioning as desired or expected.

Garmin 1
- Modify the flight plan or select Direct-To as desired or instructed by ATC.
- Tune and identify VOR frequencies as needed in the active NAV 1 slot.

Garmin 2
- Monitor for traffic on the Traffic Avoidance page (NAV 3).

Considerations
- Adjust the climb airspeed as desired for engine cooling, visibility and climb rate.
- Follow the recommended climb lean procedures during the climb. See the Normal Procedures Section of the POH for leaning during the climb procedures.
- Do not press the ALT button before the VS when attempting to engage the altitude pre-select. Pressing the ALT button first will cause the autopilot to capture the aircraft's current altitude, reset the autopilot bug and reset the VS bug to 0 fpm. This will cause 'automation surprise'. The autopilot should be disconnected and hand flown until the PFD bugs can be reset and the autopilot re-engaged.

4.6.9 Cruise

Checklist
- Complete the Climb checklist upon reaching the desired or assigned cruise altitude as a flow pattern. Reference the electronic checklist to verify all items are complete.

Aircraft Configuration
- Configure the aircraft as specified in the Cruise checklist.
- Adjust the power to the desired percent power setting.
- Adjust the mixture as specified in the MFD manual.
- Monitor the fuel flow and quantity to ensure adequate fuel to reach the intended destination and/or alternate.
- Monitor the fuel balance and switch tanks as appropriate to remain within the 7.5 gallon max fuel imbalance.

Avionics Setup and Execution

PFD

- Monitor the PFD for time, distance and navigation to the next waypoint.
- Adjust the ALT and VS bugs for any assigned or desired altitude changes.

MFD

- Use the Engine page for setting the desired cruise power.
- Use the Lean Assist on the Engine page for assistance on leaning the engine for cruise. See the MFD manual for proper leaning procedures.
- Reference the electronic checklist to verify all items of the Cruise checklist are complete. Set up the Descent checklist to reduce future cockpit work load.
- Reference the TAWS page for obstacle and terrain awareness.
- Reference the Map page for positional awareness.

Note: Data blocks on the map page can display a variety of useful information that can be customized for personal preferences. See the MFD manual for information on how to customize the information displayed on the MFD Map page.

- The Trip page displays useful flight plan information such as:
    - Fuel information.
    - ETE and ETA for each waypoint in the flight plan.
    - Weather information for enroute and destination waypoints.

Autopilot / Flight Director

- To engage the Flight Director push the AP Off / FD On button prior to pressing the buttons on the autopilot.
- Use the HDG, NAV, NAV GPS Steer, ALT and VS to control the aircraft on the desired or assigned heading, course and altitude. Always verify the PFD and autopilot annunciator panel to ensure the desired modes have been engaged. This will reduce what is known as ‘automation surprise’.
- Monitor flight instrument to ensure the autopilot is doing what is expected and desired.

XM Radio

- XM Radio can make any flight more relaxing and enjoyable. XM radio should not be used during periods of high work load and/or critical phases of flight (takeoff, initial climb, descent and landing).

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Garmin 1

- Modify flight plan as desired or assigned by ATC.
- Tune and identify VOR frequencies for VLOC navigation if required.
- Use the Vertical Navigation (VNAV) function (NAV 8) for descent planning into the destination. Set up the desired VNAV profile for accurate descent information. See the Garmin manual for information on VNAV

Garmin 2

- Monitor for traffic on the Traffic Avoidance page (NAV 3).
- Setup Ground Control and ATIS / AWOS frequencies for the destination or desired enroute airports. Comm 2 should be used for any additional communication with a FSS or Flight Watch frequency.

Consideration

- Closely monitor fuel information to ensure adequate fuel remaining to reach the destination and or alternate if required.

Note: Plan B should be determined and executed if there will not be enough fuel remaining to reach the intended destination and/or alternate airport. Plan B may consist of a diversion, change of altitude or power setting or a combination of the three options.

Note: Determine your personal minimum fuel reserve. Personal fuel minimums may exceed FAA minimums requirements. See Section 5 of the Customer Training Guide for information in the creation of personal minimums

- Monitor engine and electrical information on the MFD or the analog instruments
- In VFR conditions, always maintain good collision avoidance with a proper visual scan with the help of the Traffic Avoidance system (Garmin NAV 3).
- Monitor flight instruments closely to ensure the autopilot is doing what is desired and expected.
- Vertical Navigation (VNAV) is a great tool for descent planning that can easily be setup during the cruise phase of flight. Reference the Garmin manual for information on VNAV.
- Monitor ETE to the destination and allow adequate time to prepare for the descent to landing and possible instrument approach procedure.

- Planning the descent to landing and an instrument approach during the cruise segment will greatly reduce the cockpit work load for the arrival into the destination and will greatly increase the safety of every flight.

4.6.10 Descent

Note: See Section 4.6.14 for set up and execution of instrument approach procedures (IAP).

Checklist

- The Descent checklist should be completed as a flow pattern at the top of the descent into the destination. Reference the electronic checklist to ensure all items on the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed should be adjusted with the throttle lever to allow adequate time to prepare for the approach and landing.
- Adjust the mixture control for the appropriate altitudes throughout the descent.
- Approach flaps (50%) may be used to assist in the loss of altitude in a short period of time (In the case of an ATC 'slamdunk').

Avionics Setup and Execution

PFD

- Adjust the HDG bug for desired or assigned headings.
- Adjust the ALT and VS bugs for desired or assigned altitudes and descent rates.
- Ensure the current altimeter setting is dialed into the Baro Set for the destination.
- The Bearing Pointer and/or Aux function may be used for increased situational awareness.
- Monitor the wind vector throughout the descent and be conscious of any wind shifts.
- Monitor the time and distance to the destination for situational awareness.

MFD

- Use the electronic checklist to complete the Descent checklist after a flow pattern has been used. When the Descent checklist is

completed set up the Before Landing checklist to reduce cockpit work load in the future.
- The Map page for situational awareness, traffic avoidance, engine information and waypoint information.
- Reference the TAWS page for increased obstacle and terrain awareness.
- Reference the CMax page for approach briefing and situational awareness.
    - Auto fill the destination airport
    - Selected desired or assigned approach plate
    - Select day / night view as appropriate
    - Toggle through the different approach plate views by pushing the View button
- Zoom in the range of the map as the aircraft comes closer to the airport. Adjust the range so the destination is at the top of the moving map.

Autopilot / Flight Director
- To engage the Flight Director push the AP Off / FD On button prior to pressing the buttons on the autopilot.
- Use the HDG mode if a heading is desired or assigned by ATC.
- Use the Nav modes if tracking a desired or assigned course to the airport, navaid or instrument approach waypoint.

Note: GPS Steer should be selected by hitting the NAV button twice any time tracking a GPS course.

- Use the VS and ALT buttons to control the descent rate and desired or assigned altitude into the destination.

Garmin 1
- Use the Vertical Navigation page (NAV 8) to help plan descent into the destination.
- Monitor the Default Nav (NAV 1 page) for distance and time information.

Garmin 2

- Monitor traffic using the Traffic Avoidance (NAV 3 page).

Considerations

- Descent planning should be completed prior to the top of descent.
- Approach Briefing: The approach briefing should include some of the following elements:
    - Standard Terminal Arrival Procedure (STAR) if applicable
    - Approach procedure
        - Type of procedure
        - Transition to final course (IAF or vectors)
        - Approach frequencies
        - Inbound course
        - Target airspeed
        - Flap setting
        - Stepdown fixes
        - Final approach fix
        - Missed approach point
        - DH/MDA Altitude
        - Missed approach procedure

- Proper preparation and setup for an approach and landing into an airport are critical for a successful outcome for every flight. Always monitor the ETE and allow enough time to complete all necessary duties prior to the arrival at the destination.
- Using the autopilot can greatly reduce the cockpit work load and increase the safety of flight. However, do not let the autopilot degrade your flight proficiency. Hand flying whenever possible will help maintain and build flight proficiency.

4.6.11 Before Landing

Checklist

- The Before Landing checklist should be completed as a flow pattern on the downwind leg of VFR traffic pattern or 2 NM before the final approach fix (FAF) during an instrument approach procedure. The electronic checklist should be referenced to verify all the items of the checklist are complete.

Aircraft Configuration

- The aircraft should be configured for landing as specified in the Before Landing checklist.

Note: See the section below for information on VFR traffic patterns, normal landings, short field landings, soft field landings, 50% flap landings and 0% flap landings.

- Power as required for airspeed
- Flaps 100% before landing
- Mixture as required for altitude
- Boost pump on
- Landing light on
- Autopilot Off

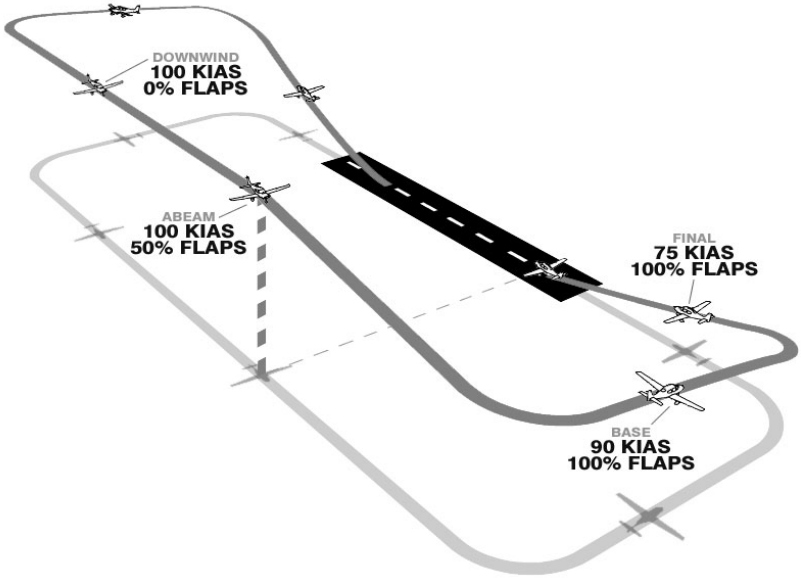
Avionics Setup and Execution
Autopilot / Flight Director

- Disconnect autopilot and flight director prior to landing. To disconnect the autopilot press and hold the A/P disconnect button on the control yoke

MFD

- Continue to monitor the Map page for situational and traffic awareness

VFR Traffic Pattern



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- Entry
  - 100 KIAS
  - 40% Power / 20” MP (approximately)
  - Before Landing checklist complete
- Downwind
  - 100 KIAS
  - 40% Power / 20” MP (approximately)
  - Flaps 0%
- Abeam Touchdown Zone
  - 100 KIAS
  - 20% Power / 12’ MP (approximately)
  - Flaps: 50%
- Base
  - 90 KIAS
  - 20 % Power / 12” MP (approximately)
  - Flaps: 100%
- Final
  - Airspeed: 75 knots
  - Power as required

Note: Aircraft configuration may be adjusted for abnormal patterns or straight in approach to landing. The suggested power settings may change to accommodate different variables. Aircraft should be configured and stabilized for landing no lower than 200ft AGL. See stabilized approach criteria in Section 4.3.5

Landing Section

Normal/Crosswind Landing

- Final Speed
  - 100% Flaps 75 KIAS
  - 50% Flaps 80 KIAS
  - 0% Flaps 85 KIAS
- Avoid prolonged slips, per the Normal Procedures section of the POH.

Short Field Landing

- Final Speed 75KIAS
- Flaps 100%

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Soft Field Landing

- Follow the normal / crosswind landing procedures while, holding the nosewheel off the ground during and after touchdown off to reduce pressure on the nose gear.

Stop and Go / Touch and Go

For executing a Stop and Go / Touch and Go be sure the following criteria is met prior to adding power for the takeoff

- Flaps 50%
- Aircraft is stabilized on the runway centerline
- Sufficient runway remains for a safe takeoff and departure

Note: The aircraft may or may not be trimmed for a normal takeoff when executing a stop and go / touch and go. Be very conscious of rotation speeds and pitch attitudes during the takeoff roll and climb. Re-trim the aircraft when time permits.

Go-Around/Balked Landing

- A go around/balked landing may be executed at any point during the approach to landing.
- Smoothly apply maximum power, level the wings and transition to a pitch attitude that will slow or stop the descent.
- After the descent has stopped reduce flaps 50%.
- Pitch for Vy (91-96 KIAS)
- Retract flaps to 0% after
    - 85 KIAS
    - Clear of obstacles and terrain
    - Positive rate of climb

Considerations

- A stabilized approach is crucial for a safe landing. See Section 4.3.5 for stabilized approach criteria.
- A go around/balked landing should be executed any time a safe landing is questionable. See above for go around procedures.
- According the Normal Procedures section of the POH, all landings should be made with 100% flaps.
- Landing with 50% or 0% should be made in abnormal situations only. Example, electrical or flap malfunctions when the flaps can not be fully deployed.
- The use of the autopilot should be limited during the final approach. Ensure the autopilot is disconnected prior to landing.

4.6.12 After Landing

Checklist

- Complete the After Landing checklist as a flow pattern after clearing the active runway. Reference the electronic checklist to ensure all items are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the After Landing checklist.
    - Flaps 0%
    - 1000 RPM
    - Transponder will automatically cycle to STBY when below 35 KTS of ground speed
    - Pitot heat off
    - Boost pump off
    - Lights as required

Avionics Setup and Execution

MFD

- Use the electronic checklist to complete the After Landing checklist
- Use the CMax page for situational awareness on the ground during the taxi. The airport diagram will be automatically selected once the aircraft is on the ground. Select the CMax page to view the airport diagram.

Considerations

- Complete the After Landing checklist after clearing the active runway once the aircraft has stopped rolling to maintain directional control during the landing rollout.
- CMax is a valuable tool for increased situational awareness while at an unfamiliar airport.
- See the Section 4.6.5 for proper taxiing and braking procedures

4.6.13 Shutdown

Checklist

- Complete the Shutdown checklist as a do-list using a paper checklist.

Aircraft Configuration

- The aircraft should be configured as specified in the preceding After Landing and Shut Down checklists.
- Chock, tie down, and lock aircraft as desired.

Avionics Setup and Execution

- Avionics should be off for the engine shutdown.

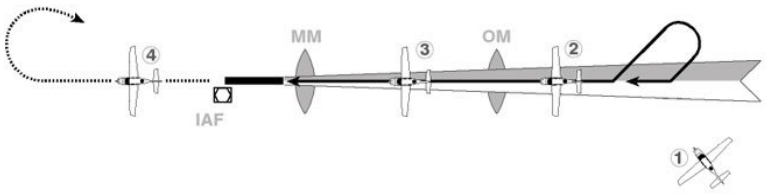
Considerations

- Verify the magnetos are off and the keys are out of the ignition prior to exiting the aircraft.
- Complete a brief post flight walk around inspection to verify the aircraft is in a good working condition for the next flight. The post flight walk around is not to take the place of a thorough preflight inspection for the next flight.
- Close your flight plan if necessary.
- Be sure to remove keys from the ignition after shutdown.

4.6.14 Instrument Approach Procedures

4.6.14.1 ILS Vector to Final

Follow the step by step procedures for executing an ILS using vectors to final. Reference Section 4.6.10 for more information regarding descent procedures.



Step 1 Prior to Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern at the start of the descent prior to the IAF. Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)
- Adjust power as required to manage the airspeed throughout the initial descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, selecting vectors to final as the approach transition.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Flip flop the NAV 1 approach frequency from the standby to the active slot and verify it is correct by comparing it to the approach chart.
- Activate the approach at the start of vectors for the approach (1st assigned heading for approach)

Garmin 2

- Verify the flight plan has cross-filled from Garmin 1.
- Flip flop the approach frequency into the active slot.
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance.

Audio Panel

- Turn on the marker beacons and adjust the sensitivity to high.

PFD

- Adjust the HDG, VS, and ALT bugs as directed by ATC.
- HSI should be coupled to GPS 1.
- Once the approach is activated verify the inbound course is displayed on the HSI.
- Use the Aux function for important approach waypoint information.

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- Monitor wind vector for changing wind conditions throughout the descent.

Autopilot / Flight Director

- To engage the Flight Director, push the AP Off / FD On button prior to pressing the buttons on the autopilot.
- Use the HDG mode once assigned a vector for the approach. Be sure to set the HDG bug on the PFD prior to engaging the HDG mode.
- Use the altitude pre-select to control the assigned altitudes
    - While holding the VS button, press the ALT button to engage the altitude pre-select

    - During the descent the PFD ALT and VS bugs may be changed to adjust for any ATC clearances.
    - Adjust the PFD VS bug to control the descent rate as desired.

    - Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude. This will reduce cockpit work load in the future.

MFD

- Use the CMax charts for briefing the approach
    - Autofill the destination airport
    - Select the desired chart
    - Change the view of the chart for the approach briefing and situational awareness.

    - Use the Map page on to maintain situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Intermediate Segment

Checklist

- Complete the Before Landing checklist prior to the FAF as a flow pattern. Reference the electronic checklist to verify all items are completed.

Aircraft Configuration

- 2 miles outside of FAF
    - Airspeed 100 KIAS
    - 50 % Power / 22'' MP (approximately)
    - Flaps 50%
    - Mixture rich
    - Boost pump on

Avionics Setup and Execution

Garmin 1

- Verify approach is activated
- Tune and identify localizer frequency in the active NAV 1
- The Garmin 430 and PFD HSI will switch from GPS mode to VLOC when the approach is activated and the localizer frequency and signal is valid in the active slot

Note: Always verify the Garmin 430 and HSI switch from GPS to VLOC. The Garmin 430 will flash a message as a reminder to select the correct approach frequency in the event the correct frequency has not been selected.

Autopilot

- On the final intercept vector to final arm the NAV mode.
    - Set the desired intercept heading in the PFD HDG bug.

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- While holding the HDG button press the NAV button once to arm the NAV mode.

- The autopilot will arm the NAV APR mode once the localizer frequency is acquired

- The autopilot will switch from HDG mode to NAV APR mode once the approach course begins to center

- The glideslope (GS) will arm automatically when:
  - The glideslope signal is acquired and valid
  - The autopilot is in the NAV APR ALT mode
  - Within 60% deflection of the glideslope and 50% deflection of the localizer
  - All three above conditions must be met for at least 10 seconds for the glideslope to arm and capture
- Verify the autopilot is in NAV APR ALT mode with the GS armed to ensure all the necessary steps have been taken to set up the system for the approach

Note: The autopilot must be in ALT hold mode for the autopilot to automatically arm and capture the glideslope. To manually arm the glideslope from a VS mode press the ALT button twice. The first ALT push will switch the autopilot from VS to ALT mode; the second ALT push will capture the glideslope.

PFD
- Set the HDG bug as assigned by ATC.
- Set the ALT bug to the decision altitude (DA) once the autopilot captures the glideslope intercept altitude.
- Monitor the AUX function for approach waypoint distance and time information.

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to the glideslope intercept.
- Use the CMax page to review the instrument procedure and for situational awareness
- Use the Map page for situational awareness if CMax is not installed

Garmin 2
- Verify Garmin 2 has switched from GSP mode the VLOC mode

Step 3 Final Approach Segment
Checklist
- No Action

Aircraft Configuration
- Glideslope intercept
    - Airspeed 100 KIAS
    - Flaps 50%
    - 25% Power / 12'' manifold pressure (approximately)
    - Make small power changes to maintain airspeed during the descent on the glideslope
    - Lights as required

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Avionics Setup and Execution
PFD
- Monitor flight and navigation instruments

Autopilot
- Verify the autopilot switches from ALT GS to GS mode

Step 5 Missed Approach Segment
See Section 4.6.14.8 for information on executing a missed approach

ILS Vectors to Final Considerations
- Load the IAP into the active flight plan as soon as the IAP to be used is known.
- Activate vectors to final when ATC assigns the 1st vector for the approach.
- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading once the autopilot is set to NAV APR mode throughout the approach.
- The HSI view may be changed to the 120º view forward without the moving map if desired.
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

- Always verify the Garmin 430 and HSI switch from GPS to VLOC. The Garmin 430 will flash a message as a reminder to select the correct approach frequency in the event the correct frequency has not been selected.
- Missed approach should be executed any time the:

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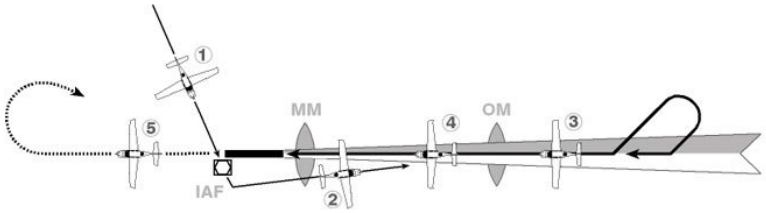
- Visibility is below what is required by the IAP.
- Runway environment is not in sight at DH.
- Aircraft is not in a position to make a normal landing.
- Course deviation indicator goes full scale deflection anytime during the final approach segment.

- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time

4.6.14.2 ILS Full Procedure

Follow the step by step procedures for executing a full procedure ILS. Reference Section 4.6.10 for more information on descent procedures



Step 1 Prior to Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern at the top of the descent prior to the initial approach fix (IAF). Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)
- Power as required to manage the airspeed through the initial descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, selecting the assigned IAF.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Flip flop the approach frequency into NAV 1 from the standby to the active slot and verify it is correct by comparing it to the approach chart.
- Activate the approach when cleared to the IAF.

Audio Panel

- Turn on the Marker Beacons and adjust to high sensitivity.

Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1.
- Flip flop the approach frequency into the active slot.
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance.

PFD

- Adjust the HDG, VS, and ALT bugs as directed by ATC.
- The HSI should be coupled to GPS 1 until the aircraft is established inbound to the FAF.
- Turn on the Aux function to GPS 1 for important approach waypoint information.
- Monitor wind vector for changing wind conditions throughout the descent.

Autopilot / Flight Director

- To engage the Flight Director only push the AP Off / FD On button prior to pressing the buttons on the autopilot.
- Use the NAV GPSS mode for navigation once cleared to the IAF.

- Use the altitude pre-select to control the altitude to the assigned altitude for the approach.

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- While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement

- The PFD ALT and VS bugs may be changed to adjust for any ATC clearances, during the descent
- Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude to reduce cockpit work load.

MFD

- Use the CMax charts for briefing the approach.
  - Autofill the destination airport.
  - Select the desired chart.
  - Change the view of the chart for the approach briefing and situational awareness.
  - Use the Map page for situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Outbound on the Initial Approach Segment

Checklist

- No action

Aircraft Configuration

- Airspeed 120 KAIS
- 50% Power / 22'' MP (approximately)

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- Make small power changes if required to maintain airspeed during the descent
- Flaps 0%

Avionics Setup and Execution
Garmin 1
- Verify approach is activated
- Tune and identify localizer frequency in the NAV 1 active slot
- The Garmin 430 and PFD HSI will switch from GPS mode to VLOC when the approach is activated and the localizer frequency and signal is acquired and valid in the NAV 1 active slot

Note: Always verify the Garmin 430 and HSI switch from GPS to VLOC. The Garmin 430 will flash a message as a reminder to select the correct approach frequency in the event the correct frequency has not been selected.

Autopilot
- Use the NAV GPSS mode to track outbound for the procedure turn
- Use the HDG mode to execute the procedure turn
- When inbound from the procedure turn waiting for course interception arm the NAV.
    - Set the desired intercept heading in the PFD heading bug.
    - While holding the HDG button press the NAV button once to arm the NAV mode.
- The autopilot will automatically arm the NAV APR mode once the localizer frequency is acquired and valid

- The autopilot will switch from HDG mode to NAV APR mode once the approach course begins to center

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- The glideslope (GS) will arm automatically when:
    - The glideslope signal is acquired and valid
    - The autopilot is in the NAV APR ALT mode
    - Within 60% deflection of the glideslope and 50% deflection of the localizer
    - All three above conditions must be met for at least 10 seconds for the glideslope to arm and capture

- Verify the autopilot is in NAV APR ALT mode with the GS armed to ensure all the necessary steps have been taken to set up the system for the approach

PFD
- Set the ALT bug to the decision altitude (DA) once the autopilot captures the glideslope intercept altitude
- Monitor the AUX function for approach waypoint distance and time information

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to the glideslope intercept.
- Use the CMax page to review the instrument procedure.
- Use the Map or CMax page for situational awareness.

Garmin 2
- Verify Garmin 2 has switched from GPS mode the VLOC mode.

Transponder
- Use the count up timer function of the transponder to time the procedure turn.

Step 3 Intermediate

Checklist

- The Before Landing checklist should be completed prior to the FAF (glideslope intercept). Reference the electronic checklist to verify all the items are completed.

Aircraft Configuration

- 2 Miles outside the FAF
  - Airspeed 100 KIAS
  - 50% Power / 22'' MP (approximately)
  - Flaps 50%
  - Boost pump on
  - Mixture full rich

Avionics Setup and Execution

PFD

- Monitor flight and navigation instruments.

Autopilot

- Verify the NAV APR and ALT GS modes are selected.

Step 4 Final Approach Segment

Checklist

- No Action

Aircraft Configuration

- Glideslope intercept
  - Airspeed 100 KIAS
  - 25% Power / 12'' MP (approximately)
  - Flaps 50%
  - Make small power changes to maintain 100 KIAS during the descent down the glideslope.

Avionics Setup and Execution

PFD

- Monitor flight and navigation instruments.

Autopilot

- Verify the autopilot switches from ALT to GS mode at the glideslope intercept.

Note: The autopilot must be in ALT hold mode for the autopilot to automatically arm and capture the glideslope. To manually arm the glideslope from a VS mode press the ALT button twice. The first ALT push will switch the autopilot from VS to ALT mode; the second ALT push will capture the glideslope.

Step 5 Missed approach segment

See Section 4.6.14.8 for information on executing missed approach procedures.

Full Procedure ILS Considerations

- Load the IAP into the active flight plan as soon as the IAP to be used is known.
- Activate the approach when cleared direct to the IAF.
- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading once the autopilot is set to NAV APR mode throughout the approach.
- The HSI view may be changed to the 120º view forward without the moving map if desired.
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

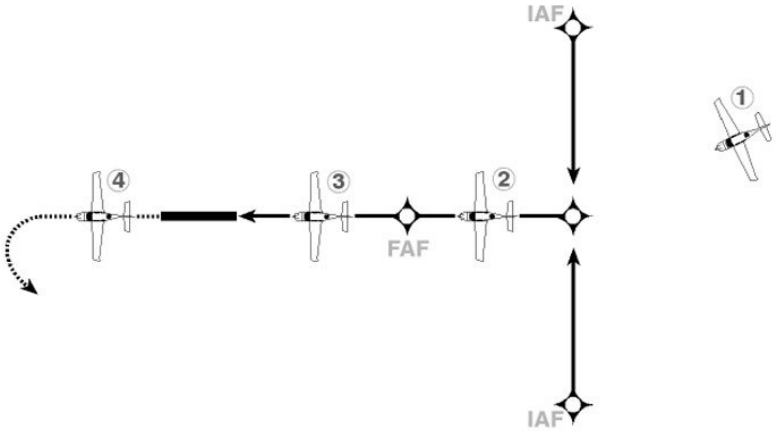
- Always verify the Garmin 430 and HSI switch from GPS to VLOC. The Garmin 430 will flash a message as a reminder to select the

correct approach frequency in the event the correct frequency has not been selected.

- Missed approach should be executed any time the:
  - Visibility is below what is required by the IAP.
  - Runway is not in sight.
  - Aircraft is not in a position to make a normal landing.
  - Course deviation indicator goes full scale deflection anytime during the final approach segment.
- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time.

4.6.14.3 GPS Vector to Final

Follow the step by step procedures for executing a GPS approach using vectors to final. Reference Section 4.6.10 for more information on descent procedures.



Step 1 Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern at the start of the descent. Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)

- Adjust power as required to manage the airspeed throughout the initial descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, selecting vectors to final.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Activate the approach at the start of vectors for the approach (1st assigned heading for approach).

Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance

PFD

- Adjust the HDG, VS, and ALT bugs as directed by ATC
- HSI should be coupled to GPS 1
- Once the approach is activated verify the inbound course is displayed on the HSI
- Monitor wind vector for changing wind conditions throughout the descent

Autopilot / Flight Director

- To engage the Flight Director only push the AP Off / FD On button prior to pressing the buttons on the autopilot
- Use the HDG mode once assigned a vector for the approach. Be sure to set the HDG bug on the PFD prior to engaging the HDG mode
- Use the ALT pre-select to control the assigned altitudes throughout the initial approach segment
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement

- During the descent the ALT and VS bugs may be changed to adjust for any ATC clearances.
- Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude to reduce cockpit work load.

MFD

- Use the CMAX charts for briefing the approach.
  - Autofill the destination airport
  - Select the desired chart
  - Change the view of the chart for the approach briefing and situational awareness.
  - Use the Map page for situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Intermediate Segment

Checklist

- Complete the Before Landing checklist prior to the FAF as a flow pattern. Reference the electronic checklist to verify all items are completed.

Aircraft Configuration

- 2 miles before the FAF
    - Airspeed 100 KIAS
    - 50% Power / 22'' MP (approximately)
    - Flaps 50%

Avionics Setup and Execution

Garmin 1

- Verify approach is activated and RAIM is armed 2 NM prior to the FAF.

Autopilot

- On the final intercept vector to final arm the NAV GPSS mode.
    - While holding the HDG button press the NAV button twice to arm the NAV GPS Steer mode.

- Use a combination of the VS and ALT modes to control the descent throughout the approach
- The descent rate required will vary between approaches. An 800fpm descent is recommended for most descents on a GPS approach

Note: Because the altitude pre-select tapers off the climb or descent rates it is recommended to only use VS until 100' above the desired altitude and then engage the altitude pre-select. This procedure will ensure the aircraft reaches the intended altitude in time.

Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' and 100' altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

PFD

- Set the HDG bug as assigned by ATC.

- Set the ALT bug to the minimum descent altitude (MDA) once the autopilot captures the current selected altitude.

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to the FAF.
- Use the CMax page to review the instrument procedure and maintain situational awareness.
- Use the Map page for situational awareness if CMax is not installed.

Step 3 Final Approach Segment

Checklist
- No Action

Aircraft Configuration
- At the FAF
    - Airspeed 100 KIAS
    - 25% Power / 12'' MP (approximately)
    - Flaps 50%
    - Make small power changes to maintain 100 KIAS during the descent

Avionics Setup and Execution

PFD
- Monitor flight and navigation instruments

Autopilot
- Use NAV GPSS mode for navigation
- Set the VS bug on the PFD to desired descent rate and push VS button to start the descent

Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' and 100'

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altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

- When assured of reaching the MDA in time engage the altitude pre-select.
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

Step 4 Missed Approach Segment
See Section 4.6.14.8 for information on executing missed approach procedures.

GPS Vectors to Final Considerations

- Load the IAP into the active flight plan as soon as the IAP to be used is known.
- Activate vectors to final when ATC assigns the 1st vector for the approach.
- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading once the autopilot is set to NAV GPSS mode throughout the approach
- The HSI view may be changed to the 120º view forward without the moving map if desired
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

- The approach can not be continued unless the GPS switches to Approach mode. (RAIM)
- Missed approach should be executed any time the:
    - Visibility is below what is required by the IAP.

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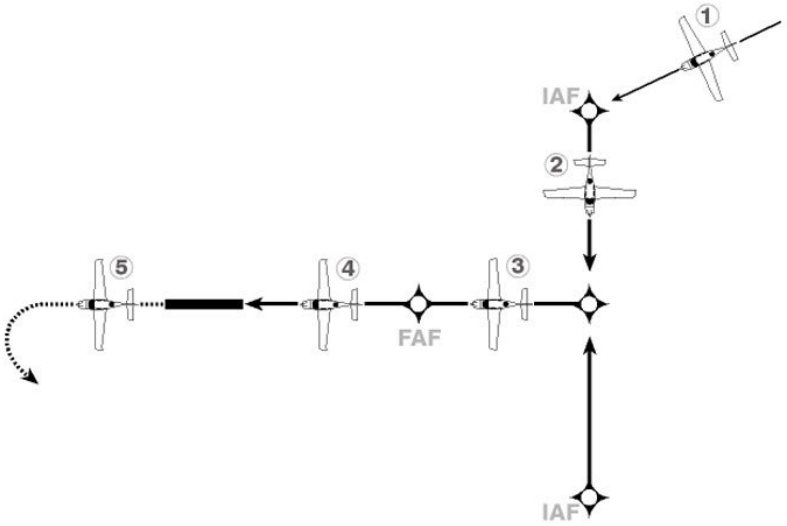
- Runway is not in sight.
- Aircraft is not in a position to make a normal landing.
- Course deviation indicator goes full scale deflection anytime during the final approach segment.

- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time.

4.6.14.4 GPS Full Procedure

Follow the step by step procedures for executing a full procedure GPS approach. Reference Section 4.6.10 for more information on descent procedures



Step 1 Prior to Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern prior to the initial approach fix (IAF). Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)

- Adjust power as required to manage the airspeed during the descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, select the assigned IAF.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Activate the approach when cleared direct to the IAF.

Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1.
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance.

PFD

- Adjust the HDG, VS and ALT bugs as directed by ATC.
- The HSI should be coupled to GPS 1.
- Monitor wind vector for changing wind conditions throughout the descent.

Autopilot / Flight Director

- To engage the Flight Director only push the AP Off / FD On button prior to pressing the buttons on the autopilot.
- Use the NAV GPSS mode for the entire approach.

- Use the altitude pre-select to control the assigned altitudes
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

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- During the descent the ALT and VS bugs may be changed to adjust for any ATC clearances.
- Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude to reduce cockpit work load.

MFD

- Use the CMax charts for briefing the approach.
  - Autofill the destination airport.
  - Select the desired chart.
  - Change the view of the chart for the approach briefing and situational awareness.
  - Use the Map page for situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Initial Approach Segment

Checklist

- Complete the Before Landing checklist prior to the final approach fix as a flow pattern. Reference the electronic checklist to make sure all items are completed.

Aircraft Configuration

- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)
- Make small power changes if required to maintain airspeed during the descent.

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- Flaps 0%

Avionics Setup and Execution
Garmin 1
- Verify the approach is activated.

Autopilot
- Use the NAV GPSS mode for the entire approach.
- Use the ALT and VS modes to control the altitude throughout the approach.

Note: Once the autopilot captures the selected altitude the PFD ALT bug should be changed for the next known altitude and the VS set to the desired descent rate.

PFD
- Set the ALT bug to the minimum descent altitude (MDA) once the autopilot captures the currently selected altitude.

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to FAF.
- Use the CMax page to review the instrument procedure and situational awareness.
- Use the Map page for situational awareness if CMax is not installed.

Step 3 Intermediate
Checklist
- Complete the Before Landing checklist as a flow pattern before the FAF. Reference the electronic checklist to verify all items the have been completed.

Aircraft Configuration
- 2 Miles outside the FAF
    - Airspeed 100 KIAS
    - 50% Power / 22'' MP (approximately)
    - Flaps 50%
    - Boost pump on
    - Mixture full rich

Avionics Setup and Execution
PFD
- Monitor flight and navigation instruments

- Preset up the ALT bug for the MDA or next stepdown fix
- Preset the VS to desired descent rate

Note: The recommended descent rate for a non-precision approach is at least 800fpm but will vary depending on the individual instrument approach procedure

Autopilot
- Verify the NAV GPSS and ALT modes are selected

Step 4 Final Approach Segment
Checklist
- The Before Landing checklist should be completed prior to the final approach segment

Aircraft Configuration
- At the FAF
    - Airspeed 100 KIAS
    - 25% Power / 12'' MP (approximately)
    - Flaps 50%
    - Make small power changes to maintain 100 KIAS during the descent to the MDA

Avionics Setup and Execution
PFD
- Monitor flight and navigation instruments

Autopilot
- Press VS to start the descent to the MDA

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Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' and 100' altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

- Engage the altitude pre-select when assured the aircraft will reach the MDA in time.
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement

Note: the altitude pre-select will taper off the descent rate as the aircraft reaches the pre-selected altitude. The tapering descent rate may prevent the aircraft from reaching the MDA in time. Use the procedure described above to ensure the aircraft reaches the MDA prior to the MAP or visual descent point.

Step 5 Missed approach segment
See Section 4.6.14.8 for information on executing missed approach procedures.

Full Procedure GPS Approach Considerations
- Load the IAP into the active flight plan as soon as the IAP to be used is known.
- Activate the approach when cleared direct to the IAF.
- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading once the autopilot is set to NAV GPSS mode throughout the approach.
- The HSI view may be changed to the 120º view forward without the moving map if desired.

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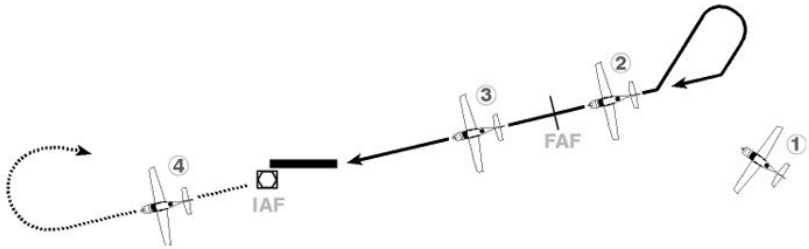
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

- The approach can not be continued unless the GPS switches to Approach mode (RAIM)
- Missed approach should be executed any time the:
    - Visibility is below what is required by the IAP
    - Runway is not in sight
    - Aircraft is not in a position to make a normal landing
    - Course deviation indicator goes full scale deflection anytime during the final approach segment
- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time.

4.6.14.5 VOR Vector to Final

Follow the step by step procedures for a VOR using vectors to final. Reference Section 4.6.10 for more information on descent procedures.



Step 1 Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern at the start of the descent. Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)
- Power as required to manage the airspeed throughout the initial descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, selecting vectors to final.
- Verify the VOR approach frequency dialed in the active NAV 1 slot.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Activate the approach at the start of vectors to final (1st assigned heading for approach).

Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1.
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance.

PFD

- Adjust the HDG, VS, and ALT bugs as directed by ATC.
- HSI should be coupled to GPS 1.
- Once the approach is activated verify the inbound course is displayed on the HIS.
- Monitor the wind vector for changing wind conditions throughout the descent.

Autopilot / Flight Director

- To engage the Flight Director only push the AP Off / FD On button prior to engaging the modes on the autopilot.
- Use the HDG mode once assigned a vector for the approach. Be sure to set the HDG bug on the PFD prior to engaging the HDG mode.
- Use the ALT pre-select to control the assigned altitudes throughout the descent.

- While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

- During the descent the ALT and VS bugs may be changed to adjust for any ATC clearances.
- Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude. This will reduce cockpit work load in the future.

MFD

- Use the CMax charts for briefing the approach
  - Autofill the destination airport
  - Select the desired chart
  - Change the view of the chart for the approach briefing and situational awareness
  - Use the Map page for situational awareness if CMax is not installed
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Intermediate Segment

Checklist

- Complete the Before Landing checklist prior to the final approach fix as a flow pattern. Reference the electronic checklist to make sure all items are completed.

Aircraft Configuration

- 2 miles outside FAF
    - Airspeed 100 KIAS
    - 50% Power / 22'' MP (approximately)
    - Flaps 50%

Avionics Setup and Execution

Garmin 1

- Verify the approach is activated
- Press the CDI button to switch from GPS mode to VLOC mode.

Note: VLOC mode is only required for non GPS overlay approaches. Use GPS mode for any GPS overlay and GPS stand alone approaches.

Note: The pilot is responsible for switching the navigation from GPS to VLOC on a VOR approach. Unlike an ILS, the switch from GPS to VLOC is NOT automatic.

Autopilot

- On the final intercept vector to final arm the NAV APR mode.
    - To intercept a course at an angle other then a 45º angle, set the HDG bug on the PFD to the desired intercept heading. While holding the HDG button press the APR button.

- Use a combination of the VS and ALT modes to control the descent throughout the approach.
- The descent rate required will vary between approaches. An 800fpm descent is recommended for most descents on a VOR approach.

Note: Because the altitude pre-select tapers off the climb or descent rates it is recommended to only use VS until 100' above the desired altitude and then engage the altitude pre-select.

PFD
- Set the HDG bug as assigned by ATC.
- Set the ALT bug to the minimum descent altitude (MDA) once the autopilot captures the current desired altitude.

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to the FAF.
- Use the CMax page to review the instrument procedure and situational awareness.
- Use the Map page for situational awareness if CMax in not installed.

Step 3 Final Approach Segment

Checklist
- No Action

Aircraft Configuration
- At the FAF
    - Airspeed 100 KIAS
    - 25% Power / 12'' MP (approximately)
    - Flaps 50%
    - Make small power changes to maintain airspeed during the descent

Avionics Setup and Execution

PFD
- Monitor flight and navigation instruments

Autopilot
- Use NAV APR mode for navigation.
- Set the VS bug on the PFD to desired descent rate and push VS button to start the descent.

Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will

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remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' 100' altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

- When assured of reaching the MDA in time engage the altitude pre-select.
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

Step 4 Missed approach segment
See Section 4.6.14.8 for information on executing missed approach procedures.

VOR Vectors to Final Considerations

- Load the IAP into the active flight plan as soon as the IAP to be used is known.
- Activate vectors to final when ATC assigns the 1st vector for the approach.
- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading throughout the approach for changing wind conditions.
- The HSI view may be changed to the 120º view forward without the moving map if desired.
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

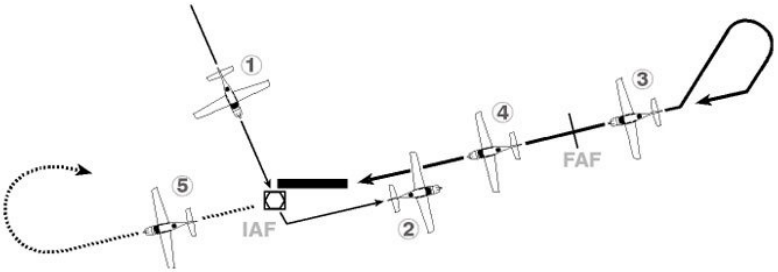
Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

- The pilot is responsible for switching the navigation from GPS to VLOC.

- Setting up the PFD ALT and VS bugs ahead of the descent will help reduce work load throughout the approach.
- Missed approach should be executed any time the:
    - Visibility is below what is required by the IAP.
    - Runway is not in sight.
    - Aircraft is not in a position to make a normal landing.
    - Course deviation indicator goes full scale deflection anytime during the final approach segment.
- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time.

4.6.14.6 VOR Full Procedure

Follow the step by step procedures for executing a full procedure VOR approach. Reference Section 3.6.9 for more information on descent procedures



Step 1 Prior to Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern prior to the initial approach fix (IAF). Reference the electronic checklist to verify all items of the Descent checklist are completed.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed 120 KIAS
- 50% Power / 22'' MP (approximately)
- Adjust power as required to maintain airspeed throughout the initial descent.
- Flaps 0%

- Adjust mixture for the appropriate altitude throughout the descent.
- Boost pump off

Avionics Setup and Execution
Garmin 1

- Load the approach into the flight plan, selecting the assigned IAF.
- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC.
- Activate the approach when cleared direct to the IAF.

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Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1
- Monitor the Traffic Avoidance page (NAV 3) for collision avoidance

PFD

- Adjust the HDG, VS, and ALT bugs as directed by ATC
- The HSI should be coupled to GPS 1
- Monitor wind vector for changing wind conditions throughout the descent

Autopilot / Flight Director

- To engage the Flight Director only push the AP Off / FD On button prior to pressing the buttons on the autopilot
- Use the NAV GPSS to navigate outbound to the procedure turn

- Use a combination of the VS and ALT modes to control the descents during the approach

  - During the descent the ALT and VS bugs may be changed to adjust for any ATC clearances.
  - Once the autopilot captures the selected altitude the ALT bug on the PFD can be reset for any future known altitude. This will reduce cockpit work load in the future

MFD

- Use the CMax charts for briefing the approach.
  - Autofill the destination airport.
  - Select the desired chart.
  - Change the view of the chart for the approach briefing and situational awareness.

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    - Use the Map page for situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Initial Approach Segment

Checklist

- No action

Aircraft Configuration

- Airspeed 120 KAIS
- 50% Power / 22'' MP (approximately)
- Make small power changes if required to maintain airspeed during the descent.
- Flaps 0%

Avionics Setup and Execution

Garmin 1

- Verify approach is activated.
- Verify the VOR frequency is tuned and identified in the active NAV 1 slot.

Autopilot

- Use the NAV GPSS for tracking outbound for the procedure turn.
- Use the HDG mode for executing the procedural turn.
- Arm the NAV APR mode once turning inbound from the procedure turn.
    - While holding the HDG button press the APR button once to arm the NAV APR mode.

- Use the ALT and VS modes to control the altitude throughout the approach.

Note: Once the autopilot captures the selected altitude the PFD ALT bug should be changed for the next known altitude and the PFD VS bug set to the desired descent rate.

Transponder
- Use the count up timer to time the procedure turn.

PFD
- Set the ALT bug to the minimum descent altitude (MDA) or stepdown fix once the autopilot is in ALT hold mode.

MFD
- Use the electronic checklist to complete the Before Landing checklist prior to FAF.
- Use the CMax page to review the instrument procedure and situational awareness.
- Use the Map page for situational awareness if CMax is not installed.

Step 3 Intermediate

Checklist
- Complete the Before Landing checklist as a flow pattern before the FAF. Reference the electronic checklist to verify all items have been completed.

Aircraft Configuration
- 2 Miles outside the FAF
    - Airspeed 100 KIAS
    - 50% Power / 22'' MP (approximately)
    - Flaps 50%
    - Boost pump on
    - Mixture full rich

Avionics Setup and Execution
PFD
- Monitor flight and navigation instruments.
- Preset up the ALT bug for the MDA or the next stepdown fix.
- Preset the VS to the desired descent rate.

Note: recommended descent rate for a non-precision is at least 800fpm but will vary depending on the individual instrument approach procedure.

Autopilot
- Verify the NAV APR mode is selected. Use a combination of VS and ALT modes to control any descents.

Step 4 Final Approach Segment
Checklist
- No Action

Aircraft Configuration
- At the FAF
    - Airspeed 100 KIAS
    - 25% Power / 12'' MP (approximately)
    - Flaps 50%
    - Make small power changes to maintain 100 KIAS during the descent to the MDA.

Avionics Setup and Execution
PFD
- Monitor flight and navigation instruments
- Adjust ALT and VS bugs as required for stepdown fixes.

Autopilot
- Press VS to start the descent to the MDA.

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Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' 100' altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

- Engage the altitude pre-select when assured the aircraft will reach the MDA in time.
    - While holding the VS button press the ALT button to engage the altitude pre-select. Always verify the PFD ALT and VS are set prior to engagement.

Note: the altitude pre-select will taper off the descent rate as the aircraft reaches the pre-selected altitude. The tapering descent rate may prevent the aircraft from reaching the MDA in time. Use the procedure described above to ensure the aircraft reaches the MDA prior to the MAP or visual descent point.

Step 5 Missed Approach Segment
See Section 4.6.14.8 for information on executing missed approach procedures.

Full Procedure VOR Approach Considerations
- Load the IAP into the flight plan as soon as the IAP to be used is known.
- Activate the approach when cleared to the IAF.

- Allow plenty of time to prepare for the approach and landing. Slow the aircraft down anytime more time is needed for preparation.
- Update the HDG bug to the freeze heading throughout the approach for changing wind conditions.
- The HSI view may be changed to the 120º view forward without the moving map if desired.
- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.
- Adjust the power to control airspeed during the descents. Make sure to add power when the autopilot begins to level the aircraft off.

Note: The autopilot is capable of stalling the aircraft if adequate power is not applied.

- Always verify the Garmin 430 and HSI have been switched from GPS to VLOC.
- The pilot is responsible for switching the navigation from GPS to VLOC on a VOR approach.
- Missed approach should be executed any time the:
    - Visibility is below what is required by the IAP.
    - Runway is not in sight.
    - Aircraft is not in a position to make a normal landing.
    - Course deviation indicator goes full scale deflection anytime during the final approach segment.
- Turn on the approach lighting system to high at airports with pilot controlled lighting. Lights will help identify the runway even during the day time.

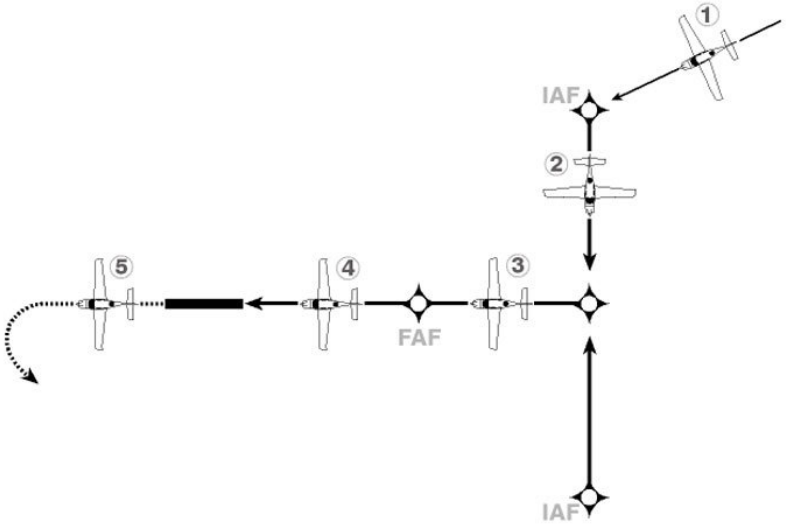
4.6.14.7 GPS Partial Panel

Follow the step by step procedures for executing a full procedure partial panel GPS approach. Reference Section 4.6.10 for more information regarding descent procedures.

- Fly to an airport with VFR weather whenever possible. Use this procedure if it is not possible to get to VFR weather.
- Use this procedure to execute a GPS approach in the unlikely event of a PFD lamp failure, power failure or unrecoverable attitude failure. The autopilot is capable of executing the entire approach.
- In the event of a PFD lamp failure in an aircraft equipped with an S-Tec 55X autopilot pull the two HSI / PFD circuit breakers to turn the

PFD off. Turning the PFD off during a lamp failure has two advantages.
  - Allows for more predicable autopilot operations.
  - Allows the VS to be controlled from autopilot VS button and knob instead of the PFD bug.

- Always execute a GPS approach with no procedure turn or course reversal during a PFD power failure, lamp failure, or unrecoverable attitude failure.
  - Using a GPS approach with no procedure turn or course reversal will allow the entire approach to be executed with the NAV GPS Steer function.
  - A procedure turn or course reversal requires the use of the HDG mode, which is not available during a PFD power failure, lamp failure or unrecoverable attitude failure. The pilot would be required to hand fly the procedure turn or course reversal, which should be avoided.
- Because of the increased work load and decreased situational awareness the autopilot should be utilized to decrease the risk factor associated with the failure.



Step 1 Prior to Initial Approach Segment

Checklist

- Complete the Descent checklist as a flow pattern prior to the initial approach fix (IAF). Reference the electronic checklist to verify all items of the Descent checklist are completed.

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- Notify ATC of the instrument failure and approach capabilities.

Aircraft Configuration

- The aircraft should be configured as specified in the Descent checklist.
- Airspeed 120 KIAS
- 50% Power / 22" MP (approximately)
- Adjust power as required to manage the airspeed through the initial descent.
- Flaps 0%
- Adjust mixture for the appropriate altitude throughout the descent.

Avionics Setup and Execution

Garmin 1

- Load the approach into the flight plan, select the assigned or requested IAF.

Note: Select an IAF that does not require a procedure turn or course reversal.

- Verify the waypoints in the flight plan are correct and make any modifications as directed from ATC
- Activate the approach when cleared direct to the IAF
- Monitor the Default Nav page (NAV 1) for distance, time and course deviation information

Garmin 2

- Make sure the flight plan has cross-filled from Garmin 1
- Monitor the Nav Position page (NAV 6) for ground track information

PFD

- Pull the two HSI / PFD circuit breakers in case of a PFD lamp failure
- During a PFD power failure or lamp failure reference the backup instrument
- During an unrecoverable attitude failure use the ALT and VS bugs on the PFD to control the assigned or desired altitudes and descent rates

Autopilot

- Use the NAV GPSS mode for the entire approach.

- Use the VS and ALT modes to control the assigned altitudes.
- Press VS on the autopilot and rotate the right hand knob to control the descent rate in 100' increments.

- Manually taper off the descent rate as the aircraft approaches the assigned or desired altitude.

- Press the ALT button to capture the assigned or desired altitude.

MFD

- Use the CMax charts for briefing the approach.
    - Autofill the destination airport.
    - Select the desired chart.
    - Change the view of the chart for the approach briefing and situational awareness.

    - Use the Map page for situational awareness if CMax is not installed.
- The approach should be terminated and a missed approach executed in the unlikely event the CMax charts become unavailable. The approach may be continued if paper charts are readily available or the approach procedure has been properly briefed.

Caution: Do not continue the approach if there is any doubt the entire approach including the missed approach procedures can be executed. A proper approach briefing prior to the IAF should be conducted for every approach executed.

Step 2 Initial Approach Segment

Checklist

- No Action

Aircraft Configuration

- Airspeed 120 KAIS
- 50% Power / 22'' MP (approximately)
- Make small power changes if required to maintain airspeed during the descent
- Flaps 0%

Avionics Setup and Execution

Garmin 1

- Verify approach is activated
- Monitor the Default Nav (NAV 1) for a course deviation indicator (CDI), distance and time information

Autopilot

- Use the NAV GPSS mode for the entire approach.

- Use the VS and ALT modes to control the assigned altitudes.
- Press VS on the autopilot and rotate the right hand knob to control the descent rate in 100' increments.

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- Manually taper off the descent rate as the aircraft approaches the assigned or desired altitude.

- Press the ALT button to capture the assigned or desired altitude.

PFD

- During an unrecoverable attitude failure use the ALT and VS bugs on the PFD to control the assigned or desired altitudes and descent rates.
- During a PFD power and lamp failure reference the backup instruments.

MFD

- Use the electronic checklist to complete the Before Landing checklist prior to FAF.
- Use the CMax page to review the instrument procedure.
- Use the Map page for situational awareness

Step 3 Intermediate

Checklist

- Complete the Before Landing checklist as a flow pattern before the FAF. Reference the electronic checklist to verify all items have been completed.

Aircraft Configuration

- 2 Miles outside the FAF
    - Airspeed 100 KIAS
    - 50% Power / 22'' MP (approximately)
    - Flaps 50%
    - Boost pump on
    - Mixture full rich

Avionics Setup and Execution

PFD

- During an unrecoverable attitude failure use the ALT and VS bugs on the PFD to control the assigned or desired altitudes and descent rates.
- During a PFD power failure and lamp failure reference the backup instruments.

Garmin 1

- Verify the GPS switches to approach mode (RAIM) 2 NM prior to the FAF.

Autopilot

- Use the NAV GPSS mode for the entire approach.
- Use the VS and ALT modes to control the assigned altitudes.
- Press VS on the autopilot and rotate the right hand knob to control the descent rate in 100' increments.

- Manually taper off the descent rate as the aircraft approaches the assigned or desired altitude.

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- Press the ALT button to capture the assigned or desired altitude.

Step 4 Final Approach Segment

Checklist

- No action

Aircraft Configuration

- At the FAF
  - Airspeed 100 KIAS
  - Flaps 50%
  - 25% Power / 12'' MP (approximately)
  - Make small power changes to maintain airspeed during the descent to the MDA.

Avionics Setup and Execution

PFD

- During an unrecoverable attitude failure use the ALT and VS bugs on the PFD to control the assigned or desired altitudes and descent rates.
- During a PFD power failure or lamp failure reference the backup instruments.

Autopilot

- Use the NAV GPSS mode for the entire approach.

- Use the VS and ALT modes to control the assigned altitudes.
- Press VS on the autopilot and rotate the right hand knob to control the descent rate in 100' increments.

Caution: Be very conscious of the aircraft's altitude when descending using the VS mode and not the altitude pre-select. The aircraft will remain in the selected vertical speed descent until a new mode is engaged or the autopilot is disconnected. Lack of pilot awareness may lead to a possible accident. Make a habit of making 1000', 500' 100' altitude callouts whenever climbing or descending to an altitude for increased situational awareness.

- Manually taper off the descent rate as the aircraft approaches the assigned or desired altitude.

- Press the ALT button to capture the assigned or desired altitude.

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Step 5 Missed Approach Segment
See Section 4.6.14.8 for information on executing missed approach procedures.

GPS Partial Panel Considerations
- When able notify ATC of the PFD failure and the aircraft's approach capabilities.
- ATC can provide useful information to greatly reduce cockpit work load such as:
    - Nearest airports with applicable GPS approaches
    - Weather information
    - How to get to VFR weather
    - Altitudes and applicable MDA
- The autopilot is capable of executing the procedure described above. Use of the autopilot as described above is highly recommend.
- Practice this procedure in VFR weather conditions with a CSIP instructor during recurrent training events.
- Do not forget to monitor the aircraft's fuel situation and all other tasks associated with flying the aircraft.

4.6.14.8 Missed Approach Procedures

Checklist
- Complete the Balked Landing / Go Around checklist as a flow pattern. Reference the electronic checklist only when time, work load and altitude permits.

Aircraft Configuration
- Disconnect the autopilot
- Full power
- Pitch up 7.5º (approximately)
- Retract flaps 0% after
    - Airspeed above 85 KIAS
    - Clear of obstacles and terrain
    - With a positive rate of climb
- Boost pump off at 1000 AGL

Avionics Setup and Execution
Garmin 1
- Push the CDI button on the Garmin to switch from VLOC to GPS navigation when going missed from an ILS or VOR approach.
- Push the OBS button to navigate to the missed approach holding fix.

Note: Pushing the OBS button will create a direct to navigation to the missed approach holding fix or any specified radial to the holding fix. Push the OBS button when the aircraft is at the altitude specified for the missed approach procedure to start the turn to the fix.

PFD

- Verify the HSI has switched from VLOC to GPS 1 navigation for the missed procedure when going missed from an ILS or VOR approach.
- Set the HDG bug as required for the missed procedure.
- Set the ALT for the specified or assigned missed procedure.

Autopilot

- The autopilot may be used for the missed approach segment only after the aircraft is above 400 AGL.
- Sync the HDG bug and VS bug on the PFD and engage the HDG and VS modes for a straight ahead climb.

- Select the assigned altitude in the ALT bug on the PFD and engage the ALT pre-select.
    - While holding the VS button press the ALT button to engage the altitude pre-select.

- When required to navigate to a waypoint set the HDG bug to a desired or assigned intercept heading and arm the navigation.
    - Set the desired intercept heading in the PFD heading bug.
    - While holding the HDG button press the NAV button twice to arm the GPS Steer navigation.

MFD

- When time, work load and altitude permit reference the Balked Landing / Go Around electronic checklist.
- Complete the Climb checklist as a flow pattern when the aircraft is above 1000 AGL. Reference the electronic checklist when time permits to verify all items are completed.
- Maintain situational awareness with the Map page.

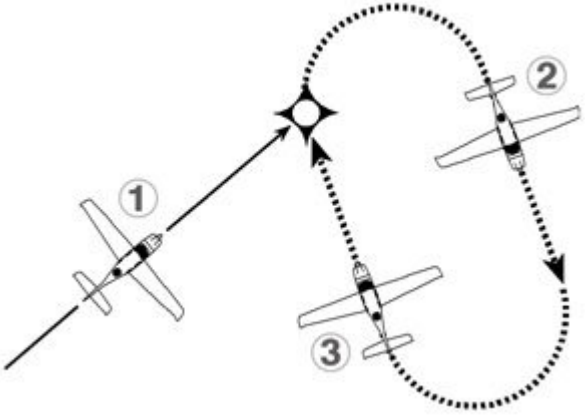
Missed approach Considerations

- Always monitor the autopilot annunciators on the PFD or autopilot screen to verify the desired modes have been properly engaged.

Note: The autopilot is capable of stalling the aircraft if adequate airspeed is not maintained.

- Memorizing the DA and missed approach procedure prior to the FAF will greatly reduce the work load allowing for safe execution of a missed approach.
- One of the main objectives during a missed approach is to stop the descent and start climb to gain altitude from possible terrain and obstacles. Do not hesitate executing a missed approach if one is required.
- Missed approach should be executed any time the:
    - Visibility is below what is required by the IAP.
    - Runway is not in sight.
    - Aircraft is not in a position to make a normal landing.
    - Course deviation indicator goes full scale deflection anytime during the final approach segment.

4.4.14.9 Holding Procedures (Published Holds)



Checklist
- No action

Aircraft Configuration
- Airspeed 120 KIAS (3 minutes prior to the holding fix)
- 50% Power / 22'' MP (approximately)
- Flaps 0%
- Mixture as required for altitude
- Boost pump off

Avionics Setup and Execution
Garmin 1
- Verify Garmin 1 is in GPS navigation.
- Activate the holding fix as the active waypoint.
- Monitor the Default Nav page (NAV 1) for timing the holding fix.
- GPS 1 will flash a message indicating the proper entry procedure into the holding pattern.

PFD
- Verify the CDI is slaved to GPS 1.
- Monitor distance and time information to the holding fix.
- Overlay the moving map on the HSI for situational awareness if desires.

MFD

- Monitor the Map page for situational awareness.

Autopilot

- Use the NAV GPS Steer to navigate to the holding fix (Step 1).

- Use the HDG mode to navigate outbound leg of the holding pattern (Step 2).

- Use the HDG bug to set up an intercept to turn inbound to the holding fix. Arm the NAV GPS Steer once the HDG bug is set. (Step 3).
    - Set the desired intercept heading in the PFD heading bug.
    - While holding the HDG button press the NAV button twice to arm the NAV GPS Steer mode.

Considerations

- Automatic timing for a published hold in the GPS database can be found on the Default NAV page (NAV 1) or the Flight Plan page.
- Use the wind vector on the PFD to help determine outbound wind correction headings.
- The GPS will go into suspend mode at the holding fix until a new navigation or flight plan has been entered.

- Overlaying the moving map on the HSI can help with situational awareness during the holding procedure.

4.7 SR20 Maneuver Profiles

4.7.1 Steep Turns

Minimum Altitude: 1,500 AGL

Execution
- Execute clearing turns
- Airspeed: 120 KIAS
- 50% Power / 22 MP (approximately)
- Bank Angle 45º (Private) or 50º (Commercial)

4.7.2 Maneuvering During Slow Flight

Minimum Recovery Altitude: 1,500 AGL

Execution
- Execute clearing turns
- Flaps as desired
- Bank angle as desired (20º maximum)
- Airspeed- an airspeed at which any further increase in angle of attack, increase in load factor, or reduction in power, would result in an immediate stall.

Recovery
- Reduce angle of attack and level wings
- Apply full power
- Flaps 50%
- Accelerate to Vy
- Flaps 0% after
    - 85 KIAS
    - Clear of terrain and obstacles
    - Positive rate of climb

4.7.3 Power Off Stalls

Minimum Recovery Altitude: 1,500 AGL

Execution
- Execute clearing turns
- 25% Power / 11” MP (approximately)

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- Flaps as desired
- Establish glide or gliding turn not to exceed 20º of bank
    - (Glide should be a descent at about 500 fpm)
- Reduce throttle to idle and increase pitch to a normal landing attitude (5º-7.5º) to induce a stall.

Recovery
- Reduce angle of attack and level wings
- Apply full power
- Flaps 50%
- Accelerate to Vy
- Flaps 0% after
    - 85 KIAS
    - Clear of terrain and obstacles
    - Positive rate of climb

4.7.4 Power On Stalls

Minimum Recovery Altitude: 1,500 AGL

Execution
- Execute clearing turns
- 25% Power / 11" MP (approximately)
- Flaps 0% or 50%, as desired
- Airspeed: slow to V_R
- Bank Angle: as desired (20° maximum)
- Apply minimum 65% power
- Increase pitch angle to induce stall (Maximum 25° pitch attitude)

Recovery
- Reduce angle of attack and level wings
- Verify full power
- Accelerate to Vy
- Flaps 0% after
    - 85 KIAS
    - Clear of terrain and obstacles
    - Positive rate of climb

4 7.5 Autopilot Stall Recognition (Power Off)

Minimum Recovery Altitude: 1,500 AGL

Execution

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- Execute clearing turns
- Flaps 50%
- Engage HDG and ALT modes on the autopilot
- 25% Power / 11" MP (approximately)

NOTE: Autopilot will increase the angle of attack to maintain altitude sacrificing airspeed. Recovery will be performed at a speed no lower than 1.2 Vs (73 KIAS), as per the S-Tec autopilot limitation.

Recovery

- Disconnect autopilot
- Reduce angle of attack and level wings
- Apply full power
- Accelerate to Vy
- Flaps 0% after
    - 85 KIAS
    - Clear of terrain and obstacles
    - Positive rate of climb

4.7.6 Autopilot Stall Recognition (Power On)

Minimum Recovery Altitude: 1,500 AGL

Execution

- Execute clearing turns
- 25% Power / 11" MP (approximately)
- Flaps 0%
- Engage HDG and VS on the autopilot with a 1600 fpm climb rate
- Apply minimum 65% Power

NOTE: Autopilot will increase the angle of attack to increase altitude sacrificing airspeed. Recovery will be initiated at a speed no lower than 95 KIAS, as per the S-Tec autopilot limitation.

Recovery

- Disconnect autopilot
- Reduce angle of attack and level wings
- Verify full power
- Flaps 0% after
    - 85 KIAS
    - Clear of terrain and obstacles
    - Positive rate of climb

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Section 5

Workbook

Table of Contents

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5.1 Introduction

Each of the following sections corresponds to a section in the POH that is included at the end of this manual. In each section you will find: quiz questions, supplemental information, and operating tips.
The answers to the questions will be found in the provided generic POH (unless otherwise noted). These questions are required to be completed prior to the beginning of your training. If you have problems with the workbook or would like clarification on a question within it, you may use the forum titled “Q & A Forum” on HTMLeZ.

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5.2 General

This section will cover Section 1 (General) of the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What is the wing span of the Cirrus SR20?
   Tip: Consider this when hangering your aircraft.

2. What is the certified max gross weight of the aircraft?

3. In what ways does the weight of the aircraft affect the aircraft?

4. How much clearance is between the tip of the propeller and the ground?

5. What is your engine model?

6. What is the definition of reference datum?

5.3 Limitations

This section will cover Section 2 (Limitations) of the Cirrus SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:

Vne	_____KIAS	_____	
Vno	_____KIAS	_____	
Vo	_____KIAS	_____	3000lbs.
Vfe	_____KIAS	_____	50% Flaps
Vfe	_____KIAS	_____	100% Flaps
Vpd	_____KIAS	_____	
Vso	_____KIAS	_____	
Vs	_____KIAS	_____	

2. What is the significance of V_{no} and how does it differ from V_{ne}?

3. What is the significance of V_o?

4. What is the significance of the green arc?

5. What two speeds define the green arc?

6. During the engine break-in period what type of oil should be used?

7. What is the max operating altitude of the aircraft?

8. Can you operate the aircraft at the max operating altitude without oxygen? (FAR 91.211)

9. Can you paint your airplane Navy Blue? Why?

10. Can you operate this aircraft out of un-paved runway surfaces?

11. Is the MFD approved as a primary navigation instrument?

12. Can you fly VFR with ALT 2 INOP?

13. Can you fly IFR with ALT 2 INOP?

14. Can you fly VFR with one of the strobe lights out?

15. What is the significance of V_{pd} and why do you not see this in other aircraft?

16. Can you fly IFR with the NAV lights inoperative?

17. Can you fly with any of the engine instruments inoperative?

18. Is the aircraft approved for aerobatics/spins?

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19. Can you operate your aircraft without removing the CAPS safety pin? (FAR 91.9)

20. Indicate the following Fuel Limits:

Approved Fuel _____

Total Fuel Capacity _____gals

Total Fuel Each Tank _____gals

Total Usable Fuel _____gals

Unusable Fuel _____gals

Maximum Allowable Fuel Imbalance _____gals

22. When does the BOOST pump need to be in operation?

23. What three annunciator lights are required to be operational for flight?
Tip: It is important to remember to check the annunciator lights panel each time. This item is not included in any other operational checklist.

24. Can you fly with the autopilot inoperative?

25. How does an inoperative autopilot affect your personal minimums or go/no-go decision for an IFR flight?

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5.4 Emergency Procedures

This section will cover Section 3 (Emergency Procedures) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:
   Vg _____KIAS _____ 3000 lbs.
   Vg _____KIAS _____ 2500 lbs.

2. Emergency Landing Speeds:
   Flaps Up _____KIAS
   50% Flaps _____KIAS
   100% Flaps _____KIAS

3. In any emergency situation, what is the most important thing to remember and perform?

4. What is the procedure for a fire on engine start?

5. How many circuit breakers would you pull with runaway trim? What are these circuit breakers labeled?

6. What indicates the failure of an alternator?

7. Would you lose any equipment if you lost ALT 1? (Electrical Distribution Diagram in Section 3) If yes, what?

8. If taxiing at 1000 RPM, why would your ALT 2 caution light be on?

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9. Would you lose any equipment if you lost ALT 2? (Electrical Distribution Diagram in Section 3) If yes, what?

10. What is your aircraft glide ratio?

11. What is your best glide distance if you were at 6,000' AGL?

12. A propeller governor failure can be the cause of what two situations?

13. Is it advisable to unlatch the cabin doors with smoke or fumes in the cabin?

14. What is the procedure for an emergency descent?
In what situation would you use an emergency descent?

15. What is the procedure if you have an engine failure in flight?

16. Is flight into known icing conditions prohibited?
What is the procedure for an inadvertent icing encounter?

17. In an engine failure situation with the prop windmilling, how can you gain additional glide distance?

18. What is the only approved and demonstrated method for spin recovery?

19. If only the airspeed indicator is giving erroneous information, what kind of malfunction can you expect?

20. Will the auxiliary fuel pump provide enough fuel to power the engine in the event of an engine driven fuel pump failure?

21. What two situations can you probably expect with a low oil pressure reading and a rise in temperature?

22. What is the procedure for a propeller overspeed?

23. What would your procedure be if you had a cabin fire in flight?

24. What procedure would you use to try and get ALT 1 back online in the case of an ALT 1 failure? What would your next step be if you could not get the alternator back online?

25. What is the approximate expected impact from a parachute drop?

26. If activation of the CAPS system is necessary, what kind of motion do you want to use when pulling the handle?

27. With an engine out will full flaps increase or decrease your glide distance?

28. If landing without elevator control, what speed do you want to trim the aircraft for?

29. True or False? If you lose the audio panel you have lost all communications with ATC.

30. Your ALT 1 light illuminates 30 minutes from your destination while in non-icing/IMC conditions at night. Would you want to reduce the loads on ALT 1? What circuit breakers would you pull?

31. What is the procedure for a brake failure during taxi?

32. What is the procedure for single and dual brake failures in flight?

33. If you suspect a brake failure, how wide and long should the landing runway be? (ie what are your personal minimums)

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5.5 Normal Procedures

This section will cover Section 4 (Normal Procedures) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. Fill in the speeds and definitions of the following:

Vr	_____KIAS	_____	Normal
Vy	_____KIAS	_____	S.L.
Vy	_____KIAS	_____	10,000’
Vx	_____KIAS	_____	S.L.
Vx	_____KIAS	_____	10,000’
Vo	_____KIAS	_____	2600 lbs.
Vo	_____KIAS	_____	2200 lbs.

Final Approach Flaps Up	_____KIAS
Final Approach 50% Flaps	_____KIAS
Final Approach 100% Flaps	_____KIAS
Vref Short Field 100% Flaps	_____KIAS
Max Demonstrated X-Wind	_____Knots

2. During the cabin preflight, what should be the normal voltage indication on the SR20?

3. How many points are you able to drain fuel from?

4. What items would you brief your passengers on during a passenger briefing?

5. True or False? You will start the engine with both batteries and both alternators on.

6. After start up, how soon should you see a change in oil pressure?

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7. What are the max cranking intervals for the starter?

8. During taxi, the taxi checklist has you check three pieces of equipment. What are these three pieces of equipment and what are you checking for?

9. Directional control during taxi operations is best achieved by differential braking where full rudder authority is used before brakes are applied. (True or False)

10 Excess use of the brake can result in overheated brakes which may result in brake failure or system failure (True or False)

11. You need to maintain at least 1000 RPM while taxing the aircraft. (True or False)

12. Before doing your run-up you want the oil temperature to reach what temperature?

13. Within what RPM range should the ALT 2 caution light turn off?

14. What is the procedure to lean for maximum power fuel flow?

15. If no drop in RPM is noted on the magneto check, what is the probable cause?

16. Normal takeoffs can be performed with what flap setting(s)? Short and soft field takeoffs?

17. Flaps retraction from 50% to 0% is done at or above what minimum speed?

18. The climb checklist should be completed no lower than what altitude? (Section 4, Standardization)

19. True or False? The fuel BOOST must be used when switching tanks?

20. The descent checklist should be completed by what point? (Section 4, Standardization)

21. True or False? Normal landings are not allowed with 0% flaps?

22. On a crosswind landing, at what point will you transition from a wings-level crab angle into a sideslip?

23. Power goes to what setting on a balked landing/go-around?

24. When do you perform the after landing checklist? (Section 4, Standardization)

25. Why is the use of a paper checklist for shutdown necessary?

26. At what point should you hear the stall warning horn?

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27. When priming the aircraft for start what are the differences between; normal, cold, and hot starts?

28. Below what temperature should external preheat or external power be used for start?

29. On start up the engine has intermittent firing and small puffs of black smoke rise from under the aircraft. What is the probable cause and corrective action?

30. You have misjudged your approach to landing due to winds, and it appears you will land longer than you anticipated. What is your best course of action?

5.6 Performance

This section will cover Section 5 (Performance) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Use the following information to answer the questions, for a flight from Duluth, MN to Rapid City. SD (KRAP). Assume max gross weight on takeoff, full fuel and 75% "best power" setting for cruise.

Distance 487 NM
Magnetic Course 254 degrees

Weather Conditions:
KDLH 101250Z 33020KT 10SM SCT010 15/10 A2982
KRAP 101250Z 22026KTG35 10SM FEW010 SCT020 20/17 A2975

Winds aloft	**FD**	**3000**	**6000**	**9000**
	DLH	2925	253415	253704
	GFK	302610	263309	253708
	FSD	2923	263214	272907
	RAP		283417	303309

Airport Information:

KDLH Elevation 1420ft.
RWY 27/09 10152ft.
RWY 03/21 5699ft.

KRAP Elevation 3202ft.
RWY 23/05 3600ft.
RWY 32/14 8701ft.

1. What will be your takeoff distance (ground roll) departing KDLH?

2. What is your x-wind component for runway 27?

3. What will be your average climb rate out of KDLH to your selected cruise altitude?

4. What altitude will you use and why?

5. Why is it recommended to fly at or below 8000 ft on a new engine?

6. What will be your endurance for today's flight?

7. What will be your calculated KTAS and fuel flow for cruise flight?

8. How much fuel will you have once you reach your destination?

9. Will you be able to make your destination non-stop? SAFELY? (Difference between FARs vs. personal minimums)

10. What will be your landing distance (ground roll) at Rapid City, SD?

11. What will your ground roll be upon arrival at Rapid City, SD?

12. What is the KCAS at 100 KIAS with 100% flaps?

13. What will your KIAS stall speed be on departure with 50% flaps and an AFT C.G.?

14. What is the difference between takeoff rate of climb vs. en route rate of climb?

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5.7 Weight and Balance

This section will cover Section 6 (Weight and Balance) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Aircraft:

BEW 2135 lbs.	Moment 301.758
Hours on New Engine	15.2 hrs
Payload	
Pilot	160 lbs.
Front Pax	160 lbs.
Rear Pax	200 lbs.
Baggage	130 lbs.
Fuel	336 lbs.

NOTE: You can not leave anyone or baggage behind.
Use any of the following methods of calculation in the POH to come up with the appropriate answers.

1. What is your ramp weight?

2. What is your aircraft's zero fuel weight?

3. What will be your aircraft's gross takeoff weight?

4. How much fuel will you have on board before takeoff?

   GALS. LBS.

5. Is unusable fuel and oil included in basic empty weight?

6. Will your aircraft be within CG limitations?

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7. Where is the aircraft Datum?

You may use the following table to aid in calculations.
For Moment/1000, refer to loading table.

Description	Weight	Moment/1000
1. Empty Weight Includes unusable fuel & full oil		
2. Front Seats Occupants Pilot and Passenger		
3. Rear Seats Occupants		
4. Baggage 130 Lb maximum		
5. Zero Fuel Condition Sub total items 1 thru 4		
6. Fuel Load 56 Gallon @6.0 lb/gal. maximum		
7. Ramp Weight Sub total items 5 and 6		
8. Fuel for Start, taxi, and runup Normally 6 lb at average Moment of /922.8		
9. Takeoff Weight Subtract Item 8 for item 7		

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5.8 Airplane and Systems Description

This section will cover Section 7 (Systems) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What are the three flap settings?
   _____% _____°
   _____% _____°
   _____% _____°

2. True or False? The horizontal stabilizer is a two piece unit attached at empennage.

3. The rudder-aileron interconnect does what to the aileron when full right rudder is applied?

4. True or False? It is possible to have an asymmetrical flap deployment in a Cirrus aircraft.
   Hint: Take a look at the flap control diagram.

5. Why is the Cirrus not equipped with gust locks?

6. True or False? The autopilot also uses the electric roll trim.

7. The landing gear struts are made of what?

8. How many master brake cylinders are there?

9. Below what temperature does the oil bypass the oil cooler?

10. What is the recommended extended flight oil level for the engine?

11. Where is the alternate air control knob?

12. What will cause the OIL warning light to illuminate?

13. Describe when oil is metered into and out of the prop hub.

14. What pulls the fuel from the collector tanks?

15. How much fuel is held in each collector tank? (PowerPoint™ slides on Customer Resource CD)

16. What is the FUEL caution light illuminated by?

17. What situation will cause the FUEL caution light to illuminate?

18. True or False? If one tank is at 10 gallons, and the other tank is at 17 gallons the FUEL caution light will illuminate.

19. Alternator #1 is rated for how many amps?
How many volts?

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20. Alternator #2 is rated for how many amps?
How many volts?

21. Battery #1 is rated for how many amps?
How many volts?

22. Battery #2 is rated for how many amps?
How many volts?

23. Output from alternator #1 is connected to which bus?

24. Output from alternator #2 is connected to which bus?

25. How are the main distribution bus and essential distribution bus connected?

26. What does the diode between the two distribution buses do?

27. You are on the ground with BAT 2 on. What indication do you get if the isolation diode has failed?

28. When battery #1 is turned on, which buses are energized?

29. When battery #2 is turned on which buses are energized?

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30. A steady ALT 1 / ALT 2 light denotes what?

31. A flashing ALT 1 / ALT2 light denotes what?

32. The back seat passengers are cold. How do you go about setting the heat and ventilation knobs to direct the maximum amount of warm air to your passengers?
Hint: Look at the heating & ventilation diagram.

33. What kind of stall warning system is installed on the Cirrus?

34. When practicing power off stalls with full flaps, at what IAS would you expect to hear the stall horn?

35. When would you see the “Pitot Heat” light on the annunciator panel? Is this a normal or abnormal condition?

36. How many square feet is the parachute?

37. What kind of pull on the handle works best when activating the CAPS system?

38. What kind of descent rate can you expect with a parachute deployment?

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5.9 Handling Service & Maintenance

This section will cover Section 8 (Service and Handling) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

1. What are the five documents required by the FAA to be onboard the aircraft at all times?

2. What are the two recommended procedures for you to verify if your airplane is conforms to all Airworthiness Directives?
   Hint: It is also possible to get this information from *http://www.faa.gov* on the web.

3. If an annual inspection was done on your aircraft May 16, 2005, when will the next inspection will be due?

4. After completing any of the work described as preventative maintenance in the POH, what are the required logbook entries you must make?

5. Should you use external power to start the airplane if it has a "dead" battery?
   Tip: In most cases you can't even connect external power to the airplane unless there are enough volts and amps remaining in battery 1 to energize the relay in the MCU.

6. How often should the brake fluid be inspected and replenished?

7. How often should the brake linings be inspected and replaced?

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6. While taxiing, how is steering is accomplished?

Tip: In the event of a brake failure it is possible to use rudder for directional control, however, this procedure will only work if you are carrying enough power on the engine to produce enough induced airflow over the rudder. This procedure should only be used in an emergency! When applying power you may gain directional control but you will also gain a considerable amount of groundspeed.

7. When moving your Cirrus around on the ground you should ALWAYS use a _____.

Tip: When flying into an unfamiliar FBO that wants to move your aircraft with mechanical tow bars, be sure to check if the tow hook fits your aircraft. Some tow bars appear to fit, but once pressure is applied they may slip out of position. This may result in the pressure being applied to the nose wheel fairing instead, possibly damaging it.

Mechanical dollies that lift the nose wheel off the ground should also be avoided due to the clearance of the nose wheel fairing. Also, the strap used to secure the aircraft on these types of systems wraps around the nose wheel strut fairing and will crack or possibly destroy the fairing.

8. Where is the hydraulic brake fluid reservoir located?

9. What is the proper tire pressure?

Nose Gear –

Main Gear -

10. After the engine break in period, what is the recommended time between oil changes?

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11. The fuel filtration screen in the gascolator must be cleaned every _____ hours of operation.

Tip: In order to get the most accurate fuel readings, when flying a Cirrus with engine monitoring, make sure that the fuel tanks are "topped off." Many times, FBO's will leave fuel levels an inch or two from the top and in the Cirrus that could equate to several gallons that may be used for reserve purposes.

12. True of False? A fuel sample is not required to be taken prior to each flight.

13. True or False? Battery 1 is located aft of the baggage compartment.

14. What should you use when washing the exterior of the aircraft?

15. When cleaning any of the windows, what do you not want to use?

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5.10 Supplements

This section will cover Section 9 (Supplements) from the SR20 Pilots Operating Handbook, unless otherwise noted.

We recommend that you download the specific information manual for each piece of equipment because of the diversity and complexity of the various avionics utilized in Cirrus aircraft.

Additional training information on specific avionics can be found on our web page at: *http://www.aero.und.edu/cirrus*.

5.10.1 Internet Hyperlinks

Pilot Operating Handbooks and supplements can be downloaded from the following websites:

- UND Aerospace Cirrus Factory Training Provider (follow links to HTMLeZ)
  - *http://www.aero.und.edu/cirrus*
- Cirrus Design Corporation for service publications updates
  - *http://www.cirrusdesign.com*
- COPA
  - *http://www.cirruspilots.org*
- Avidyne Avionics
  - *http://www.avidyne.com*
- Teledyne Continental Motors
  - *http://*www.tcmlink.com
- Garmin Avionics
  - *http://www.garmin.com*
- L-3 Avionics Systems
  - *http://www.as.l-3com.com*
- S-Tec/Meggit
  - *http://www.s-tec.com*
- Sandel
  - *http://www.sandel.com*
- TKS
  - *http://www.flightice.com/tks.html*
- AOPA
  - *http://www.aopa.org*
- Federal Aviation Administration
  - *http://www.faa.gov*

NOTE: Only answer the questions for the avionics that are in your aircraft.

5.10.2 Garmin GMA 340 Audio System

Before conducting your training you will need to know how to accomplish the following basic functions:

- Volume and squelch adjustments
- Com/Nav selectivity transmit and receive functions
- Crew isolation features
- Operation of Marker Beacon Annunciator

1. What will happen if the audio panel fails?

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5.10.3 Garmin GTX 327 Transponder

Before conducting your training you will need to know how to accomplish the following basic functions:

- Entering squawk codes
- Power on, off, and mode C operations
- Ident function
- Sub functions: Pressure Alt, flight time, count up timer, count down timer, contrast

1. At what groundspeed does the transponder automatically cycle into “ALT” mode?

2. At what point will the transponder cycle out of “ALT” mode and into “STBY”?

3. Define the following squawk codes:
   a. 1200
   b. 7500
   c. 7600
   d. 7700

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5.10.4 Garmin GNS 430 Global Positioning System (GPS)

Before conducting your training you will need to know how to accomplish the following basic functions. Please note this is the most difficult piece of avionics to operate. Please take the time to learn the basic functions listed below. We recommend purchasing a tutorial to aid in learning this system, such as V-flight. They will send a free demo disk to you upon request; find them online at: *http://www.vflite.com.*

- Turn Garmin unit ON and OFF.
- Tune in communications frequencies (manually with knob and frequency standby switch button) and adjust the volume.
- Direct–To Function (D → button) and input the airport name and/or identifier.
- Select nearest airport and navigate GPS direct-to the desired airport.
- Emergency frequency 121.5 MHz (communications standby switch held).
- Clear (CLR) Button – Default to Nav 1 page.
- Recommended: How to create, save and activate a flight plan (not required).

Recommended for Instrument Rated Pilots (Required for IPC)

- VOR/Localizer frequencies and how to identify them (manually with knob and the standby frequency switch) and adjust the volume.
- How to load and activate an approach
- How to create and edit a flight plan
- Understand when and where to use the cursor and enter buttons.
- Change the CDI between GPS and V/LOC mode and understand when it is appropriate to do so.
- Understand and know the function of the OBS button.

1. True or False? The GNS 430 Pilot's Guide and Reference can be stored outside the reach of the pilot during flight.

5.10.5 S-Tec System 55X Autopilot

Before conducting your training you will need to know how to accomplish the following basic functions.

- Knowledge of aircraft response after engaging; HDG, NAV, APR, ALT, and VS functions.
- How to engage GPSS (GPS Steer mode)
- How to disengage autopilot.
- Limitations of the autopilot system.
- Knowledge of annunciator indications and appropriate corrective action.
- Knowledge of altitude pre-select and how to set for climb and decent.

1. On what page of the POH are the limitations for the S-Tec 55X. Autopilot listed.

2. How are these limitations going to effect how you operate your aircraft?

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5.10.6 Approved Oxygen Systems

Training on oxygen systems is not covered in the standard training. Questions regarding oxygen systems should be directed to Cirrus Design or the supplier indicated in the Pilots Operating Handbook.

NOTE: You will need to add this to your pre-flight briefing for your passengers.

Note: It is recommended that you utilize a Pulse Oximeter for high altitude operations to ensure the proper blood oxygen saturation and prevent the effects of hypoxia.

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5.10.7 BF Goodrich Aerospace WX500 Stormscope Sensor

Before conducting training you will need to be familiar with the following:

- How and where information is displayed for the Stormscope
- Limitations of the system

1. To what range does the WX500 detect the electrical and magnetic fields/discharges?

2. How does the Stormscope change how you operate your aircraft both in the pre-flight planning and en route?

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5.10.8 Goodrich SkyWatch SKY497 Traffic Advisory System

Before conducting training you will need to be familiar with the following:

- How and where information is displayed for the SkyWatch system
- Limitations of the system

1. True or False? If advised to disable your transponder by ATC, you need to turn off your Sky Watch System.

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5.10.9 Avidyne FlightMax Ex-Series Multifunction Flight Display

Before conducting training you will need to be familiar with the following:

- Limitations of the system

1. On what page of the POH are the limitations for the MFD listed?

2. How are these limitations going to effect how you operate your aircraft?

5.10.10 Avidyne FlightMax Ex-Series Primary Flight Display

Before conducting training you will need to be familiar with the following:

- Limitations of the system

1. On what page of the POH are the limitations for the PFD listed?

2. How are these limitations going to effect how you operate your aircraft?

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5.10.11 Ice Protection System

Before conducting training you will need to be familiar with the following:

- Limitations of the system

1. Is flight into known icing approved for the Cirrus?

2. What is the definition of “known icing”?

NOTE: This answer is not in the POH. This is an important issue; Cirrus recommends that you do further reading about icing at the following websites:

- Aircraft Owners and Pilots Association: Safety Advisors
  - *http://www.aopa.org/asf/publications/advisors.html*
- NASA GRC Icing Branch
  - *http://aircrafticing.grc.nasa.gov/*
- AVWeb: Aviation Magazine and News Service
  - *http://www.avweb.com/news/airman/181877-1.html*
- Aeronautical Newsletter of the Seattle Flight Standards District Office – Issue November-December 2003
  - *http://www.faa.gov/fsdo/seattle/pdf/aerosafe11_12_03.pdf*

Hint: Pre-flight procedures for the ice protection system are not listed on the standard paper or MFD checklists, but are in the supplements section of the POH. Additional attention should be given to operation and pre-flight of the system ensuring it is primed, especially when flying into instrument conditions or precipitation.

5.10.12 Honeywell KGP 560 Enhanced Ground Proximity Warning System

Before conducting training you will need to be familiar with the following:

- Limitations of the system
- Knowledge of the Terrain Awareness Display

1. What are the recommended procedures for warnings in flight?

2. How will this system affect how you operate your aircraft?

5.11 Safety Information

This section will cover Section 10 (Safety Information) from the SR20 Pilots Operating Handbook. Answers to all questions will be found in the appropriate section of the POH, unless otherwise noted.

Regarding the Cirrus Airframe Parachute System (CAPS):

1. What is the significance of the V_{pd} or max parachute deployment speed and what is the numerical value?

2. What factors do you need to take into account if the parachute is to be deployed?

3. List scenarios when activation of the CAPS might be appropriate?

Tip: There is no minimum deployment altitude. This is because the actual altitude loss during a particular deployment depends upon the airplane's speed, altitude and attitude at deployment as well as other environmental factors. As a guideline, the demonstrated altitude loss from entry into a one-turn spin until under a stabilized parachute is 920 ft. Altitude loss from level flight deployments has been demonstrated at less than 400 ft. The recommended cut-off decision altitude is 2,000' AGL

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Appendices

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Appendix A: Personal Minimums

IOE Weather Minimums

Suggested weather minimums are provided based upon your category. Use these suggestions while determining your personal weather minimums during your IOE period. A blank column on the right is provided to fill in your personal minimums.

Suggested IOE Minimums (Note: Revert to IOE Minimums if you have not flown within the previous 60 days).				**IOE Personal WX Minimums (Use suggested weather minimums as a guide).**
IOE Duration	**100 hours**	**100 hours**	**100 hours**	
Categories	Category C	Category B	Category A	
*Visibility – Day VFR	10 miles	8 miles	5 miles	
*Visibility – Night VFR	10 miles	10 miles	10 miles	
*Ceiling – Day VFR	5,000 feet	4,000 feet	3,000 feet	
*Ceiling – Night VFR	6,000 feet	5,000 feet	5,000 feet	
Maximum Surface Wind (Including Gusts)	15kts	20kts	25kts	
Maximum Gust Factor	5kts	10kts	15kts	
Maximum Cross Wind Landing	5kts	10kts	15kts	
Minimum Runway Length/Width (Use the higher of the two).	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3500ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	
Runway Surface	Hard Surfaced	Hard Surfaced	Hard Surfaced	
Braking Action	Good	Good	Good	
Fuel Reserves	60 Min	60 Min	60 Min	
Thunderstorms Circumnavigating	50 Miles	40 Miles	30 Miles	
Fly with CSIP Instructor After Initial Transition Training	60 days	60 days	60 days	
Instrument Rated Pilots Only				
**Day IFR Approach Ceiling & Visibility	2000ft agl 3 miles	1000ft agl 3 miles	1000 agl 3 miles	
**Night IFR Approach Ceiling & Visibility	Not Advised	1500ft agl 4 miles	1000ft agl 3 miles	

Note: If your personal weather minimums are higher than the suggested weather minimums, use your personal weather minimums.
**An instrument rated pilot should refer to the IFR weather minimums and fly IFR if the weather is below personal VFR minimums.*
***If the approach minimum is higher than the suggested minimum, use the approach minimum.*
**** File IFR anytime the weather is below 3000' / 5sm*

Personal Minimums after IOE Worksheet

After IOE Weather Minimums

Suggested weather minimums are provided based upon your category. Use these suggestions while determining your personal weather minimums after your IOE period. A blank column on the right is provided to fill in your personal minimums.

Suggested Pilot Minimums After IOE (Note: Revert to IOE Minimums if you have not flown within the previous 60 days).				**After IOE Personal WX Minimums (Use suggested wx minimums as a guide).**
Recommended Minimums	**Risk Category**			
	Category C	Category B	Category A	
*Visibility – Day VFR	6 miles	5 miles	5 miles	
*Visibility – Night VFR	10 miles	10 miles	10 miles	
*Ceiling – Day VFR	3500 feet	3,000 feet	3000 feet	
*Ceiling – Night VFR	5,000 feet	5,000 feet	5,000 feet	
Maximum Surface Wind (Including Gust Factor)	20kts	25kts	35kts	
Maximum Gust Factor	5kts	10kts	10kts	
Maximum Cross Wind Landing	10kts	15kts	Max Demonstrated (See POH)	
Minimum Runway Length/Width (Use the longer of the two).	3000ft or 2.5 times computed Takeoff or Landing Distance / 75' Wide	3000 ft or2.5 times computed Takeoff or Landing Distance / 75' Wide	3000ft or 2.5 times computed Takeoff or Landing Distance / 50' Wide	
Runway Surface	Hard Surfaced	Hard Surfaced	Hard Surfaced	
Braking Action	Good	Good	Fair	
Fuel Reserves	60 min	60 min	60 min	
Thunderstorms Circumnavigating	50 miles	40 miles	30 miles	
Fly with CSIP Instructor after initial transition training	12 months	12 months	12 months	
Instrument Rated Pilots Only				
**Day IFR Approach Ceiling & Visibility	1000ft agl / 3 miles	800ft agl / 2 miles	500 agl / 1 mile	
**Night IFR Approach Ceiling & Visibility	1500ft agl / 3 miles	1000ft agl / 3 miles	600 agl / 2 miles	

Note: If your personal weather minimums are higher than the suggested weather minimums, use your personal weather minimums.
**An instrument rated pilot should refer to the IFR weather minimums and fly IFR if the weather is below personal VFR minimums.*
***If the approach minimum is higher than the suggested minimum, use the approach minimum.*
**** File IFR anytime the weather is below 3000' / 5sm*
***** Instrument rated (proficient with demonstrated ability to CAT 1 minimums within 60 days) Operate at or above published minimums.*

Appendix B: Personal Minimums Checklist

Pilot:_____

Date Revised:_____

Reviewed With:_____
(if applicable)

Your Personal Minimums Checklist

- This checklist is intended as an easy-to-use, personal tool, tailored to your level of skill, knowledge, and ability. The checklist:
- Helps you control and manage risk by identifying even subtle risk factors; and,
- Lets you fly with less stress and less risk.

Practice "Conservatism without Guilt"

Each item provides you with either a space to complete a personal minimum or a checklist item to think about. Spend some quiet time completing each blank and consider other items that apply to your personal minimums. Give yourself permission to choose higher minimums than those specified in the regulations, aircraft flight manuals, or other rules.

How to Use Your Checklist

Use this checklist just as you would use one for your aircraft. Carry the checklist in your flight kit. Use it at home as you start planning a flight, and again just before you make your final decision to fly. Be wary if you have an item that is marginal in any single risk factor category. **IF YOU HAVE MARGINAL ITEMS IN TWO OR MORE RISK FACTORS/CATEGORIES, DO NOT UNDERTAKE THE FLIGHT!**

Periodically review and revise your checklist as your personal circumstances change, such as your proficiency, recency, or training. Cirrus recommends that you never make your minimums less restrictive unless a significant positive event has occurred; however, it is acceptable to make your minimums more restrictive at any time. Never make your minimums less restrictive when you are planning a specific flight, to prevent undue influence from external pressures.

PILOT

Experience/Recency

Takeoffs/Landings	_____	in the last
	_____	days
Hours in make/model	_____	in the last
	_____	days
Instrument approaches	_____	in the last
(simulated or actual)	_____	days
Instrument flight hours	_____	in the last
(simulated or actual)	_____	days
Terrain and airspace		familiar

Physical Condition

Sleep	_____	in the last 24 hours
Food and water	_____	in the last
	_____	hours
Alcohol		None in the last
	_____	hours
Drugs or medication		None in the last
	_____	hours
Stressful events		None in the last
	_____	days
Illnesses		None in the last
	_____	days

AIRCRAFT

Fuel Reserves (Cross-Country)

VFR Day	_____	hours
VFR Night	_____	hours
IFR Day	_____	hours
IFR Night	_____	hours

Experience in Type

Takeoffs/landings	_____	in the last
in aircraft type	_____	days

Aircraft Performance

Establish that you have additional performance available over that required. Consider the following:

- Gross weight
- Load distribution
- Density altitude
- Performance charts

Aircraft Equipment

Avionics:	Familiar with equipment (Including autopilot and GPS systems)
COM/NAV:	Equipment appropriate to flight Charts current
Clothing:	Suitable for preflight and flight
Survival gear:	Appropriate for flight/terrain

ENVIRONMENT

Airport Conditions

Crosswind	_____	% of max POH
Runway length	_____	% more than POH

Weather

Reports and forecasts	_____	not more than hours old
Icing conditions		within aircraft/ pilot capabilities

Weather for VFR

Ceiling Day	_____	feet
Ceiling Night	_____	feet
Visibility Day	_____	miles
Visibility Night	_____	miles

Weather for IFR

Precision Approaches

Ceiling	_____	feet above min.
Visibility	_____	mile(s) above min.

Non-Precision Approaches

Ceiling	_____	feet above min.
Visibility	_____	mile(s) above min.

Missed Approaches

No more than	_____	before diverting

Takeoff Minimums

Ceiling	_____	feet
Visibility	_____	mile(s)

EXTERNAL PRESSURES

Trip Planning
Allowance for delays _____ minutes

Diversion or Cancellation — Alternate Plans

- Notification of person(s) you are meeting
- Passengers briefed on diversion or cancellation plans and alternatives
- Modification or cancellation of car rental, restaurant, or hotel reservations
- Arrangement of alternative transportation (airline, car, etc.)

Personal Equipment

- Credit card and telephone numbers available for alternate plans
- Appropriate clothing or personal needs (e.g., eye wear, medication) in the event of an unexpected stay

Appendix C: Preflight Risk Assessment Form

The Preflight Risk Assessment form should be completed prior to each flight as a tool for determining the level of risk for each flight. It is your responsibility as pilot in command to determine if the level of risk is acceptable for the flight.

	1	2	3	4	5	Rating
Flight type	**VFR**	**IFR**				
Dual/solo	**Dual**		**Solo**			
Day/night	**Day**		**Night**			
Rating	**CFI/ATP**	**Comm/Inst**	**PPL w/Inst**	**PPL**	**Student**	
Rest in last 24 hrs	**>8**	**6-7**		**3-5**	**< 3**	
Visibility	**>15**	**10-15**	**6-9**	**3-5**	**< 3**	
Ceiling	**10,000**	**5,000-9,000**	**3,000-4,000**	**1,000-2,000**	**< 1,000**	
Crosswind departure	**0-5**	**6-10**	**11-15**	**16-20**	**> 20**	
Crosswind destination	**0-5**	**6-10**	**11-15**	**16-20**	**> 20**	
Weather stability	**Stable**		**Slow Deterioration**		**Rapid deterioration**	
Destination airport familiarity	**Yes**		**No**			
Hours in aircraft type	**>200**	**151-199**	**100-150**	**50-99**	**< 50**	
Hours last 90 days	**>20**	**15-20**	**10-14**	**5-9**	**< 5**	
Total hrs	**>2000**	**501-2000**	**251-500**	**100-250**	**< 100**	

See next page for scoring results chart.

Preflight Risk Assessment Score Results	
No unusual hazards. Use normal flight planning and establish personal minimums and operating procedures	14-30
Somewhat riskier than usual. Conduct flight planning with extra care. Review personal minimums and operating procedures to insure that all standards are being met. Consider alternatives to reduce risk.	31-47 or a 5 in any row
Conditions present much higher than normal risk. Conduct flight planning with extra care and review all elements to identify those that could be modified to reduce risk. If available, consult with more experienced pilot or instructor for guidance before flight. Develop contingency plans before flight to deal with high risk items. Decide beforehand on alternates and brief passengers and other crewmembers on special precautions to be taken during the flight. Consider delaying flight until conditions improve and risk is reduced.	48-63 or a 5 in any 2 rows

Appendix D

Transition Training Syllabus

The transition training course is accepted by the FAA/Industry Training Standards.

Edition 6
Revision 3
May, 2006

UND Aerospace Foundation, Grand Forks, ND 58202
CIRRUS Design, Duluth, MN 55811

D1. Introduction

D1.1 Purpose and Audience

This transition course is to be used for CIRRUS Owners and Operators. This course is designed to assist Owner/Operators in continuing to develop their judgment, aeronautical decision making abilities, single-pilot resource management skills, and risk management skills to safely fly a technically advanced CIRRUS aircraft (TAA). Owner/Operators will obtain a Certificate of Completion for successful completion of the course.

This course is designed for the CIRRUS Owner/Operator who has satisfactorily completed the pre-training requirements. Those individuals who have not done the proper preparation prior to aircraft pick-up or delivery should contact UND Aerospace to schedule additional training days so that a Certificate of Completion may be obtained.

> Note: Pilot shall hold at least a private pilot certificate to participate in the transition training.

D1.2 Desired Outcomes

The following desired outcomes, along with instructor notes, will be applied throughout the CIRRUS Factory Training Transition Course to guide the instructor and CIRRUS Owner/Operator in the Pilot in Training (PT) led critique. For purposes of this course, an Owner/Operator will be designated a Pilot in Training (PT).

Desired PT Scenario Outcomes – The object of scenario-based training is to strengthen the thought processes, habits, and behaviors of the PT during the planning and execution of the scenario. Since the training is learner centered, the success of the training is measured in the following desired outcomes:

Maneuver Grades (Tasks)

- **Explain** – At the completion of the scenario, the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.

- **Practice** – At the completion of the scenario, the PT will be able to practice the scenario activity with input from the CFI. The PT with coaching and/or assistance from the CFI will quickly correct deviations and errors identified by the CFI.

- **Perform** – At the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT in an expeditious manner. At no time will the successful completion of the activity be in doubt. "Perform" will be used to signify that the PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.

Single Pilot Resource Management (SRM) Grades

- **Explain** – The PT can verbally identify, describe, and understand the risks inherent in the flight scenario. The PT will need to be prompted to identify risks and make decisions.

- **Practice** –the PT is able to identify, understand, and apply SRM principles to the actual flight situation. Coaching, instruction, and/or assistance from the CFI will quickly correct deviations and errors identified by the CFI. The PT will be an active decision maker.

- **Manage/Decide** – At the completion of the scenario, the PT will be able to correctly gather the most important data available both within and outside the cockpit, identify possible courses of action, evaluate the risk inherent in each course of action and make the appropriate decision. "Manage/Decide" will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

D1.3 Assessment Items

Each of the assessment items are given to ensure the required desired outcomes are accomplished for each lesson. They are also presented in a manner that promotes a PT led critique. The assessment items utilize statements such as "You used…" or "You identified…" to signify the activities of the PT.

At the end of each lesson or lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

While these assessment items are essential to properly measure the PT's behavior, instructors are expected to adhere to the Pilots Operating Handbook, and standardization procedures included in the instructor

guide and customer guide. All assessment items will be determined complete or incomplete by the PT and the instructor prior to completing the lesson. Any assessment items determined incomplete will be reviewed until the appropriate standards have been met for that lesson.

NOTE: Assessment items have been developed for all available options on a current aircraft; therefore, it may be necessary to exclude assessment items if they are not installed in the aircraft.

- **Complete**: Indicates that the PT has completed the assessment items to the desired outcome level.

- **Incomplete**: Indicates that the PT did not complete the assessment items to the desired outcome level

NOTE: All assessment items must be accomplished for the lesson to be completed.

NOTE: While an assessment item may repeated, completion standards will change if the desired outcome has changed.

NOTE: The flight instructor's final determination of whether that assessment item is complete or incomplete should be withheld until the PT is able to self-critique at the end of the flight.

Best operating practices for the post-lesson critique: Although, at times a critique may seem intimidating, it is an integral part of the lesson. A good critique closes the chapter on the lesson and sets the stage for the next lesson. The critique is not intended as a barrier to progress, but rather a step that advances the learning process, allowing the learner and the instructor to best evaluate how to proceed. Both the Pilot in Training (PT) and the instructor should keep detailed notes throughout a flight so an effective critique can be accomplished after each lesson. For additional information on performing effective critiques utilize Chapter 6 of the FAA Aviation Instructor Handbook (FAA-H-8083-9).

Approximate lesson times: Approximate times are provided with each lesson to orient the instructor and the PT to the mental and physical requirements for completion of the lesson. These times are approximate; the actual time needed to complete a lesson is not part of the evaluation. Individuals will vary according to experience and skill level; the most important aspect of each lesson is successful completion of all the assessment items regardless of the actual time needed.

D1.4 Completion Criteria

A Certificate of Completion will be awarded at the satisfactory completion of Lesson 8 when the CIRRUS Owner/Operator has met the required desired outcome levels by satisfactorily demonstrating judgment, aeronautical decision making abilities, single-pilot resource management and risk management skills to safely fly a technically advanced CIRRUS aircraft.

While performing flight training, the instructor will:

1. Be the sole and **final** authority regarding whether or not the desired outcomes and assessment items are considered complete.
2. Be the **final** authority in all decisions regarding termination and/or continuation of flight.

While performing flight training, the pilot flying the aircraft will:

1. Act as the pilot-in-command when appropriately rated in the aircraft and is the sole manipulator of the controls.
2. Transfer controls using positive exchange of flight controls procedures [Reference: "Introduction: Positive Exchange of Flight Controls," Private Pilot for Airplane Single-Engine Land and Sea Practical Test Standards (FAA-S-8081-14AS), pp. 9.].

D1.5 Scope and Sequence

The training program includes evaluation of normal and emergency procedures, as well as proven standard operating procedures developed by UNDAF and CIRRUS Design. Scenario-based instruction techniques, aeronautical decision making, and effective risk management will be major emphases, while maintaining the highest level of safety.

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 1: This lesson is an introduction to SBT and CIRRUS Transition Training. This ground lesson is to ensure that the PT has an understanding of the POH and the contents within, at a level in which the scenario-based training can be conducted efficiently, effectively and safely. This lesson will include analysis of decision making processes, ADM concepts and

risk factors in relation to an accident scenario. This lesson will include an overview of the FAA Industry Training Standards (FITS) and the concepts of a FITS accepted course.

The PT and instructor will be introduced to the advanced cockpit of a CIRRUS aircraft and practice normal checklist use, avionics symbology and functionality and CAPS training.

Lesson 2: This lesson provides an introduction to normal operations and automation using an aircraft or flight training device. Conducted on a planned cross country scenario, this lesson will include normal operations of critical equipment for flight in VFR and IFR flight. The PT will generate acceptable solutions and alternatives to normal procedures (ADM) while performing automation management during a cross country scenario. The PT will implement normal procedures, including checklists, en route procedures and arrival procedures. The PT will make extensive use of the autopilot to gain proficiency in operating various avionics in the aircraft.

Lesson 3: This lesson is an introduction to operational characteristics and normal operations. This lesson is conducted on a planned cross country scenario to provide practice of normal procedures in a technically advanced aircraft and enhanced aeronautical decision making, information management, risk management and single-pilot resource management skills.

Lesson 4: This lesson is a ground lesson on Aeronautical Decision Making (ADM) through use of scenarios. This lesson includes numerous risk management tools and techniques to reduce the overall risks associated with flying. This lesson includes the use of PowerPoint™ presentation material and other media to introduce and explore scenarios, based upon the certification and ratings of the PT.

Lesson 5: This lesson provides an introduction to abnormal and emergency operations and automation competence using an aircraft or flight training device. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while properly utilizing the automation and avionics available. The PT will demonstrate extensive

use of the automation to develop his/her skills relating to work load management and SRM skills.

Lesson 6: This lesson provides additional instruction regarding abnormal and emergency operations, with emphasis on the ability of the PT to safely fly the aircraft without the use of the autopilot. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while using those resources, other than automation, to generate a safe outcome.

Lesson 7: This lesson is to demonstrate ADM and SRM skills during normal, abnormal, and emergency operations, while demonstrating both automation and manual flying competence. Conducted on a planned VFR or IFR cross country scenario, the PT will generate acceptable solutions, while effectively using all resources that are available.

Lesson 8: This lesson is the final flight that will take into account previously learned material. Conducted on a planned cross country scenario, the PT will demonstrate knowledge and skill levels that meet or exceed defined desired outcomes.

D2. Lessons

D2.1 Ground Lesson 1

Introduction to SBT and CIRRUS Transition Training
[Approximate time: 2.0 hours]

D2.1.1 Objectives

- This ground lesson is to ensure that the Pilot in Training (PT) has an understanding of the POH and the contents within, at a level in which the scenario-based training can be conducted efficiently, effectively and safely.

- The PT will also be given an overview of the course, as well as a student led discussion relating to aeronautical decision making and personal minimums.

D2.1.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.1.3.

The instructor will begin the training by developing the instructor/learner relationship. The first meeting will create the safety "culture" expected throughout the training. Included in this is an assessment done by the PT to determine personal readiness to safely begin training.

Through guided questions by the instructor, the PT will assess personal understanding of the pre-training material. Areas that are determined as a weakness will be strengthened by use of CIRRUS Aircraft Training Software (CATS), PowerPoint™ presentations and other training tools.

The instructor will lead a discussion on FAA Industry Training Standards (FITS) and the concepts of a FITS accepted course. An overview of the course content will also be discussed at this time.

The PT will be introduced to the advanced cockpit of a CIRRUS aircraft and be allowed to practice normal checklist use, avionics symbology and functionality and CAPS training; each using possible scenarios in which it may be necessary to accomplish these procedures.

D2.1.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 1 Concepts

- Pre-training material:
  - CIRRUS Aircraft Training Software (CATS)
  - CIRRUS Customer Courseware CD
  - CIRRUS SR20/ Training Guide (as appropriate)
- Scenario-based training procedures and guidelines:
  - "Section 2: Scenario Based Training," CSIP Standardized Instructor Guide, Edition 6.
- Decision making processes
  - "The Decision Making Process," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-10.
- ADM concepts
  - "Aeronautical Decision Making," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-8 - 9-9.
- Risk factors
  - "Assessing Risk," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-12 - 9-13.
- Risk management tools
  - Appendix A, "Personal Minimums Worksheet," SR20/22 Training Guide, Edition 6.
  - Appendix B, "PAVE Model," SR20/22 Training Guide, Edition 6
  - Appendix C, "Risk Assessment Chart," SR20/22 Training Guide, Edition 6.
- FITS
  - Outlined on FAA web site: *http://www.faa.gov/avr/afs/fits/*
- Checklist use
  - Section 4 Standard Operating Procedures, "Checklists," SR20/22 Training Guide, Edition 6.
- Avionics Symbology and Functionality
  - GNS 430/430A, Pilots Guide and Reference.
  - FlightMax Entegra PFD Rev. 09.
  - FlightMax EX5000C, FlightMax EX3000C Multi-Function Display, Pilots Guide for SRV, SR20, & SR22.
- CAPS Training

- "Section 10: Safety Information," SR20/22 Training Guide Edition 6.
- CIRRUS Aircraft Training Software (CATS): “AIRPLANE DESCRIPTION” section.

D2.1.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT’s performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the “C” column indicates “Complete” and that the item is completed at a satisfactory level. A check in the “I” column indicates “Incomplete” and that the item does not meet the evaluation standard.

Instructor student relationship (Explain)

C	I	
☐	☐	You conducted a self assessment related to the safety of flight.
☐	☐	You understand the importance of maintaining the “safety” culture.
☐	☐	You understand the instructor/student (PT) relationship in regards to interaction in and outside the aircraft.

Review of pre-training material (Explain)

C	I	
☐	☐	You understand the POH as to how it relates to the safe operation of the aircraft.
☐	☐	You applied stall theory to the safe operation of the aircraft.
☐	☐	You can explain any errors you made when previously completing the pre-training material.

Course Briefing/Overview (Explain)

C	I	
☐	☐	You understand the FITS Scenario based concept of student (PT)-led training.
☐	☐	You understand the requirements for the completion of the course.

Cockpit procedures trainer/aircraft (Explain)

C	I	
☐	☐	You safely performed the normal checklist procedures of the CIRRUS aircraft.
☐	☐	You understand the general avionics symbology and functionality.
☐	☐	You practiced the proper procedures to safety operate the CAPS.

NOTE: Do not actually practice CAPS deployment unless you are in a Cockpit Procedures Trainer (CPT) or Flight Training Device (FTD).

2.1.5 Completion Standards

This lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items.

D2.2 Flight Lesson 2

Introduction to Normal Operations and Automation (Aircraft or Flight Training Device) [Approximate time: 2.0 hours]

D2.2.1 Objectives

- ✈ The Pilot in Training (PT) will conduct normal operations of critical equipment for flight in VFR and IFR flight.

- ✈ The PT will demonstrate ADM skills to generate acceptable solutions and alternatives to normal procedures while performing automation management during a cross country scenario.

D2.2.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.2.3.

The cross country flight should include at least three legs and be conducted in a manner in which the PT has ample time to conduct normal procedures such as checklists, en route procedures, and arrival procedures – 30 to 45 minutes in duration for each leg is preferred. The PT will use the autopilot for most of this flight to gain proficiency in operating the various avionics in the aircraft.

At the completion of each leg, the PT will conduct a brief review of the decisions made on that leg and possible alternative solutions that could have been used to operate more effectively, efficiently and safely.

Automation Management – The demonstrated ability to control and navigate an aircraft by means of the automated systems installed in the aircraft.

Leg 1 – VFR Automated Navigation Leg

- Properly using autopilot from 1,000 ft. AGL on the departure until entry to the 45-degree leg in the VFR pattern.
- Properly using the XM Satellite Weather for en route and arrival.
- Properly setting in GPS course and navigating using automation to include climb, cruise and arrival.

Leg 2 – MVFR 2000agl / 4 visibility – Scenario provided prior to takeoff.

- Practice using TAWS.
- Practice using Traffic Watch.
- ADM – generating acceptable solutions and alternatives related to MVFR.
- Within the scenario, an instrument rated pilot may chose to go IFR.

Leg 3 – VFR or IFR – Determination of whether VMC or IMC conditions exist will be made prior to commencing leg 3.

- VFR Automated Navigation Leg –
    - Re-enforce those areas of weakness in normal operations, that have been determined inadequate by self-critique of the PT.
    - Automation Management
    - GPS competency
    - TAWS competency
    - XM Satellite Weather
    - Traffic Watch
- IFR Automated Navigation Leg
    - Will be flown on autopilot from 500 ft. AGL on departure until reaching the decision altitude (coupled ILS approach) on the instrument approach. If a missed approach is flown, it will be flown using the autopilot (in accordance with the standardization Section 3) and on-board navigation systems.
    - Re-enforce those areas of weakness in normal operations that have been determined inadequate by PT self critique and by the instructor.
        - Automation Management
        - GPS competency
        - TAWS competency
        - XM Satellite Weather
        - Traffic Watch

This lesson will require a minimum of three legs.

This lesson will be the first introduction to a planned VFR and/or IFR cross country scenario involving travel to numerous airports in a technically advanced CIRRUS aircraft.

D2.2.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 2 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training Guide Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Arrival procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide Edition 6.
- Automation management guidelines and procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-7 - 4-16.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- IFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Approach Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-19 - 4-44.

D2.2.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Explain)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Practice)

C	I	
☐	☐	During the flight, you recognized clearances from ATC and practiced the appropriate actions when those clearances were unclear.
☐	☐	You established and maintained proper communication with ATC, tower or UNICOM
☐	☐	You acquired communication and navigation frequencies using both your GPS and the MFD.

Avionics Usage (Practice)

C I

☐ ☐ You used the electronic checklists and other available information on MFD during the appropriate phase of flight.
☐ ☐ You used the CMAX airport plan view appropriately to reduce runway incursions.
☐ ☐ You entered the destination airport into the GPS.
☐ ☐ You utilized the autopilot or flight director (FD) as appropriate for climbs, descents, altitude hold, and course guidance.

Demonstrates Proper Decision Making Process (Explain)

C I

☐ ☐ During the scenarios you identified situations as they arose.
☐ ☐ During the scenarios you effectively assessed the alternatives you had and implemented the most appropriate course of action.
☐ ☐ During the scenarios, you continued to evaluate your decisions and identify additional risk.

Preflight Preparation (Practice)

C I

☐ ☐ You properly acquired, interpreted and briefed the instructor on the current weather information for the route of flight.
☐ ☐ You determined you have enough fuel to safely make the flight.
☐ ☐ You are familiar with the CG limits of your aircraft and have determined the CG is within aircraft limitations.
☐ ☐ You identified the risks of this flight and you related your personal minimums to weather conditions you encountered.
☐ ☐ You practiced using the I.M.S.A.F.E checklist and practiced identifying any associated risks that may affect a go/no-go decision.

☐ ☐ You identified the risk elements appropriate to the flight training scenario and would be able to categorize the risks of the flight into the P.A.V.E. model.
☐ ☐ You understood why preflight is the proper time to remove the CAPS safety pin.

Engine Start Up (Practice)

C	I	
☐	☐	You determined the best start procedure.
☐	☐	You used the proper clearing procedures prior to engine start.
☐	☐	You monitored engine indications after engine start.

Before Taxi (Practice)

C	I	
☐	☐	You completed the appropriate electronic checklist on the MFD.

Taxi (Practice)

C	I	
☐	☐	You maintained directional control with minimal use of brakes.
☐	☐	You are comfortable with the handling characteristics associated with taxing a CIRRUS aircraft with a castering nose wheel.

Before Takeoff (Practice)

C	I	
☐	☐	You completed the appropriate checklist on the MFD.
☐	☐	You determined the best type of takeoff and configuration to conduct for each scenario.
☐	☐	You used proper clearing procedures when taxiing onto the active runway.
☐	☐	You set up PFD before taxing into the active runway by entering: altitude, vertical speed heading information, and navigation information.

C I
☐ ☐ You conducted a takeoff briefing that included all information pertaining to the safety of the flight.

Take-off (Practice)

C I
☐ ☐ You maintained centerline at all times on takeoff.

Normal and Cross Wind takeoff (Explain)

C I
☐ ☐ You maintained centerline on takeoff as the power was increased.
☐ ☐ You chose to reduce your risk by using the entire runway for takeoff.
☐ ☐ You considered the associated conditions related to conducting a normal takeoff.
☐ ☐ You used the appropriate techniques to perform a crosswind takeoff.

Climb out (Practice)

C I
☐ ☐ You used the autopilot to assist in climb out.
☐ ☐ You safely retracted the flaps at the appropriate time.
☐ ☐ You selected the most appropriate altitude to turn onto course.
☐ ☐ You used the proper scanning techniques for collision avoidance including the use of electronic displays available.
☐ ☐ You chose the most appropriate time to follow up with the checklist flow by using the available resources on the MFD
☐ ☐ You properly established the power and mixture settings on climb out.

Cruise - Execution of the VFR Cross Country (Practice)

C I
☐ ☐ You maintained situational awareness using all available resources.
☐ ☐ You used the autopilot for the appropriate phases of flight including: climb out, cruse, and descent.
☐ ☐ You set in the GPS course and navigation using automation to include climb, cruise, and arrival.
☐ ☐ You used the lean assist feature on the MFD to aid in the leaning process.

XM Satellite Weather (Explain)

C	I	
☐	☐	You identified weather patterns on the XM satellite weather displays.
☐	☐	You practiced activating and interpreting the storm scope and NexRad.
☐	☐	You identified the best situations in which to use the storm scope versus the NexRad.
☐	☐	You utilized XM Satellite weather displays and other weather resources to evaluate the environmental risks of the flight, while applying the PAVE model.
☐	☐	You assessed possible alternatives for final destination airports and selected the most appropriate destination using all available resources including XM satellite weather.

TAWS (Explain)

C	I	
☐	☐	You considered the risks related to the MFD color codes for terrain.
☐	☐	You practiced the appropriate emergency response for a “Pull Up” alert.
☐	☐	You identified and reacted to the aural and visual alerts provided by the TAWS.

Traffic (Explain)

C	I	
☐	☐	You conducted collision avoidance procedures by using traffic watch.
☐	☐	You adjusted traffic watch displays appropriate the current situation.

Descent and Arrival Procedures for Destination (Practice)

C	I	
☐	☐	You used the correct arrival and approach procedure needed to safely transition from en route to arrival.
☐	☐	You used the XM Satellite Weather to aid in determining active runway and/or traffic pattern entry.

C I

- ☐ ☐ You chose the best alternative course of action for approach and arrival given the conditions.
- ☐ ☐ You evaluated alternative risks that may impair safe arrival at the destination.
- ☐ ☐ You established a stabilized descent and arrival.
- ☐ ☐ You chose the safest course of action to safely transition from arrival to a safe landing.
- ☐ ☐ You properly adjusted your speed for arrival at airport.
- ☐ ☐ You used all available internal and external resources to choose the best runway for landing and properly entered the airport area of the arrival airport.

Approach to Landing and Landing (Practice)

Normal and Crosswind Landings

C I

- ☐ ☐ You performed the most appropriate takeoff for the given conditions and/or scenario.
- ☐ ☐ You conducted a stabilized approach which included: proper airspeed, correct flight path, correct landing configuration, power setting appropriate for aircraft configuration, sink rate was not abnormal and you completed all checklists.
- ☐ ☐ You executed a go-around when a stabilized approach could not be obtained by 200 ft. AGL.

Instrument Approach Procedures (Practice)

Precision approach using automation
(Instrument rated pilot only, on third leg)

C I

- ☐ ☐ You loaded and activated the ILS approach using the GPS and navigate vertically and horizontally using the automation available.
- ☐ ☐ You executed a couple ILS approach.
- ☐ ☐ You made a safe transition from simulated/actual IMC conditions to visual conditions at the decision altitude on the ILS approach.

Post Flight Discussion and Critique (Explain)

Conducted at completion of each leg of flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the scenarios.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process that you used to make good decisions.

D2.2.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2.3 Flight Lesson 3

Introduction to Operational Characteristics and Normal Operations
[Approximate time: 2.0 hours]

D2.3.1 Objectives

- ✈ The Pilot in Training (PT) will conduct an introductory flight to practice normal procedures in a technically advanced aircraft and continue to enhance aeronautical decision making, information management, risk management and single-pilot resource management skills.

D2.3.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.3.3.

Flight should be conducted in a manner in which the PT has ample time to conduct normal procedures such as checklists, en route procedures, aircraft familiarization maneuvers and arrival procedures. Lesson can be conducted as a cross county lesson or local flight due to the increased number of maneuvers and landings required.

- Proper utilization of the avionics in the aircraft as learned on the previous lesson.
- Introduce the pilot to the CIRRUS Aircraft with emphasis on the operational characteristics of the CIRRUS:
    - Steep Turns
    - Flight at minimum controllable airspeed
    - Power off Stalls
    - Power on Stalls
    - Autopilot stall recognition
- Apply Aeronautical Decision Making.
- Introduction to various take off and landing configurations.

D2.3.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 3 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training Guide Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Arrival procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- SRM
  - Section 4 Standard Operating Procedures, "Single Pilot Operations," SR20/22 Training, Guide Edition 6.
- ADM
  - "Aeronautical Decision Making," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-8 - 9-9.
- Familiarization maneuvers
  - Section 4 Standard Operating Procedures, "Maneuver Profiles," SR20/22 Training Guide, Edition 6.

Takeoff and landing configurations

  - Section 4 Standard Operating Procedures, "Maneuver Profiles," SR20/22 Training Guide Edition 6.

- Risk factors
  - "Assessing Risk," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-12 - 9-13.
- Risk management tools
  - Appendix A, "Personal Minimums Worksheet," SR20/22 Training Guide, Edition 6.

- Appendix B, "PAVE Model," SR20/22 Training Guide, Edition 6.
- Appendix C, "Risk Assessment Chart," SR20/22 Training Guide, Edition 6.

D2.3.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Explain)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the most appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Practice)

C	I	
☐	☐	During the flight you recognized clearances from ATC and conducted the appropriate actions when those clearances were unclear.
☐	☐	You acquired communication and navigation frequencies from the GPS or MFD.
☐	☐	You established and maintained proper communication with ATC, tower or UNICOM

Avionics Usage (Practice)

C I

☐ ☐ You used the electronic checklists and other available information on MFD during the appropriate phase of flight.

☐ ☐ You used the CMAX airport plan view to reduce runway incursions.

☐ ☐ You utilized the autopilot or flight director (FD) as appropriate for climbs, descents, altitude hold, and course guidance.

Demonstrates proper decision making process (Explain)

C I

☐ ☐ You properly analyzed problems and developed low risk alternatives for the problems.

☐ ☐ You effectively assessed the alternatives and selected the most appropriate alternative that would limit your risk to an acceptable level.

Preflight Preparation (Practice)

C I

☐ ☐ You properly acquired, interpreted and briefed the current weather information for the route and time of flight to the instructor.

☐ ☐ You are familiar with the CG limits of your aircraft and have determined the CG is within aircraft limitations.

☐ ☐ You properly identified the risks of the flight and you were able to relate your personal minimums to the flight performed.

☐ ☐ You used the I.M.S.A.F.E checklist and identified risks associated with the flight.

☐ ☐ You removed the CAPS safety pin as stated in the checklist.

C	I	
☐	☐	You briefed your instructor pilot on the passenger briefing elements, including: seat belt use, emergency exits, and operation of the fire extinguisher.
☐	☐	You identified the risk elements appropriate to the flight training scenario by categorizing the risks of the flight into the P.A.V.E. model.

Engine Start Up (Practice)

C	I	
☐	☐	You used the best start procedure for the given conditions.
☐	☐	You used proper clearing procedures prior to engine start.
☐	☐	You monitored engine indications after engine start.
☐	☐	You set up the electronic displays in a manner that reduced work load.

Before Taxi (Practice)

C	I	
☐	☐	You used the electronic checklist to perform the required checklist items.

Taxi (Practice)

C	I	
☐	☐	You maintained directional control with minimal use of brakes.
☐	☐	You are comfortable with the handling characteristics associated with a castering nose wheel.

Before Takeoff (Practice)

C	I	
☐	☐	You used the appropriate checklists before takeoff.
☐	☐	You established the proper configuration for the takeoff option you chose.
☐	☐	You set up PFD before taxing into the active runway by entering: altitude, vertical speed heading information, and navigation information.
☐	☐	You used proper clearing procedures when taxiing onto the active runway.

Takeoff(s) (Practice)

C I

☐ ☐ You performed the most appropriate take off for the given conditions.

Normal and Cross Wind Takeoff

C I

☐ ☐ You anticipated the forces on the airplane to maintain centerline as power was increased for takeoff.

☐ ☐ You chose to reduce your risk by using the entire runway for takeoff.

☐ ☐ You recognized the associated conditions related to conducting a normal takeoff.

☐ ☐ You used the appropriate techniques to perform a crosswind takeoff.

Short-Field Takeoff

C I

☐ ☐ You took into account the associated conditions when conducting a short-field takeoff.

☐ ☐ You anticipated the forces on the airplane to maintain centerline.

☐ ☐ You maintained the best rate of climb until the obstacle was cleared.

Soft-Field Takeoff

C I

☐ ☐ You recognized the associated conditions related to conducting a soft-field takeoff.

☐ ☐ You considered the recent weather conditions (or simulated) prior to using a soft field for takeoff.

☐ ☐ You maintained the appropriate taxi speed in relation to the given situation.

Climb Out (Practice)

C I

☐ ☐ You performed proper scanning techniques for collision avoidance.

☐ ☐ You used the MFD to ensure checklist completion.

☐ ☐ You used all available resources on the MFD to reduce CFIT, collision or flight into unexpected weather conditions.

☐ ☐ You established the proper power and mixture settings on climb out.

Maneuvers (Practice)

Steep Turns

C I

☐ ☐ You executed proper collision avoidance procedures prior to conducting steep turns.

☐ ☐ You used good decision making skills to select a low-risk location to conduct the steep turns.

☐ ☐ You applied the appropriate corrections to maintain the steep turns within the standards for your certificate and ratings.

Slow Flight

C I

☐ ☐ You can explain the relationship between pitch and power.

☐ ☐ You applied slow flight principles to normal flight conditions.

☐ ☐ You used good decision making skills to select a low-risk location to conduct slow flight.

☐ ☐ You divided your attention between the airplane control and situational awareness, while maintaining the altitude assigned.

Power-off Stalls

C I

☐ ☐ You used good decision making skills to select a low-risk location to conduct power-off stalls.

☐ ☐ You practiced various stages of the stall and recovered promptly allowing the aircraft to accelerate to the recommended airspeed.

NOTE: Power-off stalls will be practiced to the point of recognition and full stall, both in a wings level and turning condition.

Power-on Stalls

C I

☐ ☐ You exhibited knowledge of the elements related to power-on stalls.

☐ ☐ You used good decision making skills to select a low-risk location to conduct power-on stalls.

☐ ☐ You recognized various stages of the stall and recovers promptly allowing the aircraft to accelerate to the recommended airspeed.

NOTE: Power-on stalls will be practiced to the point of recognition and full stall, both in a wings level and turning condition.

Autopilot Stall Recognition

C I

☐ ☐ You exhibited knowledge of the elements related to limitations associated with the autopilot.

☐ ☐ You practiced conducting an autopilot stall recognition to recovery and were able to relate possible scenarios where this could happen.

☐ ☐ You took appropriate action when the autopilot exceeded its airspeed limitation.

NOTE: For additional information on conducting safe autopilot stall recognition see the Standardization section.

Descent and Arrival Procedure for Destination (Practice)

C I

☐ ☐ You properly used the GPS and MFD to aid in traffic pattern entry.

☐ ☐ You slowed the aircraft to appropriate airspeed in preparation for arrival.

☐ ☐ You had the appropriate radio frequencies displayed relating to the arrival airport and entered the frequencies into the standby using the GPS.

☐ ☐ You established and maintained proper radio communications.

Approach to Landing and Landing (Practice)

Normal and Crosswind Landings

C	I	
☐	☐	You performed the most appropriate landing for the given conditions.
☐	☐	You performed stabilized approaches which included: proper airspeed, correct flight path, correct landing configuration, power setting appropriate for aircraft configuration, sink rate was not abnormal and you completed all checklists.
☐	☐	You identified touchdown and go-around points prior to performing landings.
☐	☐	You verified flap setting for all landings.
☐	☐	You executed a go-around when a stabilized approach could not be obtained by 200 ft AGL.

Soft-Field Landings

C	I	
☐	☐	You demonstrated the ability to safely land using soft-field techniques.
☐	☐	You adequately surveyed the runway environment prior to landing on a soft-field runway.
☐	☐	You considered the recent weather conditions when deciding the safety of landing on the soft-field runway.
☐	☐	You used the appropriate resources to ensure the runway was suitable to land on.

Short-Field Landings

C I

☐ ☐ You demonstrated the ability to safely land using short-field techniques.

☐ ☐ You performed stabilized approaches which included: proper airspeed, correct flight path, correct landing configuration, power setting appropriate for aircraft configuration, sink rate was not abnormal and you completed all checklists.

☐ ☐ You identified touchdown and go-around points prior to performing landings.

☐ ☐ You executed a go-around when a stabilized approach could not be obtained by 200 ft AGL.

50% Flap Landings

C I

☐ ☐ You explained a scenario in which a 50% flap landing may be required.

☐ ☐ You demonstrated a stabilized 50% flap landing.

☐ ☐ You identified a touchdown and go around point prior to landing.

☐ ☐ You identified risks associated with 50% flap landing.

Zero Flap Landings

C I

☐ ☐ You explained a scenario in which a zero flap landing may be required.

☐ ☐ You maintained recommended airspeeds while performing a zero flap landing.

☐ ☐ You identified risks associated with a zero flap landing.

Power Off Landing

C I

☐ ☐ You understand the dangers of performing a zero flap and power off landing.
NOTE: Not authorized per standardization section.

☐ ☐ You demonstrated a stabilized power-off landing.

Go-Around (Practice)

C I

☐ ☐ You recognize situations in which a go-around is the best course of action.

☐ ☐ You executed a go-around when a stabilized approach could not be obtained by 200 ft AGL.

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CIRRUS Design, Duluth, MN 55811

After Landing and Shutdown (Practice)

C	I	
☐	☐	You conducted the after landing checklists at the appropriate time.
☐	☐	You used the appropriate electronic and paper checklists to properly execute shutdown procedures.

Post Flight Discussion and Critique (Explain)

Critique of the aeronautical decisions made at the completion of each leg of the flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the lesson.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process you used to make good decisions.

D2.3.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2.4 Ground Lesson 4

Aeronautical Decision Making – Scenarios
[Approximate time: 2.0 hours]

D2.4.1 Objectives

- ✈ The Pilot in Training (PT) will correlate systems and system malfunctions to a manage/decide level in a scenario-based format through a PowerPoint™ presentation.

- ✈ The PT will practice numerous risk management tools and techniques to reduce the overall risks associated with flying. These scenarios will be based on the certificate and ratings held by the PT.

D2.4.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.4.3.

The instructor will guide the PT through a series of general aviation accident statistics, as they pertain to the phases of flight that have an increased probability of accident occurrence. The PT will also identify ways to reduce risk in relation to common accident causes.

The instructor will guide the PT through a series of scenarios to provide the PT with an opportunity to apply the concepts and tools discussed during this lesson. The PT will have an opportunity to analyze each scenario to identify what systems are affected, what risks he/she feels are acceptable, discuss alternative solutions to reduce the risk, and explain how personal minimums influenced decisions.

D2.4.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 4 Concepts:

- Scenario-based training procedures and guidelines:
  - "Section 2: Scenario Based Training," CSIP Standardized Instructor Guide, Edition 6.
- Risk factors
  - "Assessing Risk," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-12 - 9-13.
- Risk management tools
  - Appendix A, "Personal Minimums Worksheet," SR20/22 Training Guide, Edition 6.
  - Appendix B, "PAVE Model," SR20/22 Training Guide, Edition 6.
  - Appendix C, "Risk Assessment Chart," SR20/22 Training Guide, Edition 6.

D2.4.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

General Aviation Accident Statistics (Explain)

C	I	
☐	☐	You understand the statistical causes of accidents
☐	☐	You understand those phases of flight that have an increase in the chance of an accident.
☐	☐	You identified ways to reduce risk related to common accident causes.

Analysis of CIRRUS Scenarios – VFR and IFR (Explain)

C	I	
☐	☐	You identified the system affected in each scenario.
☐	☐	You discussed what risk would be acceptable for each scenario.
☐	☐	You discussed ways that risk could be reduced in each scenario.
☐	☐	You discussed how personal minimums influence each scenario.

D2.4.5 Completion Standards/Desired Outcomes

The lesson will be complete when the PT can explain probable causes and appropriate actions based on each scenario to a manage/decide level. The PT will also be expected to identify possible systems affected by the scenario, high risk items, possible ways those risk items could have been reduced or eliminated, and how these situations would have related to the individuals' personal minimums.

D2.5 Flight Lesson 5

Abnormal/Emergency Operations and Automation Competence (Aircraft or Flight Training Device) [Approximate time: 3.0 hours]

D2.5.1 Objectives

- ✈ The Pilot in Training (PT) will practice abnormal and emergency procedures for flight. The PT will generate acceptable solutions and alternatives as a result of the given abnormal/emergency condition while performing automation management during the cross country scenario.

D2.5.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.5.3.

The cross country flight should include at least three legs and be conducted in a manner in which the PT has ample time to conduct procedures such as checklists, en route procedures, and system malfunctions or emergencies – 30 to 45 minutes in duration for each leg is preferred. The PT will use the autopilot for most of this flight to gain proficiency in operating the various avionics in the aircraft.

At the completion of each leg, the PT will conduct a brief review of the decisions made on that leg and possible alternative solutions that could have been used to operate more effectively, efficiently and safely.

Automation Management – The demonstrated ability to control and navigate an aircraft by means of the automated systems installed in the aircraft.

Leg 1 – VFR or IFR Leg (if PT has Instrument rating)
Automated Navigation Leg

- Re-enforce those areas of weakness in normal operations.
  - Automation Management
  - Work load Management
- Introduce system malfunctions
  - Pilot/Static malfunction (air data failure)
  - Alternator 1 failure
- Instrument approach (if PT instrument rated)

Leg 2 – VFR or IFR Leg (if PT has Instrument rating)
Automated Navigation Leg

- PFD lamp failure
- Instrument approach (if PT instrument rated)

Leg 3 – VFR or IFR Leg (if PT has Instrument rating)
Automated Navigation Leg

- Cabin fire in flight

This lesson will require a minimum of three legs.

Throughout the lesson, generating acceptable solutions and alternatives related to the flight must be exercised (simulated instrument if PT has instrument rating).

D2.5.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 5 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training, Guide Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Automation management guidelines and procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-7 - 4-16.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- IFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6..
  - "Approach Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-19 - 4-44.

- SRM
  - Section 4 Standard Operating Procedures, "Single Pilot Operations," SR20/22 Training Guide Edition 6.

D2.5.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Practice)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the most appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Perform)

C	I	
☐	☐	You continue to perform all aspects of radio communication in accordance with the assessment items in previous flight lessons.

Avionics Usage (Perform)

C	I	
☐	☐	You continue to utilize all available avionics information as appropriate to the situation presented.

Demonstrates Proper Decision Making Process (Perform)

C	I	
☐	☐	During the scenarios, you identified problems as they arose.
☐	☐	During the scenarios, you analyzed the problems and developed alternatives to reduce risk.
☐	☐	During the scenarios, you assessed the alternatives you had and selected the most appropriate alternative.
☐	☐	During the scenarios, you safely, efficiently, and effectively implemented the selected alternative.
☐	☐	During the scenarios, you continued to evaluate your decisions and you identified additional risks.

Preflight Preparation (Perform)

C	I	
☐	☐	You continue to perform all aspects of preflight preparation in accordance with the assessment items in previous flight lessons.

Engine Start Up (Perform)

C	I	
☐	☐	You used the best start procedure for the given conditions, while maintaining proper clearing procedures.

Before Taxi (Perform)

C	I	
☐	☐	You continue to use all available avionics and resources as outlined in the assessment items in previous flight lessons.

Taxi (Perform)

C	I	
☐	☐	You continue to perform safe taxi procedures in accordance with the assessment items in previous flight lessons.

Before Takeoff (Perform)

C	I	
☐	☐	You continue to perform before takeoff checks and in accordance with the assessment items in previous lessons.

Takeoff(s) (Perform)

C	I	
☐	☐	You performed the most appropriate take off for the given conditions.

Climb Out (Perform)

C I

☐ ☐ You continue to perform climb procedures in accordance with the assessment items in previous flight lessons.

Cruise: Execution of the VFR or IFR Cross Country (Practice)

Overall

C I

☐ ☐ You made appropriate decisions without losing situational awareness.

☐ ☐ You used autopilot from 500 ft AGL on the departure until the final descent to landing or missed approach.

☐ ☐ You set in the proper GPS course and navigated using automation to include climb, cruise, and arrival.

During the simulated emergencies and malfunctions you:

C I

☐ ☐ Maintained aircraft control.

☐ ☐ Analyzed the situation correctly.

☐ ☐ Took the appropriate action.

☐ ☐ Included a plan to land as soon as condition permitted it.

Leg 1

C I

☐ ☐ You determined that a pilot/static malfunction had occurred.

☐ ☐ You identified indications of an alternator 1 failure.

☐ ☐ You identified what avionics-related equipment will be affected with an alternator 1 failure.

☐ ☐ You understood what systems were malfunctioning, properly troubleshot and took appropriate action to reduce risk to an acceptable level.

☐ ☐ You used all available resources to reduce the additional work load.

☐ ☐ You followed proper checklist procedures.

☐ ☐ You shed electrical loads as necessary for the given situation.

Leg 2

C I

☐ ☐ You determined the reason for the PFD failure.

☐ ☐ Upon detecting a PFD lamp failure, you took appropriate action to maintain aircraft control.

C I

☐ ☐ You used all available resources to reduce the additional work load.

☐ ☐ You understood the autopilot operation as it related to the PFD failure.

☐ ☐ You understand how other equipment is affected in the event of a PFD Failure.

☐ ☐ You took appropriate action for the given situation.

Leg 3

C I

☐ ☐ You demonstrated knowledge on why an electrical fire will happen.

☐ ☐ You responded to the urgency of the electrical scenario.

☐ ☐ You showed understanding of the proper checklist items for the flight situation.

☐ ☐ You took necessary action to eliminate fumes and smoke (simulated) from the cockpit.

☐ ☐ You made a decision to divert in a timely manner.

Descent and Arrival Procedure for Destination (Perform)

C I

☐ ☐ You Continue to use all available information for arrival to the airport in accordance with the assessment items in the previous flight lessons.

Descent and Arrival Procedure for Destination (Practice)

Instrument Rated Pilot Only

Instrument Approach Procedures

Precision Approach – Coupled

C I

☐ ☐ You loaded and activated the ILS approach using the GPS and navigated vertically and horizontally using automation.

☐ ☐ You executed a coupled ILS approach.

☐ ☐ You transitioned to the missed approach at the DH.

☐ ☐ You navigated to the missed approach using the GPS.

☐ ☐ You used the proper entry into the holding pattern and executed two turns in the hold.

Non-precision GPS Approach – Coupled

C I

☐ ☐ You loaded and activated the approach using the GPS and navigated vertically and horizontally using automation.
☐ ☐ You executed a non-precision approach using the GPS.
☐ ☐ You verified the GPS is in the APR mode (if GPS approach).
☐ ☐ You transitioned from simulated IMC conditions to visual conditions at the instructor's discretion.
☐ ☐ You executed a straight in or circling landing.

Any Non-precision or Precision Approach - Coupled

C I

☐ ☐ You chose the proper approach and loaded it accordingly.
☐ ☐ You activated the approach two miles before the final approach fix.
☐ ☐ You made proper decisions during the execution of the approach.
☐ ☐ You safely transitioned from simulated/actual IMC conditions to visual conditions.
☐ ☐ You determined whether to make a circling or straight in landing.

Approach to Landing and Landing (Perform)

NOTE: A minimum of three landings must be attempted. For the lesson to be complete, all assessments items must be met for any type of landing that is attempted. The type and maximum amount of landings practiced should be tailored to the needs of the PT.

C I

☐ ☐ You performed appropriate approach to landing and landing for the given situation while maintaining the highest level of safety as outlined in previous assessment items and standard operating procedures. .

After Landing and Shutdown (Perform)

C I

☐ ☐ You continue to perform the tasks associated with the after landing and shutdown in accordance with assessment items in the previous flight lessons.

Post Flight Discussion and Critique (Practice)

Critique of the aeronautical decisions made at the completion of each leg of the flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the scenarios.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process that you used to make good decisions.

D2.5.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2.6 Flight Lesson 6

Abnormal/Emergency Operations and Manual Flying Competence (Aircraft) [Approximate time: 3.0 hours]

D2.6.1 Objectives

- ✈ The Pilot in Training (PT) will practice abnormal and emergency procedures for flight. The PT will generate acceptable solutions and alternatives as a result of the given abnormal/emergency condition while manually flying the aircraft.
  Note: the (PT) should be allowed to utilize the autopilot as a part of there decision making process, but then should be asked to hand fly the aircraft.

D2.6.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.6.3.

The cross country flight should include at least three legs and be conducted in a manner in which the PT has ample time to conduct procedures such as checklists, en route procedures, and system malfunctions or emergencies – 30 to 45 minutes in duration for each leg is preferred. The PT will hand fly for most of this flight to increase proficiency in BAIF skills, multi-tasking, and cockpit organization.

At the completion of each leg, the PT will conduct a brief review of the decisions made on that leg and possible alternative solutions that could have been used to operate more effectively, efficiently, and safely.

Leg 1 – VFR or IFR Leg (if PT has Instrument rating) –

- Re-enforce those areas of weakness in previous lesson that have been determined inadequate by self-critique of the PT.
- Perform system malfunctions and emergencies
  - Open door on takeoff
  - Autopilot failure
- Instrument approach (if PT instrument rated)

Leg 2 – VFR or IFR Leg (if PT has Instrument rating) –

- Perform system malfunctions and emergencies
  - Low oil pressure

Leg 3 – VFR or IFR Leg (if PT has Instrument rating) –

- Simulated weather conditions - MVFR
- Flight begins VFR, then inadvertent IMC
  - Unusual Attitudes
  - Autopilot stall recognition
- TAWS escape maneuver (if installed)
- Instrument approach (if PT instrument rated)

This lesson will require a minimum of three legs.

Throughout the lesson, generating acceptable solutions and alternatives related to the flight must be exercised (simulated instrument if PT has instrument rating).

D2.6.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 6 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training Guide Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Arrival procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide Edition 6.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- IFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Approach Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-19 - 4-44.

- SRM
  - Section 4 Standard Operating Procedures, "Single Pilot Operations," SR20/22 Training Guide Edition 6.

D2.6.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Practice)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the most appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Perform)

C	I	
☐	☐	You continue to perform all aspects of radio communication in accordance with the assessment items in previous flight lessons.

Avionics Usage (Perform)

C	I	
☐	☐	You continue to utilize all available avionics information as appropriate to the situation presented.

Demonstrates Proper Decision Making Process (Practice)

C	I	
☐	☐	During the scenarios, you identified problems as they arose.
☐	☐	During the scenarios, you analyzed the problems and developed alternatives to reduce risk.
☐	☐	During the scenarios, you assessed the alternatives you had and selected the most appropriate alternative.
☐	☐	During the scenarios, you safely, efficiently, and effectively implemented the selected alternative.
☐	☐	During the scenarios, you continued to evaluate your decisions and you identified additional risks.

Preflight Preparation (Perform)

C	I	
☐	☐	You continue to perform all aspects of preflight preparation in accordance with the assessment items in previous flight lessons..

Engine Start Up (Perform)

C	I	
☐	☐	You used the best start procedure for the given conditions, while maintaining proper clearing procedures.

Before Taxi (Perform)

C	I	
☐	☐	You continue to use all available avionics and resources as outlined in the assessment items in previous flight lessons.

Taxi (Perform)

C	I	
☐	☐	You continue to perform safe taxi procedures in accordance with the assessment items in previous flight lessons.

Before Takeoff (Perform)

C	I	
☐	☐	You set up PFD before taxing into the active runway by entering: altitude, vertical speed heading information, and navigation information.
☐	☐	You continue to perform before takeoff checks in accordance with the assessment items in previous lessons.

Takeoff(s) (Perform)

C I

☐ ☐ You performed the most appropriate take off for the given conditions.

Climb Out (Perform)

C I

☐ ☐ You continue to perform climb procedures in accordance with the assessment items in previous flight lessons.

☐ ☐ You used the flight director (FD) for the climb out and transition to cruise.

Cruise: Execution of the VFR or IFR Cross Country (Practice)

Overall

C I

☐ ☐ You made appropriate decisions without losing situational awareness.

☐ ☐ You set in the proper GPS course and navigated using avionics while manually conducting the climb, cruise, and arrival.

☐ ☐ You identified the differences involved in manually flying with and without the (FD) and took proper precautions.

☐ ☐ You integrated automation and manual flying competencies.

During the simulated emergencies and malfunctions you:

C I

☐ ☐ Maintained aircraft control.

☐ ☐ Analyzed the situation correctly.

☐ ☐ Took the appropriate action.

☐ ☐ Included a plan to land as soon as conditions permitted it.

Leg 1

C I

☐ ☐ You identified an open door and reacted accordingly.

☐ ☐ You identified the risks associated with an autopilot failure.

☐ ☐ You identified how the autopilot failure affects your personal minimums.

Leg 2

C I

☐ ☐ You can explain what situations may lead to an oil annunciation.
☐ ☐ You used checklists when time permitted.
☐ ☐ You decided on the best course of action for each emergency simulation.
☐ ☐ You recognized the need to divert and chose a suitable location, if the situation warranted.
☐ ☐ You considered CAPS as one alternative solution to each potentially life threatening emergency.

Leg 3

C I

☐ ☐ You have identified methods to help prevent inadvertent flight into IMC conditions.
☐ ☐ You acted appropriately to exit IMC conditions or get an IFR clearance.
☐ ☐ You performed scenarios that simulated TAWS warnings.
☐ ☐ You identified audible warnings associated with the TAWS system.
☐ ☐ You decided on appropriate maneuvers when a TAWS warning was simulated.
☐ ☐ You recovered properly and in a timely manner when the autopilot put the aircraft in a stall situation.
☐ ☐ You can identify the primary hazards of partial power while operating the autopilot.
☐ ☐ You demonstrated knowledge of flight situations that could lead to unusual attitudes.
☐ ☐ You recovered from an unusual attitude properly and used the autopilot, as appropriate, to keep the aircraft stabilized.
☐ ☐ You identified the possible alternative of using the CAPS with regards to an unusual attitude.

Descent and Arrival Procedure for Destination (VFR or IFR) (Perform)

C I

☐ ☐ You Continue to use all available information for arrival to the airport in accordance with the assessment items in previous flight lessons.

Descent and Arrival Procedure for Destination (Practice)

Instrument Rated Pilot Only

Instrument Approach Procedures

Non-precision Approach – Leg 1

C I

☐ ☐ You chose the proper approach and loaded it correctly.
☐ ☐ You loaded and activated the approach at the proper time.
☐ ☐ You transitioned from simulated IMC conditions to visual conditions at the instructor's discretion.
☐ ☐ You determined whether to make a circling or straight in landing.

Visual Approach (Simulated Engine Failure) – Leg 2

C I

☐ ☐ You identified a proper landing location and the risks involved.
☐ ☐ You effectively utilized the glide characteristics of the aircraft.
☐ ☐ You considered CAPS as one alternative solution to each potentially life threatening emergency.

Non-precision Approach – Leg 3

C I

☐ ☐ You chose the proper approach and loaded it accordingly.
☐ ☐ You transitioned safely from simulated IMC conditions to a visual landing.
☐ ☐ You executed a circling or straight in landing.
☐ ☐ You did not descend below the MDA until you were: in a normal position to land, had the flight visibility prescribed by the approach, and had the runway environment in sight.

Approach to Landing and Landing (Perform)

NOTE: A minimum of three landings must be attempted. For the lesson to be complete, all assessment items must be met for any type of landing that is attempted. The type and maximum amount of landings practiced should be tailored to the needs of the PT.

C I

☐ ☐ You performed appropriate approach to landing and landing for the given situation while maintaining the highest level of safety as outlined in previous assessment items and standard operating procedures.

After Landing and Shutdown (Perform)

C	I	
☐	☐	You continue to perform the tasks associated with the after landing and shutdown in accordance with assessment items in previous flight lessons.

Post Flight Discussion and Critique (Practice)

Critique of the aeronautical decisions made at the completion of each leg of the flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the scenarios.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process you used to make good decisions.

D2.6.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2.7 Flight Lesson 7

Abnormal/Emergency Operations and Automation and Manual Flying [Approximate time: 2.0 hours]

D2.7.1 Objectives

- ✈ The Pilot in Training (PT) will practice abnormal and emergency procedures for flight. The PT will generate acceptable solutions and alternatives as a result of the given abnormal/emergency condition while demonstrating automation and manual flying competency.

D2.7.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.7.3.

The cross country flight should include at least three legs and be conducted in a manner in which the PT has ample time to conduct procedures such as checklists, en route procedures, and system malfunctions or emergencies – 30 to 45 minutes in duration for each leg is preferred. The PT will both manually fly and use the autopilot.

At the completion of each leg, the PT will conduct a brief review of the decisions made on that leg and possible alternative solutions that could have been used to operate more effectively, efficiently and safely.

Leg 1 – VFR or IFR Leg (if PT has Instrument rating)

- Simulated icing scenario
- MFD Failure
- Instrument approach (if PT instrument rated)

Leg 2 – VFR or IFR Leg (if PT has Instrument rating)
Automated Navigation Leg

- PFD Failure (Invalid Attitude and Heading)
- Instrument approach (if PT instrument rated)

Leg 3 – IFR Leg (if Instrument rated)

- Discretion of the Pilot and Instructor
- Emphasis on ADM

This lesson will require a minimum of three legs.

Throughout the lesson, generating acceptable solutions and alternatives related to the flight must be exercised (simulated instrument if PT has instrument rating).

D2.7.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 7 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training Guide, Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Arrival procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Automation management guidelines and procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-7 - 4-16.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- IFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Approach Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-19 - 4-44.
- SRM
  - Section 4 Standard Operating Procedures, "Single Pilot Operations," SR20/22 Training Guide, Edition 6.

D2.7.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Manage/Decide)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the most appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Perform)

C	I	
☐	☐	You continue to perform all aspects of radio communication in accordance with the assessment items in previous flight lessons.

Avionics Usage (Perform)

C I

☐ ☐ You continue to utilize all available avionics information as appropriate to the situation presented..

Demonstrates Proper Decision Making Process (Manage/Decide)

C I

☐ ☐ You identified problems as they arose.

☐ ☐ You properly analyzed problems and developed low risk alternatives for the problems.

☐ ☐ You effectively assessed the alternatives and selected the most appropriate alternative that would limit your risk to an acceptable level.

☐ ☐ You executed those alternatives in each situation and you are able to identify the remaining risks associated with those decisions.

Preflight Preparation (Perform)

C I

☐ ☐ You continue to perform all aspects of preflight preparation in accordance with the assessment times in previous flight lessons.

Engine Start Up (Perform)

C I

☐ ☐ You used the best start procedure for the given condition, while maintaining proper clearing procedures.

Before Taxi (Perform)

C I

☐ ☐ You continue to use all available avionic and resources as outlined in the assessment items in previous flight lessons.

Taxi (Perform)

C I

☐ ☐ You continue to perform safe taxi operations in accordance with the assessment items in previous flight lessons.

Before Takeoff (Perform)

C I

☐ ☐ You continue to perform before takeoff checks in accordance with the assessment items in previous lessons.

Takeoff(s) (Perform)

NOTE: A minimum of three takeoffs must be attempted. For the lesson to be complete, all assessment items must be met for any type of takeoff that is attempted. The type and maximum amount of takeoffs practiced should be tailored to the needs of the PT.

C I

☐ ☐ You performed the most appropriate take off for the given conditions.

Climb Out (Perform)

C I

☐ ☐ You continue to perform climb procedures (utilizing the FD and AP) in accordance with the assessment items in previous flight lessons.

Cruise: Execution of the VFR or IFR Cross Country (Practice)

Overall

C I

☐ ☐ You made appropriate decisions without losing situational awareness.

☐ ☐ You set in the proper GPS course and navigated using avionics while manually conducting the climb, cruise, and arrival.

☐ ☐ You identified the differences involved in manually flying the aircraft with and with out the use of the flight director and took proper precautions.

☐ ☐ You integrated automation and manual flying competencies.

During the simulated emergencies and malfunctions you:

☐ ☐ Maintained aircraft control.

☐ ☐ Analyzed the situation correctly.

☐ ☐ Took the appropriate action.

☐ ☐ Included a plan to land as soon as conditions permitted it.

Leg 1

☐ ☐ You did not lose situational awareness.
☐ ☐ You identified that the scenario created the possibility of icing.
☐ ☐ You identified the need to divert to avoid icing conditions and chose a suitable location.
☐ ☐ You identified the limitations of the inadvertent ice protection system and the aircraft, as applicable to the scenario.
☐ ☐ You identified how the loss of the MFD effects the operation of the aircraft and your personal minimums
☐ ☐ You understand how the loss of Cmax changes how you operate your airplane and you personal minimums.
☐ ☐ You used all available resources to reduce the additional work load

Leg 2

C I

☐ ☐ You determined your alternatives for an instrument approach with invalid attitude and heading information on the PFD
☐ ☐ You understand how other equipment is affected with invalid attitude and heading information on the PFD.
☐ ☐ You used all available resources to reduce the additional work load.

Leg 3

C I

☐ ☐ You were able to re-enforce those areas that you and your instructor wanted to review.

Descent and Arrival Procedure for Destination (VFR or IFR) (Perform)

C I

☐ ☐ You chose the correct arrival and approach procedure needed to safely transition from en route to arrival to a safe landing.
☐ ☐ You slowed the aircraft to appropriate airspeed in preparation for arrival.

Descent and Arrival Procedure for Destination (Practice)

Instrument Rated Pilot Only

Instrument Approach Procedures

ILS – Precision Approach – Coupled

C I

- ☐ ☐ You loaded and activated the ILS approach using the GPS and navigated vertically and horizontally using automation.
- ☐ ☐ You executed a coupled ILS approach.
- ☐ ☐ You transitioned to the missed approach at the DA.
- ☐ ☐ You navigated to the missed approach using the GPS.
- ☐ ☐ You used the proper entry into the holding pattern and executed two turns in the hold.

Non-precision Approach

C I

- ☐ ☐ You loaded and activated the approach using the GPS and navigated vertically and horizontally using automation.
- ☐ ☐ You executed a non-precision approach.
- ☐ ☐ You ensured the GPS was in the APR mode (if GPS approach).
- ☐ ☐ You transitioned from simulated IMC conditions to visual conditions.
- ☐ ☐ You executed a straight in or circling landing.

Approach to Landing and Landing (Perform**)**

NOTE: A minimum of three landings must be attempted. For the lesson to be complete, all assessment items must be met for any type of landing that is attempted. The type and maximum amount of landings practiced should be tailored to the needs of the PT.

C I

- ☐ ☐ You performed appropriate approach to landing and landing for the given situation while maintaining the highest level of safety as outlined in previous flight lessons.
- ☐ ☐ You executed a go-around (if needed) when a stabilized approach could not be obtained by 200 ft AGL.

After Landing and Shutdown (Perform**)**

C I

- ☐ ☐ You continue to perform the tasks associated with the after landing and shutdown in accordance with the assessment items in the previous flight lessons.

Post Flight Discussion and Critique (Manage/Decide)

Critique of the aeronautical decisions made at the completion of each leg of the flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the scenarios.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process you used to make good decisions.

D2.7.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2.8 Flight Lesson 8

Final Evaluation Flight
[Approximate time: 2.5 hours]

D2.8.1 Objectives

- ✈ The Pilot in Training (PT) will demonstrate a manage/decide level of competency for the overall flight. This will include the demonstration of judgment, aeronautical decision making, and single-pilot resource management skills necessary to effectively, efficiently, and safely operate a technically advanced aircraft while conducting a cross country based scenario.

D2.8.2 Scenario

The concepts presented in this lesson will be presented according to the procedures outlined by the references listed in D2.8.3.

The cross country flight should include at least three legs and be conducted in a manner in which the PT has ample time to conduct procedures such as checklists, en route procedures, and system malfunctions or emergencies – 30 to 45 minutes in duration for each leg is preferred. The PT will both manually fly and use the autopilot.

The content will be based on past performance and areas which the pilot and/or instructor would like to review in addition to:

Leg 1 – VFR or IFR Leg – (if PT Instrument rated)
- Alternator 1 failure
- Instrument approach (if PT instrument rated)

Leg 2 –VFR or IFR Leg – (if PT Instrument rated)
- PFD failure
- Instrument approach (if PT instrument rated)

Leg 3 – VFR or IFR Leg – (if PT Instrument rated)
- Weather diversion
- Instrument approach (if PT instrument rated)

This lesson will require a minimum of three legs.

Throughout the lesson, generating acceptable solutions and alternatives related to the flight must be exercised.

D2.8.3 References

All instructional procedures, materials and training activities will conform to the guidelines established for standardized instruction and scenario-based training as outlined in the Standardized Instructor Guide, as accepted and in strict compliance with FAA Industry Training Standards (FITS).

Lesson 8 Concepts:

- Checklist procedures
  - "Section 4: Standard Operating Procedures: Checklist Completion," SR20/22 Training Guide, Edition 6.
- En route procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Arrival procedures
  - "Section 4: Standard Operating Procedures," SR20/22 Training Guide, Edition 6.
- Automation management guidelines and procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-7 - 4-16.
- VFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Normal Operating Procedures: System 55X Autopilot" Pilots Operating Handbook, pp. 4-7 - 4-16.
- IFR automated navigation procedures
  - "Section 9: Supplements/Avionics: S-Tec System 55X Autopilot," SR20/22 Training Guide, Edition 6.
  - "Approach Procedures: System 55X Autopilot," Pilots Operating Handbook, pp. 4-19 - 4-44.
- Decision making processes
  - "The Decision Making Process," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-10.
- SRM
  - Section 4 Standard Operating Procedures, "Single Pilot Operations," SR20/22 Training Guide Edition 6.

- ADM concepts
  - "Aeronautical Decision Making," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-8 - 9-9.
- Familiarization maneuvers
  - Section 4 Standard Operating Procedures, "Maneuver Profiles," SR20/22 Training Guide, Edition 6.
- Takeoff and landing configurations
  - Section 4 Standard Operating Procedures, "Maneuver Profiles," SR20/22 Training Guide, Edition 6.
- Risk factors
  - "Assessing Risk," Aviation Instructors Handbook (FAA-H-8083-9), pp. 9-12 - 9-13.
- Risk management tools
  - Appendix A, "Personal Minimums Worksheet," SR20/22 Training Guide, Edition 6.
  - Appendix B, "PAVE Model," SR20/22 Training Guide, Edition 6.
  - Appendix C, "Risk Assessment Chart," SR20/22 Training Guide, Edition 6.

D2.8.4 Evaluation

Each of the assessment items are given to ensure the required desired outcomes are accomplished for this lesson. At the end of the lesson or each lesson segment, the PT will use the listed assessment items to self-critique performance. The instructor will also critique the PT's performance, and from this, a guided discussion will ensue to determine whether the desired outcomes for the lesson were completed.

A check in the "C" column indicates "Complete" and that the item is completed at a satisfactory level. A check in the "I" column indicates "Incomplete" and that the item does not meet the evaluation standard.

Overall Flight

Demonstrates SRM (Manage/Decide)

C	I	
☐	☐	You managed all the resources (both on-board the aircraft and from outside sources) available to you (prior and during flight) to ensure that the successful outcome of the flight was never in doubt.
☐	☐	You programmed and utilized the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario.
☐	☐	You prioritized and selected the most appropriate course of action to ensure successful completion of the training scenario.
☐	☐	During low and high work loads you evaluated your course of action and identified resources you could use to reduce your risk.

Radio Communications (Perform)

C	I	
☐	☐	During the flight, you recognized clearances from ATC and practiced the appropriate actions when those clearances were unclear.
☐	☐	You established and maintained proper communication with ATC.
☐	☐	You anticipated the next radio frequency to be used and entered it into the standby function using the GPS.
☐	☐	You set up navigation frequencies and entered the route using GPS.

Avionics Usage (Perform)

C I

☐ ☐ You determined how the simulated malfunctions affected your capability to use your PFD, MFD, GPS 1, GPS 2, autopilot, and other related equipment.

☐ ☐ You set the proper electronic displays to reduce work load and increase efficiency.

Demonstrates Proper Decision Making Process (Manage/Decide)

C I

☐ ☐ During the scenarios, you identified problems as they arose.

☐ ☐ During the scenarios, you properly analyzed problems and developed low risk alternatives for the problems.

☐ ☐ During the scenarios, you assessed the alternatives you had and selected the most appropriate alternative.

☐ ☐ During the scenarios, you safely, efficiently, and effectively implemented the selected alternative.

☐ ☐ During the scenarios, you continued to evaluate your decisions and you identified additional risks.

Preflight Preparation (Perform)

C I

☐ ☐ You categorized the risks of the flight into the P.A.V.E. model.

☐ ☐ You chose the optimum route to accomplish the scenario with minimal risk.

☐ ☐ You had all required charts and documents for the proposed flight with you.

☐ ☐ You properly filed, opened, and closed the flight plan (VFR/IFR) for each leg of the scenario to be flown.

Engine Start Up (Perform)

C I

☐ ☐ You used the best start procedure for the given condition.

☐ ☐ You used proper clearing procedures prior to engine start.

Before Taxi (Perform)

C I

☐ ☐ You used the electronic checklist to perform the required checklist items.

☐ ☐ You identified runway incursion “Hot Spots” using CMAX airport planview.

☐ ☐ You acquired communication and navigation frequencies

from the GPS or MFD.

C I
☐ ☐ You entered the destination airport into the GPS.
☐ ☐ You used the GPS cross fill function to copy data to the other GPS unit.

Taxi (Perform)

C I
☐ ☐ You maintained directional control with minimal use of brakes.
☐ ☐ You navigated on the ground with the aid of CMAX and safe operating procedures.
☐ ☐ You used proper clearing procedures when taxiing onto the active runway.

Before Takeoff (Perform)

C I
☐ ☐ You utilized the appropriate checklist on the MFD
☐ ☐ You set up PFD before taxing into the active runway by entering: altitude, vertical speed heading information, and navigation information.
☐ ☐ You conducted a takeoff briefing that included all information pertaining to the safety of the flight.

Takeoff(s) (Perform)

NOTE: A minimum of three takeoffs must be attempted. For the lesson to be complete, all assessments items must be met for any type of takeoff that is attempted. The type and maximum amount of takeoffs practiced should be tailored to the needs of the PT.

C I
☐ ☐ You performed the most appropriate take off for the given conditions.
☐ ☐ You recognized the associated conditions related to conducting the appropriate takeoff.
☐ ☐ You used the appropriate techniques to perform the appropriate takeoff.
☐ ☐ You considered the weather conditions prior to using the takeoff.
☐ ☐ You maintained the appropriate taxi speed in relation to the given situation.

Climb Out (Perform)

C	I	
☐	☐	You used the autopilot to assist in climb out.
☐	☐	You selected the most appropriate altitude to turn onto course.
☐	☐	You used the proper scanning techniques for collision avoidance including the use of MFD and GPS displays.
☐	☐	You chose the most appropriate time to follow up with the checklist flow by using the available resources on the MFD.
☐	☐	You properly established the power and mixture settings on climb out.
☐	☐	You leveled off at your planned or assigned altitude.

Cruise: Execution of the VFR or IFR Cross Country (Manage/Decide)

Overall

C	I	
☐	☐	You made appropriate decisions without losing situational awareness.
☐	☐	You used the autopilot or flight director as appropriate for the situation at hand.
☐	☐	You set in the proper GPS course and navigated using automation to include climb, cruise, and arrival.

During the simulated emergencies and malfunctions you:

C	I	
☐	☐	Maintained aircraft control.
☐	☐	Analyzed the situation correctly.

C	I	
☐	☐	Took the appropriate action.
☐	☐	Included a plan to land as soon as conditions permitted it.

Leg 1

C	I	
☐	☐	You identified the alternator failure in a timely manner.
☐	☐	You conducted load shedding as necessary to prevent battery failure.
☐	☐	You followed proper procedures by reference to paper checklist and/or the MFD checklist.
☐	☐	You maintained your situational awareness.

Leg 2

C I

☐ ☐ You identified the source of the PFD failure
☐ ☐ You referenced proper material (not in checklists) and followed corrective procedures.
☐ ☐ You took appropriate action to safely return to the airport.

Leg 3

C I

☐ ☐ You identified weather conditions that had not been forecasted and landed at an airport safely.

Descent and Arrival Procedure for Destination (VFR or IFR) (Perform)

C I

☐ ☐ You chose the correct arrival and approach procedure needed to safely transition from en route to arrival to a safe landing.
☐ ☐ You slowed the aircraft to appropriate airspeed in preparation for arrival.

Descent and Arrival Procedure for Destination (Practice)

Instrument Rated Pilot Only

Instrument Approach Procedures

ILS – Precision Approach – Coupled

C I

☐ ☐ You loaded and activated the ILS approach using the GPS and navigated vertically and horizontally using automation.
☐ ☐ You executed a coupled ILS approach.
☐ ☐ You transitioned to the missed approach at the DA.

C I

☐ ☐ You navigated to the missed approach using the GPS.
☐ ☐ You used the proper entry into the holding pattern and executed two turns in the hold.

Non-precision Approach

C I

☐ ☐ You loaded and activated the approach using the GPS and navigated vertically and horizontally using automation.
☐ ☐ You executed a non-precision approach.
☐ ☐ You ensured the GPS was in the APR mode (if GPS approach).
☐ ☐ You transitioned from simulated IMC conditions to visual

conditions.

☐ ☐ You executed a straight in or circling landing.

Approach to Landing and Landing (Perform)

NOTE: A minimum of three landings must be attempted. For the lesson to be complete, all assessments items must be met for any type of landing that is attempted. The type and maximum amount of landings practiced should be tailored to the needs of the PT.

C I

☐ ☐ You performed stabilized approaches which included: proper airspeed, correct flight path, correct landing configuration, power setting appropriate for aircraft configuration, sink rate was not abnormal and you completed all checklists.

☐ ☐ You identified touchdown and go-around points prior to performing landings.

☐ ☐ You executed a go-around (if needed) when a stabilized approach could not be obtained by 200 ft AGL.

☐ ☐ You adequately surveyed the runway environment prior to landing on the runway.

☐ ☐ You considered the recent weather conditions when deciding the safety of landing on the runway.

☐ ☐ You used the appropriate resources to ensure the runway was suitable to land on.

After Landing and Shutdown (Perform)

C I

☐ ☐ You conducted the landing checklists at the appropriate time and you were aware of possible runway incursion using the CMAX airport diagram.

☐ ☐ You acquired ground communication frequencies through the use of the GPS or MFD.

☐ ☐ You used the appropriate electronic and paper checklists to properly execute shutdown procedures.

☐ ☐ You used the appropriate electronic and paper checklists to properly execute shutdown procedures.

Post Flight Discussion and Critique (Manage/Decide)

Critique of the aeronautical decisions made at the completion of each leg of the flight.

C	I	
☐	☐	You and your instructor reviewed the decisions that you made and related them to an analysis of factual information, the aircraft capabilities, your experience and skill.
☐	☐	You discussed with your instructor possible methods and alternatives for improvement on outcomes of the scenarios.
☐	☐	You identified performance deficiencies encountered during the flight.
☐	☐	You are aware of the process that you used to make good decisions.

D2.8.5 Completion Standards/Desired Outcomes

This flight lesson will be complete when the PT satisfactorily demonstrates ADM and critical thinking skills by completing the assessment items required while conducting a cross country flight.

D2. 9 Flight Lesson 9

Biennial Flight Review (Optional)

D2.9.1 Objectives

- ✈ This lesson is not a part of the transition training, but is a requirement of the federal aviation regulations which should be accomplished in accordance with the guidelines set forth by FAR 61.56 and the supporting advisory circular.

NOTE: BFR Training can only be conducted after satisfactory completion of the transition course. An additional half day of training will be required to cover ground information required by the FAR's.

D2.9.2 Lesson Focus

- Perform: Ground Items required by FAR and Advisory Circular

☐ Incomplete ☐ Complete

- Perform: Flight Items required by FAR and Advisory Circular

☐ Incomplete ☐ Complete

NOTE: Completion of Lesson 8 may satisfy the flying requirements for the flight review.

D2.9.3 Completion Standards/Desired Outcomes

The biennial flight review will be complete when the PT has satisfactorily demonstrated to a Perform level those maneuvers and procedures that, at the discretion of the person giving the review, are necessary for the PT to safely exercise the privileges of the pilot certificate he/she holds and has been given the appropriate logbook endorsement.

D2. 10 Flight Lesson 10

Instrument Proficiency Check (Optional)

D2.9.1 Objectives

- ✈ This lesson is not a part of the transition training, but is a requirement of the federal aviation regulations which should be accomplished in accordance with the guidelines provided in the FAR's and the current instrument PTS.

NOTE: Instrument proficiency check training can only be conducted after satisfactory completion of the transition course. An additional half day of training will be required to cover ground and flight segments required by the FAR's and the current instrument PTS.

D2.10.2 Lesson Focus

- Perform: Ground Items required by PTS

☐ Incomplete ☐ Complete

- Perform: Flight Items required by PTS

☐ Incomplete ☐ Complete

NOTE: Completion of Lesson 8 may satisfy the flying requirements for the flight review.

D2.10.3 Completions Standards/Desired Outcomes

The instrument proficiency check will be complete when the PT has satisfactorily demonstrated to a Perform level the ground and flight requirements for the instrument proficiency check as prescribed in the instrument rating practical test standards and has been given the appropriate logbook endorsement.

D3. Course Summary: Transition Training

Customer: _____

Aircraft Type: _____

A/C "N" Number: _____

Date: _____

- ❑ Completion Certificate Awarded (VFR only)
- ❑ Completion Certificate **Not** Awarded
  Reason:

- ❑ High Performance Logbook Endorsement
  (CIRRUS SR-22 only)

NOTE: IPC and BFR Training can only be conducted after he/she has satisfactorily completed the transition course.

- ❑ (BFR) Biennial Flight Review – Logbook Endorsement
- ❑ (IPC) Instrument Proficiency Check – Logbook Endorsement

I understand that the following training is provided as transition training and I (pilot) need to maintain proficiency by flying often and seeking recurrent training. Because of the complexity of the avionics, the certificate of completion is issued as a VFR completion certificate, and the only way to be proficient in IMC is to complete an IPC.

I have reviewed and accept the evaluation and agree with the above statement.

_____ _____ _____
Instructor Customer Date
Instructor Code _____

INSTRUCTOR COMMENTS:

Noted instructor times

Total instructor ground time: _____

Total instructor flight time: _____

Acknowledgments for Course Development

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