FLIGHT OPERATIONS MANUAL

REV 6

AVIATION SYSTEM PROGRAM
UNIVERSITY OF TENNESSEE SPACE INSTITUTE
TULLAHOMA, TENNESSEE

26 SEPTEMBER 2011

LIST OF REVISIONS

Rev	Date	Change	Originator
0	01 OCT 06	Original	Corda
1	07 JUL 08	Revised all sections	Corda & Martos
2	15 SEPT 08	Revised Section 5	Corda & Martos
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6	26 SEP 11	Revised all sections and Appendices A and B	Corda

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1. Introduction

The UTSI Aviation Systems Flight Operations Manual provides information and procedures for UTSI flight operations. This document applies to flight operations conducted in UTSI aircraft as well as in other aircraft operated by UTSI personnel in an official capacity for UTSI. This document applies to flight operations conducted from the Tullahoma Regional Airport (KTHA) and from any other location where official UTSI flight operations are conducted.

2. UTSI Aircraft

2.1. Aircraft Fleet

The UTSI aircraft fleet is listed in Appendix A. Information provided for each aircraft include the FAA registration number (N-number), FAA airworthiness certificate type and category, aircraft model name, operational status, and additional comments.

2.2. Aircraft Insurance

The UTSI Aviation Systems Program aircraft are insured by the State of Tennessee. A list of UTSI insured pilots is provided in Appendix B, including the aircraft that each pilot is insured.

Under the UT-UTSI aviation insurance policy, the pilot qualification requirements are as follows:

i. The pilot must hold the appropriate Federal Aviation Administration (FAA) license/rating for the aircraft to be flown.

ii. The pilot must have the approval of the UTSI Director of Flight Operations (Chief Pilot).

3. Aircrew Qualifications and Training

3.1. Pilot Qualifications

For all types of flight operations, the minimum pilot qualification requirements of the UT-UTSI Aircraft Insurance policy (Section 3) must be satisfied.

Minimum pilot qualifications to act as Pilot in Command (PIC) of UTSI aircraft and for UTSI official flight operations of non-UTSI aircraft is given below for the various types of flight operations.

i. Maintenance, Proficiency, and Cross-Country Flights

- FAA Private Pilot Certificate
- FAA Medical Certificate, as appropriate
- Only Day VFR Maintenance Flights are authorized
- 100 flight hours total time

ii. Flight Test Education / Laboratory Flights

- FAA Commercial Pilot Certificate, and multi- engine rating as appropriate
- FAA 2nd Class (or higher) Medical Certificate
- Required training/experience as appropriate for maneuvers to be flown
- 200 flight hours total time

iii. Flight Test / Research Operations in addition to (ii) above

- Required type ratings, flight or simulator training and experience as appropriate to the aircraft type or class employed for a flight test

3.2. Crew Training and Currency Requirements

Pilots

Training and currency requirements for UTSI Aviation Systems Test Pilots (TP) and Maintenance Pilots (MP) are accomplished in accordance with FAR §61. Annual recurrent training, which is conducted at a certified flight training school in a flight simulator, may be used to satisfy both semi-annual instrument proficiency check and instrument approach requirements.

Multi-engine rated pilots who are designated UTSI Piper Navajo pilots are required to attend annual Navajo flight simulator training at SIMCOM, Orlando, Florida.

Flight Frequency

TP and MP proficiency requirement is satisfied by flying each aircraft for which proficiency is required. Due the sporadic nature of academic and research flying, proficiency flights will be scheduled as required by each pilot in order to maintain landing and instrument currency.

Flight Crew Proficiency and Flight Check Requirements

The TP and MP must ensure that they meet the minimum practical test standards set forth by the Federal Aviation Administration as applicable to the pilot certificate that they hold. These standards are contained within the appropriate version of FAA-S-8081 for private, commercial, or ATP rated pilots.

In addition to meeting the FAA standards for practical flight checks, TP's must demonstrate proficiency in the accomplishment of the required flight test maneuver(s) or procedures that will be performed during the course of a flight laboratory, flight test, or research flight mission. A typical TP proficiency flight should include the following minimum requirements:

- Basic airwork
- Flight Test Technique(s) (FTT) as appropriate
- One Emergency Procedure (EP)
- Holding and instrument approach procedures under simulated IFR (Safety Pilot required)

Instrument approach and holding procedures should be flown with the intent of meeting the semi-annual currency requirement as provided for in FAR § 61.57(c). Recurrent training in a simulator may be substituted per FAR § 61.57(c)(2).

Flight Test Engineer (FTE)

FTE's are aircrew members and will be included on proficiency and check flights as required and appropriate to practice and demonstrate:

- Coordination with the TP during the performance of a Flight Test Technique (FTT)
- Provide crew coordination during Emergency Procedure (EP) practice
- Serve as the Safety Observer during IFR approach procedures
- Practice and demonstrate proficient operation of data acquisition, instrumentation, and/or sensor systems and collection of hand-written flight data, debrief the flight crew, and complete the FTT flight test report

Maintenance Pilot (MP)

The MP will accomplish the following minimum requirements:

- Basic airwork
- Emergency and Abnormal Procedures, e.g. engine failure in flight, wing flap malfunctions, etc.

Pilot Proficiency and Flight Check Forms

Pilot proficiency flights or annual flight check flights administered by a designated UTSI check pilot will be logged on the Pilot Proficiency and Flight Check Form as shown in Appendix E. Proficiency and check flight forms will be retained in the individual pilot's records.

3.3. Life Support Training

Every five years, all aircrew are required to attend the following Life Support training offered by the Federal Aviation Administration (FAA) Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma.

- Aerospace Physiology Training (Altitude Chamber and Spatial Disorientation)
- Basic Survival Training (Land and Water Survival)

This training requirement may be waived by the UTSI Director of Flight Operations (Chief Pilot) based on experience level of the aircrew personnel.

3.4. Minimum Aircrew

The minimum aircrew for a Maintenance, Proficiency, or Cross-Country Flight is one TP or one MP.

The minimum aircrew for a Flight Test Education / Laboratory Flight is one TP.

The minimum aircrew for a Flight Test / Research Operations Flight is one TP.

Preferred aircrew for any Flight Test related flight is one TP and one FTE. TP/FTE teams will be rotated on a monthly basis to allow training between different aircrew teams. FTE rotations are the responsibility of each TP.

The minimum aircrew for Simulated / Practice Instrument Flying, including Instrument Approaches, is one TP and a Safety Pilot.

3.5. Crew Rest

All flight crew members are limited to 12 continuous duty hours with a 12 hour rest period. Flight crew may be extended to a 14 hour duty day provided they have the approval of the UTSI Director of Flight Operations (Chief Pilot) and meet the following requirements.

- The duty day begins no earlier than 0600.
- The aircraft has an operational autopilot.
- The aircraft has a two pilot aircrew.

Following an extended crew duty day pilots must be given a minimum of a 12 hour rest period.

The crew duty duration may not exceed 6 continuous days. Upon completion of 6 continuous duty days, the crew must be given a minimum of 24 hours crew rest.

3.6. Non-UTSI Crew Qualifications

Non-UTSI personnel flying onboard UTSI aircraft as crew members must meet the following requirements.

- Personnel may be required to hold an FAA 3rd Class medical certificate or waiver.
- A current Hold Harmless agreement may be required and, if required, must be signed and on file with UTSI.

3.7. Aircrew Records

The Aviation Systems Program will maintain a pilot record folder for each UTSI pilot. The folder will include copies/records of the following:

- Government issued photo identification, e.g. state government issued Driver's License or U.S. Government issued passport
- FAA pilot certificate(s)
- FAA medical certificate
- Copy of most recent Biennial Flight Review or annual SIMCOM check-ride
- Record of recurrent and proficiency training
- Physiological training

4. Flight Operations

4.1. Flight Scheduling and Flight Log

The Flight Schedule Pro software (http://www.flightschedulepro.com/indexs.asp) will be utilized for aircraft reservation, check-out, check-in, and logging flight time. The Flight Log form will be also filled out at the completion of each flight. It is the responsibility of the TP or MP to ensure that these actions are completed and a current monthly flight time summary is posted in the pilot folder.

4.2. Weather Minimums

The following weather minimums are applicable to the different types of UTSI flight operations.

- Maintenance Flights may be conducted in Day VMC only.
- Flight Test Education / Laboratory Flights may be conducted in Day VMC only.
- Flight Test / Research Operations Flights may be conducted in appropriate weather with no less than published weather minimums.
- Proficiency/Currency Flights may be conducted in weather appropriate to the planned flight activities.

4.3. Use of Supplemental Oxygen

Requirements for use of supplemental oxygen are as follows.

- For Day flight, supplemental oxygen will be used by all aircrew (pilots, FTEs, scientists, etc.) and passengers for all times at altitudes at or above 12,000 feet MSL.

- For Night flight, supplemental oxygen will be used by all aircrew (pilots, FTEs, scientists, etc.) and passengers for all times at altitudes at or above 10,000 feet MSL.

4.4. Carriage of Passengers

All UTSI personnel, including students, faculty, and staff, are permitted to fly in UTSI aircraft provided that their role and flight objective(s) have been approved by the UTSI Director of Flight Operations (Chief Pilot). Only required aircrew members are permitted aboard UTSI aircraft when flown in the Public Use category.

During UTSI flight test operations, only the minimum required aircrew as specified in the UTSI *Flight Permit* may fly in the test aircraft.

Carriage of non-UTSI passengers must be approved by the UTSI Director of Flight Operations (Chief Pilot) prior to flight. The passenger may be required to sign a waiver of liability (Hold Harmless agreement) prior to flying in UTSI aircraft.

4.5. Flight Test Operations

All Flight Test Operations will be conducted IAW the UTSI *Flight Operations Safety Manual Rev 3*, 26 April 2010. An approved/signed *Flight Permit* must be obtained prior to the conduct of any UTSI flight test operations.

4.6. UTSI Aero Club Flight Operations

Flight operations of the UTSI Flying Club and UTSI Soaring Club will be conducted IAW the respective club's operating procedures and practices.

4.7. Flight Safety

All flights will be conducted IAW the appropriate Federal Aviation Regulations for the type of flight being conducted. A pre-flight briefing will be completed using the *UTSI Pre-Flight Briefing Guide* prior to every official UTSI flight.

The Aviation Systems Program will accomplish a Flight Operations / Safety Meeting each academic semester (Spring, Fall, Summer) that must be attended by all UTSI aircrew (TP, MP, and FTE) and other personnel flying in UTSI aircraft, e.g. graduate students. Minutes of this activity and an attendance roster will be recorded and emailed to all aircrew and personnel that were required to attend.

Any and all issues related to ground and flight safety of UTSI Aviation Systems Program flight operations should be brought to the attention of the UTSI Director of Flight Operations (Chief Pilot).

In the event of an aircraft related ground or flight incident or accident, the procedures and contact information provided in Appendix D should be utilized.

APPENDIX A
UTSI AIRCRAFT

26 September 2011

N Number	Airworthiness Certificate / Category	Aircraft Model	Status	Comments
N11UT	Public	Piper Navajo (PA31-310)	Flying	Twin engine, 6-seat classroom/research
N22UT	Public	Piper Saratoga (PA32-301)	Flying	Single-engine, 6-seat, classroom/research
N714X	Public	Extra 300 (EA-300)	Flying	Single engine, 2-seat, classroom/research
N2232S	Public	Cessna T210L	Flying	Single engine, 4-seat, research
N55UT	Special / Experimental	North American Navion	Non-Flying	Single engine, 2-seat, variable response (6 DOF)
N66UT	Special / Experimental	Ryan Navion	Non-Flying (engine install)	Single engine, 2-seat, variable response (5 DOF)
N44UT	Standard / Normal or Utility	Piper Super Cub (PA18-125)	Non-Flying (in rebuild)	Single engine, 2-seat, tailwheel
N7UT	Standard / Normal or Utility	Cessna 150M	Flying	Single engine, 2-seat, trainer (UTSI Aero Club)

APPENDIX B
UTSI INSURED PILOTS

26 September 2011

Last Name	First Name	Piper Navajo	Piper Saratoga	Cessna 210	Extra 300	Cessna 150
		N11UT	N22UT	N2232S	N714X	N7UT
Corda*	Stephen	X	X	X	X	X
Martos*	Borja	X	X	X		X
Simmons	Devon	X	X	X		X

* UTSI Check Pilots

APPENDIX C
EMERGENCY CONTACT INFORMATION

In the event of an aircraft related ground or flight incident or accident, contact the following as appropriate:

AMBULANCE / POLICE	9-911
FIRE DEPT	(931) 455-0936/0268
POLICE, Tullahoma	(931) 455-3411
SHERIFF, Coffee Co.	(931) 728-9555
SHERIFF, Franklin Co.	(931) 967-2331
Tennessee Highway Patrol	1-423-634-6890
Insurance Company (Starr Aviation)	

After contacting the appropriate emergency response personnel, inform the following personnel:

Stephen Corda, Aviation Systems	(931) 393-7413 (661) 331-2664 (cell)
Wesley McMinn, UTSI Safety	(931) 393-7313/7320

The Chairman, Aviation Systems and/or UTSI Safety Manager will contact UTSI Senior Management as required.

Dr. Robert Moore, UTSI Executive Director,	(931) 393-7213

Appendix D
Aircraft Currency Requirements

UTSI AIRCRAFT	PILOT IN COMMAND	SIC
Piper PA 31 Navajo		
Previous 3 Months		
Takeoffs/Landings	**3**	**3**
Approaches	**3**	**3**
Previous 6 Months		
Takeoffs/Landings	**6**	**NA**
Approaches	**6**	**NA**
Extra 300		
Previous 3 Months		
Takeoffs/Landings	**3**	**NA**
Approaches	**3**	**NA**
Previous 6 Months		
Takeoffs/Landings	**NA**	**NA**
Approaches	**NA**	**NA**
Cessna 210		
Previous 3 Months		
Takeoffs/Landings	**3**	**NA**
Approaches	**3**	**NA**
Previous 6 Months		
Takeoffs/Landings	**NA**	**NA**
Approaches	**NA**	**NA**
Piper PA 32 Saratoga		
Previous 3 Months		
Takeoffs/Landings	**3**	**NA**
Approaches	**3**	**NA**
Previous 6 Months		
Takeoffs/Landings	**NA**	**NA**
Approaches	**NA**	**NA**
NIGHT		
Previous 6 Months		
Takeoffs/Landings (Night landings in any UTSI aircraft fulfill this requirement)	**3** **3**	**NA** **NA**
Notes:		

FAR §61.57 landing currency may be satisfied in any UTSI aircraft. Instrument currency is required before any flights conducted under IFR in IMC. Simulator training may be credited towards instrument currency and approach requirements.

Appendix E
Pilot Proficiency and Flight Check Form

Aviation Systems and Flight Research
PILOT FLIGHT EVALUATION AND PROFICIENCY FORM
University of Tennessee Space Institute

Name:	Date:	
Instructor /Check Pilot:	Aircraft:	Tail No.

Type of flight

- ☐ PILOT IN COMMAND (PIC) CHECK
- ☐ SECOND IN COMMAND (SIC) CHECK
- ☐ GUEST PILOT CHECK
- ☐ FLIGHT CHECK SATISFACTORY COMPLETED
- ☐ INSTRUMENT COMPETENCY CHECK
- ☐ RECURRENT CHECK
- ☐ ANNUAL
- ☐ OTHER _____

	ITEM	S/U		ITEM	S/U
1	PREFLIGHT		4	FLIGHT MANEUV ERS	
	Systems review/test			Steep turns	
	Weather brief			Slow flight	
	Planning			Stalls	
	W&B			Flight test maneuver	
	Preflight			Feather/un-feather procedures	
	Ground operations				
			5	LANDINGS	
2	TAKEOFF			Number of landings _____	
	Normal			Simulated engine out landing	
	Instrument			Rejected landing	
	Power plant failure			No-flap landing	
	Rejected				
			6	NORMAL/ABNORMAL PROCEDURES	
3	INSTRUMENT PROCEDURES		7	EMERGENCY PROCEDURES	
	Departure and Arrival		8	AIRMANSHIP	
	Holding entry and pattern		9	UTSI FLIGHT LOGS AND FORMS	
	No. approaches flown _____				
	Engine out approach				
	Circling				
	Missed approach procedure				

REMARKS:

INSTRUCTOR/CHECK PILOT SIGNATURE:

DATE: