

Purdue Aviation, LLC

Training Course Outline &

Safety Procedures Manual

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PREFACE

PURPOSE

This manual has been prepared to cover the policies and procedures for flight training operations at Purdue Aviation, LLC. (PAL) This manual, along with the Training Course Outline (TCO) and Curriculum, provides firm guidelines to enable all personnel to carry out their assigned duties and responsibilities in accordance with company policies, procedures and FAA regulations.

DISTRIBUTION

A digital copy of this manual shall be provided during indoctrination to students, instructors, dispatchers and maintenance personnel within the Flight School of Purdue Aviation, LLC. This will normally be accomplished through issuance of an external drive containing this manual and other applicable documents, but can also be distributed as an email attachment. Recipients include, but are not limited to:

- Flight Instructors
- Maintenance Personnel
- Customer Service Representatives/Dispatch Personnel
- FAA (Flight Standards District Office)
- Flight Students

REVISION CONTROL

Revisions shall be issued by the Chief Flight Instructor, or his/her designee. Each revision shall have a revision number, date and page numbers being revised. Revisions shall be identified by a vertical line adjacent to the changed text in the margin. Revisions shall be consecutively numbered. The Chief Flight Instructor shall maintain the most-current TCO and is responsible for the dissemination of revisions to the distribution list. Aircraft Dispatchers shall ensure each Instructor and Student's TCO is updated through use of the Aircrew Dispatch Form (Appendix A).

The sole official copy of the Training Course Outline and Safety and Procedures Manual shall be maintained in the Chief Flight Instructor's office. Once the electronic copy is downloaded, it no longer shall be an official copy. It shall be the responsibility of each manual holder to keep his/her manual current and record any revisions on the Record of Revisions. In order to facilitate recordkeeping and ensure that all manuals are current, a List of Effective Pages shall be distributed with each revision and shall instruct personnel as to which pages are to be removed or replaced.

All revisions to the Safety and Procedures manual shall be submitted to the Certificate-Holding District Office (CHDO) for review and approval, prior to being implemented.

Record of Revisions

The Chief Flight Instructor shall issue revisions. These revisions shall be posted in this manual and maintained until a current version is printed. When a change is posted, it should be recorded on the following Record of Revisions:

Original Operations Manual Issue Date:

This Revision Log was updated on: (NA)

Revision Number	Date	Effected Page Numbers	Initials
1	6/15/2017	4,5,26	
2	10/19/2017	4,5,6,8,11,13-16,19,21- 23, 26, 41, 51-53	
3	2/8/2018	4,5,8,11- 16,19,20,26,41,52, 53,61,62	
4	2/19/2019	4,5,20,21,22,26	
5	2/15/2022	4,5,26,36,37,38,40,41	

T

List of Effective Pages

	1	Original	11/29/2016
	2	Original	11/29/2016
Preface	3	Original	11/29/2016
Record of Revision	4	Rev. 5	2/15/2022
Effective Pages	5	Rev. 5	2/15/2022
	6	Rev. 2	10/19/2017
	7	Original	11/29/2016
	8	Rev. 3	2/8/2018
	9	Original	11/29/2016
	10	Original	11/29/2016
	11	Rev. 3	2/8/2018
	12	Rev. 3	2/8/2018
	13	Rev. 3	2/8/2018
	14	Rev. 3	2/8/2018
	15	Rev. 3	2/8/2018
	16	Rev. 3	2/8/2018
Table of Contents	17	Original	11/29/2016
	18	Original	11/29/2016
	19	Rev. 3	2/8/2018
Introduction	20	Rev. 4	2/19/2019
	21	Rev. 4	2/19/2019
Facilities and Aircraft	22	Rev. 4	2/19/2019
	23	Rev. 2	10/19/2017
	24	Original	11/29/2016
	25	Original	11/29/2016
	26	Rev. 5	2/15/2022
	27	Original	11/29/2016
	28	Original	11/29/2016
Policies and Procedures	29	Original	11/29/2016
	30	Original	11/29/2016
	31	Original	11/29/2016
	32	Original	11/29/2016
	33	Original	11/29/2016
	34	Original	11/29/2016
	35	Original	11/29/2016
	36	Rev. 5	2/15/2022

I

	37	Rev. 5	2/15/2022
	38	Rev. 5	2/15/2022
	39	Original	11/29/2016
	40	Rev. 5	2/15/2022
Standard Operations	41	Rev. 5	2/15/2022
	42	Original	11/29/2016
	43	Original	11/29/2016
	44	Original	11/29/2016
	45	Original	11/29/2016
	46	Original	11/29/2016
	47	Original	11/29/2016
	48	Original	11/29/2016
	49	Original	11/29/2016
	50	Original	11/29/2016
	51	Rev. 2	10/19/2017
	52	Rev. 3	2/8/2018
	53	Rev. 2	10/19/2017
Appendices	54	Original	11/29/2016
	55	Original	11/29/2016
	56	Original	11/29/2016
	57	Original	11/29/2016
	58	Original	11/29/2016
	59	Original	11/29/2016
	60	Original	11/29/2016
	61	Original	11/29/2016
	62	Original	11/29/2016
	63	Original	11/29/2016
	64	Original	11/29/2016
	65	Original	11/29/2016
	66	Original	11/29/2016
	67	Original	11/29/2016
	68	Original	11/29/2016
	69	Original	11/29/2016
	70	Original	11/29/2016
	71	Original	11/29/2016
	72	Original	11/29/2016
	73	Original	11/29/2016
	74	Original	11/29/2016
	75	Original	11/29/2016

76	Original	11/29/2016
77	Original	11/29/2016
78	Original	11/29/2016
79	Original	11/29/2016
80	Original	11/29/2016
81	Original	11/29/2016
82	Original	11/29/2016
83	Original	11/29/2016
84	Original	11/29/2016
85	Original	11/29/2016
86	Original	11/29/2016

Effective Pages Jeppesen Private Pilot -004

	Page #	Revision	Date	Date Effective
Preface	iii	Original	11/29/2016	11/29/2016
	iv	Original	11/29/2016	11/29/2016
Table of Contents	v	Original	11/29/2016	11/29/2016
Introduction	vi	Original	11/29/2016	11/29/2016
	vii	Original	11/29/2016	11/29/2016
	viii	Original	11/29/2016	11/29/2016
	ix	Original	11/29/2016	11/29/2016
	х	Original	11/29/2016	11/29/2016
	xi	Original	11/29/2016	11/29/2016
	xii	Original	11/29/2016	11/29/2016
Overview	xiii	Original	11/29/2016	11/29/2016
	xiv	Original	11/29/2016	11/29/2016
	xv	Original	11/29/2016	11/29/2016
	xvi	Original	11/29/2016	11/29/2016
	xvii	Original	11/29/2016	11/29/2016
	xviii	Original	11/29/2016	11/29/2016
	xix	Original	11/29/2016	11/29/2016
	хх	Original	11/29/2016	11/29/2016
Ground Stage I	1	Original	11/29/2016	11/29/2016
	2	Original	11/29/2016	11/29/2016
	3	Original	11/29/2016	11/29/2016
	4	Original	11/29/2016	11/29/2016
	5	Original	11/29/2016	11/29/2016
	6	Original	11/29/2016	11/29/2016
	7	Original	11/29/2016	11/29/2016
	8	Original	11/29/2016	11/29/2016
	9	Original	11/29/2016	11/29/2016
	10	Original	11/29/2016	11/29/2016
Ground Stage II	11	Original	11/29/2016	11/29/2016
	12	Original	11/29/2016	11/29/2016
	13	Original	11/29/2016	11/29/2016
	14	Original	11/29/2016	11/29/2016
	15	Original	11/29/2016	11/29/2016

		1		
Ground Stage III	16	Original	11/29/2016	11/29/2016
	17	Original	11/29/2016	11/29/2016
	18	Original	11/29/2016	11/29/2016
	19	Original	11/29/2016	11/29/2016
	20	Original	11/29/2016	11/29/2016
	21	Original	11/29/2016	11/29/2016
	22	Original	11/29/2016	11/29/2016
	23	Original	11/29/2016	11/29/2016
	24	Original	11/29/2016	11/29/2016
Flight Stage I	25	Original	11/29/2016	11/29/2016
	26	Original	11/29/2016	11/29/2016
	27	Original	11/29/2016	11/29/2016
	28	Original	11/29/2016	11/29/2016
	29	Original	11/29/2016	11/29/2016
	30	Original	11/29/2016	11/29/2016
	31	Original	11/29/2016	11/29/2016
	32	Original	11/29/2016	11/29/2016
	33	Original	11/29/2016	11/29/2016
	34	Original	11/29/2016	11/29/2016
	35	Original	11/29/2016	11/29/2016
	36	Original	11/29/2016	11/29/2016
	37	Original	11/29/2016	11/29/2016
	38	Original	11/29/2016	11/29/2016
	39	Original	11/29/2016	11/29/2016
	40	Original	11/29/2016	11/29/2016
	41	Original	11/29/2016	11/29/2016
	42	Original	11/29/2016	11/29/2016
Flight Stage II	43	Original	11/29/2016	11/29/2016
	44	Original	11/29/2016	11/29/2016
	45	Original	11/29/2016	11/29/2016
	46	Original	11/29/2016	11/29/2016
	47	Original	11/29/2016	11/29/2016
	48	Original	11/29/2016	11/29/2016
	49	Original	11/29/2016	11/29/2016
	50	Original	11/29/2016	11/29/2016
	51	Original	11/29/2016	11/29/2016
	52	Original	11/29/2016	11/29/2016
	53	Original	11/29/2016	11/29/2016
	54	Original	11/29/2016	11/29/2016

	55	Original	11/29/2016	11/29/2016
	56	Original	11/29/2016	11/29/2016
Flight Stage III	57	Original	11/29/2016	11/29/2016
	58	Original	11/29/2016	11/29/2016
	59	Original	11/29/2016	11/29/2016
	60	Original	11/29/2016	11/29/2016
	61	Original	11/29/2016	11/29/2016
	62	Original	11/29/2016	11/29/2016
	63	Original	11/29/2016	11/29/2016
	64	Original	11/29/2016	11/29/2016
	65	Original	11/29/2016	11/29/2016
	66	Original	11/29/2016	11/29/2016
	67	Original	11/29/2016	11/29/2016
	68	Original	11/29/2016	11/29/2016
Appendix	69	Original	11/29/2016	11/29/2016
	70	Original	11/29/2016	11/29/2016
	71	Original	11/29/2016	11/29/2016
	72	Original	11/29/2016	11/29/2016
	73	Original	11/29/2016	11/29/2016
	74	Original	11/29/2016	11/29/2016
	75	Original	11/29/2016	11/29/2016
	76	Original	11/29/2016	11/29/2016
	77	Original	11/29/2016	11/29/2016
	78	Original	11/29/2016	11/29/2016
	79	Original	11/29/2016	11/29/2016
	80	Original	11/29/2016	11/29/2016
	81	Original	11/29/2016	11/29/2016
	82	Original	11/29/2016	11/29/2016
Enrollment Certificate		Original	11/29/2016	11/29/2016
Completion Certificate		Original	11/29/2016	11/29/2016

Effective Pages Jeppesen Instr./Comm. -004

	Page #	Revision	Date	Date Effective
Preface	iii	Original	11/29/2016	11/29/2016
	iv	Original	11/29/2016	11/29/2016
Table of Contents	v	Original	11/29/2016	11/29/2016
Introduction	vi	Original	11/29/2016	11/29/2016
	vii	Original	11/29/2016	11/29/2016
	viii	Original	11/29/2016	11/29/2016
	ix	Original	11/29/2016	11/29/2016
	х	Original	11/29/2016	11/29/2016
	xi	Original	11/29/2016	11/29/2016
	xii	Original	11/29/2016	11/29/2016
	xiii	Original	11/29/2016	11/29/2016
	xiv	Original	11/29/2016	11/29/2016
	XV	Original	11/29/2016	11/29/2016
Overview	xvi	Original	11/29/2016	11/29/2016
	xvii	Original	11/29/2016	11/29/2016
	xviii	Original	11/29/2016	11/29/2016
	xix	Original	11/29/2016	11/29/2016
	хх	Original	11/29/2016	11/29/2016
	ххі	Original	11/29/2016	11/29/2016
	xxii	Original	11/29/2016	11/29/2016
	xxiii	Original	11/29/2016	11/29/2016
	xxiv	Original	11/29/2016	11/29/2016
	xxv	Original	11/29/2016	11/29/2016
	xxvi	Original	11/29/2016	11/29/2016
	xxvii	Original	11/29/2016	11/29/2016
	xxviii	Original	11/29/2016	11/29/2016
Instr. Ground Stage I	1	Original	11/29/2016	11/29/2016
	2	Original	11/29/2016	11/29/2016
	3	Original	11/29/2016	11/29/2016
	4	Original	11/29/2016	11/29/2016
	5	Original	11/29/2016	11/29/2016
	6	Original	11/29/2016	11/29/2016
	7	Original	11/29/2016	11/29/2016
	8	Original	11/29/2016	11/29/2016
	9	Original	11/29/2016	11/29/2016
	10	Original	11/29/2016	11/29/2016
	11	Original	11/29/2016	11/29/2016
Instr. Ground Stage II	12	Original	11/29/2016	11/29/2016
	13	Original	11/29/2016	11/29/2016

	14	Original	11/29/2016	11/29/2016
	15	Original	11/29/2016	11/29/2016
	16	Original	11/29/2016	11/29/2016
	17	Original	11/29/2016	11/29/2016
	18	Original	11/29/2016	11/29/2016
	19	Original	11/29/2016	11/29/2016
	20	Original	11/29/2016	11/29/2016
	21	Original	11/29/2016	11/29/2016
	22	Original	11/29/2016	11/29/2016
Instr. Ground Stage III	23	Original	11/29/2016	11/29/2016
	24	Original	11/29/2016	11/29/2016
	25	Original	11/29/2016	11/29/2016
	26	Original	11/29/2016	11/29/2016
	27	Original	11/29/2016	11/29/2016
	28	Original	11/29/2016	11/29/2016
	29	Original	11/29/2016	11/29/2016
	30	Original	11/29/2016	11/29/2016
Instr. Flight Stage I	31	Original	11/29/2016	11/29/2016
	32	Original	11/29/2016	11/29/2016
	33	Original	11/29/2016	11/29/2016
	34	Original	11/29/2016	11/29/2016
	35	Original	11/29/2016	11/29/2016
	36	Original	11/29/2016	11/29/2016
	37	Original	11/29/2016	11/29/2016
	38	Original	11/29/2016	11/29/2016
	39	Original	11/29/2016	11/29/2016
	40	Original	11/29/2016	11/29/2016
	41	Original	11/29/2016	11/29/2016
	42	Original	11/29/2016	11/29/2016
	43	Original	11/29/2016	11/29/2016
	44	Original	11/29/2016	11/29/2016
	45	Original	11/29/2016	11/29/2016
Instr. Flight Stage II	46	Original	11/29/2016	11/29/2016
	47	Original	11/29/2016	11/29/2016
	48	Original	11/29/2016	11/29/2016
	49	Original	11/29/2016	11/29/2016
	50	Original	11/29/2016	11/29/2016
	51	Original	11/29/2016	11/29/2016
-	52	Original	11/29/2016	11/29/2016
	53	Original	11/29/2016	11/29/2016
-	54	Original	11/29/2016	11/29/2016
-	55	Original	11/29/2016	11/29/2016
Instr. Flight Stage III	56	Original	11/29/2016	11/29/2016

	57	Original	11/29/2016	11/29/2016
	58	Original	11/29/2016	11/29/2016
	59	Original	11/29/2016	11/29/2016
	60	Original	11/29/2016	11/29/2016
	61	Original	11/29/2016	11/29/2016
	62	Original	11/29/2016	11/29/2016
	63	Original	11/29/2016	11/29/2016
	64	Original	11/29/2016	11/29/2016
	65	Original	11/29/2016	11/29/2016
Comm. Ground Stage IV	66	Original	11/29/2016	11/29/2016
	67	Original	11/29/2016	11/29/2016
	68	Original	11/29/2016	11/29/2016
	69	Original	11/29/2016	11/29/2016
	70	Original	11/29/2016	11/29/2016
	71	Original	11/29/2016	11/29/2016
	72	Original	11/29/2016	11/29/2016
Comm. Ground Stage V	73	Original	11/29/2016	11/29/2016
	74	Original	11/29/2016	11/29/2016
	75	Original	11/29/2016	11/29/2016
	76	Original	11/29/2016	11/29/2016
	77	Original	11/29/2016	11/29/2016
	78	Original	11/29/2016	11/29/2016
	79	Original	11/29/2016	11/29/2016
	80	Original	11/29/2016	11/29/2016
	81	Original	11/29/2016	11/29/2016
	82	Original	11/29/2016	11/29/2016
	83	Original	11/29/2016	11/29/2016
	84	Original	11/29/2016	11/29/2016
	85	Original	11/29/2016	11/29/2016
	86	Original	11/29/2016	11/29/2016
	87	Original	11/29/2016	11/29/2016
Comm. Flight Stage IV	88	Rev. 3	11/29/2016	2/8/2018
	89	Rev. 3	11/29/2016	2/8/2018
	90	Rev. 3	11/29/2016	2/8/2018
	91	Rev. 3	11/29/2016	2/8/2018
	92	Rev. 3	11/29/2016	2/8/2018
	93	Rev. 3	11/29/2016	2/8/2018
	94	Rev. 3	11/29/2016	2/8/2018
	95	Rev. 3	11/29/2016	2/8/2018
	96	Rev. 3	11/29/2016	2/8/2018
	97	Rev. 3	11/29/2016	2/8/2018
	98	Rev. 3	11/29/2016	2/8/2018
	99	Rev. 3	11/29/2016	2/8/2018

	100	Rev. 3	11/29/2016	2/8/2018
	101	Rev. 3	11/29/2016	2/8/2018
	102	Rev. 3	11/29/2016	2/8/2018
	103	Rev. 3	11/29/2016	2/8/2018
	104	Rev. 3	11/29/2016	2/8/2018
Comm. Flight Stage V	105	Rev. 3	11/29/2016	2/8/2018
	106	Rev. 3	11/29/2016	2/8/2018
	107	Rev. 3	11/29/2016	2/8/2018
	108	Rev. 3	11/29/2016	2/8/2018
	109	Rev. 3	11/29/2016	2/8/2018
	110	Rev. 3	11/29/2016	2/8/2018
	111	Rev. 3	11/29/2016	2/8/2018
	112	Rev. 3	11/29/2016	2/8/2018
	113	Rev. 3	11/29/2016	2/8/2018
	114	Rev. 3	11/29/2016	2/8/2018
	115	Rev. 3	11/29/2016	2/8/2018
	116	Rev. 3	11/29/2016	2/8/2018
	117	Rev. 3	11/29/2016	2/8/2018
	118	Rev. 3	11/29/2016	2/8/2018
	119	Rev. 3	11/29/2016	2/8/2018
	120	Rev. 3	11/29/2016	2/8/2018
	121	Rev. 3	11/29/2016	2/8/2018
	122	Rev. 3	11/29/2016	2/8/2018
	123	Rev. 3	11/29/2016	2/8/2018
Comm. Flight Stage VI	124	Rev. 3	11/29/2016	2/8/2018
	125	Rev. 3	11/29/2016	2/8/2018
	126	Rev. 3	11/29/2016	2/8/2018
	127	Rev. 3	11/29/2016	2/8/2018
	128	Rev. 3	11/29/2016	2/8/2018
	129	Rev. 3	11/29/2016	2/8/2018
	130	Rev. 3	11/29/2016	2/8/2018
	131	Rev. 3	11/29/2016	2/8/2018
	132	Rev. 3	11/29/2016	2/8/2018
	133	Rev. 3	11/29/2016	2/8/2018
	134	Rev. 3	11/29/2016	2/8/2018
	135	Rev. 3	11/29/2016	2/8/2018
	136	Rev. 3	11/29/2016	2/8/2018
	137	Rev. 3	11/29/2016	2/8/2018
	138	Rev. 3	11/29/2016	2/8/2018
	139	Rev. 3	11/29/2016	2/8/2018
	140	Rev. 3	11/29/2016	2/8/2018
Multi Engine Rating	141	Rev. 3	11/29/2016	2/8/2018
Ground Stage VI	142	Rev. 3	11/29/2016	2/8/2018

	143	Rev. 3	11/29/2016	2/8/2018
	144	Rev. 3	11/29/2016	2/8/2018
	145	Rev. 3	11/29/2016	2/8/2018
	146	Rev. 3	11/29/2016	2/8/2018
	147	Rev. 3	11/29/2016	2/8/2018
	148	Rev. 3	11/29/2016	2/8/2018
	149	Rev. 3	11/29/2016	2/8/2018
	150	Rev. 3	11/29/2016	2/8/2018
	151	Rev. 3	11/29/2016	2/8/2018
Stage VII	152	Rev. 3	11/29/2016	2/8/2018
	153	Rev. 3	11/29/2016	2/8/2018
	154	Rev. 3	11/29/2016	2/8/2018
	155	Rev. 3	11/29/2016	2/8/2018
	156	Rev. 3	11/29/2016	2/8/2018
	157	Rev. 3	11/29/2016	2/8/2018
	158	Rev. 3	11/29/2016	2/8/2018
	159	Rev. 3	11/29/2016	2/8/2018
	160	Rev. 3	11/29/2016	2/8/2018
	161	Rev. 3	11/29/2016	2/8/2018
	162	Rev. 3	11/29/2016	2/8/2018
	163	Rev. 3	11/29/2016	2/8/2018
	164	Rev. 3	11/29/2016	2/8/2018
	165	Rev. 3	11/29/2016	2/8/2018
	166	Rev. 3	11/29/2016	2/8/2018
	167	Rev. 3	11/29/2016	2/8/2018
	168	Rev. 3	11/29/2016	2/8/2018
	169	Rev. 3	11/29/2016	2/8/2018
	170	Rev. 3	11/29/2016	2/8/2018
Appendix	171	Rev. 3	2/8/2018	2/8/2018
	172	Rev. 3	2/8/2018	2/8/2018
	173	Rev. 3	2/8/2018	2/8/2018
	174	Rev. 3	2/8/2018	2/8/2018
	175	Rev. 3	2/8/2018	2/8/2018
	176	Rev. 3	2/8/2018	2/8/2018
	177	Rev. 3	2/8/2018	2/8/2018
	178	Rev. 3	2/8/2018	2/8/2018
	179	Rev. 3	2/8/2018	2/8/2018
	180	Rev. 3	2/8/2018	2/8/2018
	181	Rev. 3	2/8/2018	2/8/2018
	182	Rev. 3	2/8/2018	2/8/2018
	183	Rev. 3	2/8/2018	2/8/2018
	184	Rev. 3	2/8/2018	2/8/2018
	185	Rev. 3	2/8/2018	2/8/2018

	186	Rev. 3	2/8/2018	2/8/2018
	187	Rev. 3	2/8/2018	2/8/2018
	188	Rev. 3	2/8/2018	2/8/2018
	189	Rev. 3	2/8/2018	2/8/2018
	190	Rev. 3	2/8/2018	2/8/2018
	191	Rev. 3	2/8/2018	2/8/2018
Enrollment Certificate		Original	11/29/2016	11/29/2016
Enrollment Certificate		Original	11/29/2016	11/29/2016
Enrollment Certificate		Original	11/29/2016	11/29/2016
Completed Certificate		Original	11/29/2016	11/29/2016
Completed Certificate		Original	11/29/2016	11/29/2016
Completed Certificate		Original	11/29/2016	11/29/2016

Contents

Preface	e			
Record	of Revis	sions		
List of	Effective	e Pages		
Table o	f Conter	nts		
1.0	Introdu	ction		
	1.1	Compan	y20	
	1.2	Policies,	Purpose and Scope	
	1.3	Publicati	ion and Organization of the Manual20	
	1.4	Jeppesen FliteTraining Syllabus		
2.0	Facilities, Aircraft and Personnel		ft and Personnel	
	2.1	Ground	Instruction Facilities	
	2.2	Airport.		
		2.2.1	Purdue Aviation Hangar and Ramp26	
	2.3	Aircraft	Assets	
	2.4	Chief Flight Instructor		
	2.5	Assistant Chief Flight Instructor		
	2.6	Certified	l Flight Instructors	
		2.6.1	Certified Flight Instructor Assignments	
	2.7	General Responsibilities of PAL Certified Flight Instructors & Students?		
	2.8	Security		
3.0	PAL Policies and Procedures		1 Procedures	
	3.1	General		
	3.2	Safety		
		3.2.1	Aviation Safety	
		3.2.2	Safety Officer	
		3.2.3	Safety Education and Training	
		3.2.4	Occurrence Reporting and Documentation	
		3.2.5	Alcohol and Drug Policy	
		3.2.6	Smoking	
		3.2.7	Flight Instructor Duty Limits	
PAL-TCO-SPM		3,2.8 M	Aircrew Dispatch Form	

3.3		Security Awareness and Procedures		
		3.3.1 Security Considerations	32	
		3.3.2 TSA Regulations Governing Flight Training	32	
		3.3.3 TSA Security Awareness Training	32	
		3.3.4 Flight Training to U.S. Citizens	33	
		3.3.5 Flight Training to Foreign Citizens	34	
	3.4	Aircraft Scheduling	35	
	3.5	Aircraft Dispatch Procedures		
		3.5.1 Black Binder	36	
		3.5.2 Dispatcher Actions	36	
		3.5.3 Dispatch Authorization	37	
		3.5.4 Control of Aircraft Keys	37	
		3.5.5 Dispatching to Solo Students	37	
	3.6	Aircraft Airworthiness		
		3.6.1 PAL Discrepancy Reporting Procedure	38	
		3.6.2 Unplanned Landings and Discrepancy Reporting Off LAF	39	
		3.6.3 Inspections/Approval for Return to Service	40	
		3.6.4 Airworthiness Directives & Instructions for Continued Airworthiness	s.40	
4.0	Standa	tandard Operating Procedures		
	4.1	Preflight		
	4.2	Ground Operations		
	4.3	Engine Starting and Taxiing		
4.4		Weather Minimums		
		4.4.1 VFR Weather Minimums	43	
		4.4.2 IFR Weather Minimums	43	
		4.4.3 General Weather Limitations	44	
	4.5	Winter Operations	44	
	4.6	Night Flight Limitations		
	4.7	Foreseen/Unforeseen Circumstances	45	
	4.8	Designated Practice Areas	47	
	4.9	Airports of Use	48	
		4.9.1 Solo Cross Countries Routes	51	
	4.10	Minimum Altitudes	52	
PAL	-TCO-S	PM Original 11/29/2016		

4.11	General Restrictions	52
4.12	Refueling	53
Appendix A		54
	Aircrew Dispatch Form	
Appendix B		56
	Emergency Response Manual	
Appendix C		54
	Occurrence Reporting Form	
Appendix D		56
	PAL Solo Flight Authorization Form (solo slip)	
Appendix E		C 0
		58
	PAL Aircraft Status Sheet	58
Appendix F	PAL Aircraft Status Sheet	58 72
Appendix F	PAL Aircraft Status Sheet Discrepancy Report	72
Appendix F Appendix G	PAL Aircraft Status Sheet Discrepancy Report	72 74

1.0 Introduction

1.1 Company

Purdue Aviation, LLC, located at the Purdue University Airport (LAF), West Lafayette, IN, holds Air Agency Certificate Number 8PUS360C, and is owned and operated as: Purdue Aviation, LLC, 1630 Aviation, Drive, West Lafayette, IN 47906.

1.2 Policies, Purpose and Scope

This Training Course Outline (TCO) and Safety and Procedures Manual (SPM) provides a guide line for Purdue Aviation, LLC (PAL) Instructors, Students, Maintenance Personnel, and Customer Service Representatives/Dispatchers in the operation and use of PAL aircraft. The procedures and policies contained here are supplemental to the 14 Certified Federal Regulations Part 141, and PAL policy is designed to provide for safe and correct operating practices. Instructors, Students, Maintenance Personnel and Dispatchers shall become familiar with the contents of this manual and with the correct procedures for the planning and performance of all flight activities.

This manual covers all aspects of PAL flight operations in PAL aircraft. Material includes Instructor, Student, Maintenance Personnel, Dispatcher and management responsibilities and authority, aircraft maintenance, planning and conducting of flight operations, and the training for all 14 CFR Part 141 Students.

1.3 Publications and Organization of the Manual

The PAL Chief Flight Instructor is the facilitator of this manual. All questions concerning this manual should be directed to the Chief Flight Instructor or to the President of PAL. This TCO/ Safety and Procedures Manual is organized into five sections:

- Introduction
- Facilities, Aircraft and Personnel
- PAL Policies and Procedures
- Standard Operating Procedures
- Appendices

1.4 Jeppesen FliteTraining Syllabus

Purdue Aviation, LLC shall incorporate the FAA-approved Jeppesen FliteTraining System, including the Private Pilot and the Instrument/Commercial syllabi as published by Jeppesen, into the TCO and SPM. The Jeppesen products shall be issued to students along with this TCO/SPM and shall be used in conjunction as integrated elements of this training.

Students and instructors in the Private Pilot training curriculum shall use the TCO/SPM in conjunction with the Jeppesen Private Pilot Syllabus; instructors shall additionally use the Jeppesen Private Pilot Instructor Guides. Students and instructors in the Instrument Pilot training curriculum shall use the TCO/SPM in conjunction with the Jeppesen Instrument Commercial Syllabus; instructors shall additionally use the Jeppesen Instrument Pilot Instructor Guides. Students and instructors in the Commercial Pilot training curriculum shall use the TCO/SPM in conjunction with the Jeppesen Instrument Pilot Instructor Guides. Students and instructors in the Commercial Pilot training curriculum shall use the TCO/SPM in conjunction with the Jeppesen Instrument Commercial Syllabus; instructors shall additionally use the Jeppesen Commercial Pilot Instructor Guides. Students and instructors in the Multi Engine Pilot training curriculum shall use the TCO/SPM in conjunction with the Jeppesen Multi-Engine Syllabus found within the Instrument/Commercial Syllabus; instructors shall additionally use the Jeppesen Commercial Pilot Instructor Guides.

Purdue Aviation, LLC shall deliver the most current information available when distributing each TCO. As revisions to the TCO become available, the Chief Flight Instructor shall exchange current revisions to replace previous revisions in the possession of the students, instructors, staff and the FAA. As revisions to the SPM are approved, the Chief Flight Instructor shall replace the previous revision online and distribute a link via electronic correspondence to the students, instructors, staff and the FAA. The Chief Flight Instructor shall maintain the most current revisions of the TCO, SPM and Jeppesen products, and is responsible for the dissemination of revisions to the distribution list. Aircraft Dispatchers shall ensure each Instructor and Student's TCO is updated through use of the Aircrew Dispatch Form (Appendix A).

2.0 Facilities, Aircraft and Personnel

2.1 Ground Instruction Facilities

Ground instruction facilities are located in PAL's facility, at 1630 Aviation Drive, West Lafayette, Indiana as depicted in *Figure 1*. Training space consists of one flight training room (13'x19'6''), two conference rooms (8'6"x16', 18'x12'3"), one President's Office (12'6"x15'6"), one Flight Instructor office (16'8"x12'3"), one Chief Flight Instructor Office (12'6"x13'), one Business room (11'6"x31'), one Pilot's Lounge (13'x19'), one Customer Lobby (22'x33') and a pilot briefing room for weather and flight service information.

The flight training room has two partitioned workspaces with white boards, tables and chairs, a table for briefing, a computer, file cabinets and a TV with DVD/VCR for training materials. Each conference room has a capacity to seat eight, a large table for charts and discussion, white board, and projector availability.

The President's office has capacity to seat five, a desk, a white board and can be used for training and private discussions.

The Flight Instructor's office has capacity to seat eight, two desks, a table, white boards and can be used for training and private discussions.

The Chief Flight Instructor's office has capacity to seat five, a desk, a white board and can be used for training and private discussions.

The Business Room has the capacity to seat 20 and is adaptable to be equipped with the multiple briefing cubes, portable tables, and seats, white boards and projector availability. It can be used to support training and private discussions as needed.

The Pilot's Lounge and the Customer Lobby have the capacity to seat 20 with tables and chairs and are adaptable to support training and private discussion when appropriate.





Figure 1. Purdue Aviation LLC Ground Instruction Facilities



Figure 2. Hangar 7 Exits

2.2 Airport

Purdue University Airport is the main operation base for PAL's training flight operations. It has hardsurfaced runways meeting the requirements of 14 CFR Part 141.38 for day and night flight operations as depicted in Figure 2.



Figure 3. Purdue University Airport in West Lafayette, Indiana

2.2.1 Purdue Aviation Hangar and Ramp Area

Purdue Aviation operates from Hangar 7 and the adjoining aircraft parking ramp area bordered by Hangers 7 and 8, and taxiways C and E, as depicted in Figure 2. All hangars and ramp areas support aircraft operations and shall always be considered potentially dangerous due to imminent or ongoing turbine and piston engine operations. Exhaust from turbines engines and spinning propellers are unforgiving and are not always readily obvious to transient personnel, especially those distracted by personal electronic devices or any other action that reduces situational awareness. No Student shall enter these areas unescorted prior to receiving a ramp awareness briefing during the first flight lesson.

2.3 Aircraft Assets

The aircraft flown meet the requirements of 14 CFR Part 91.39. Each aircraft is equipped for day and night VFR and IFR flying as specified in 14 CFR Part 91.205. All aircraft are maintained in accordance with 14 CFR Part 43, appendix D; PAL asset maintenance procedures are depicted in section 3.6. Every aircraft contains a checklist, which includes pre-takeoff and pre-landing items, as well as aircraft registration, airworthiness certificate and manufacturer-issued POH. The aircraft types listed below are used for the Private, Instrument, Commercial and Multi-Engine courses.

- Cessna 172 Skyhawk (CE 172 172)
- Piper PA-28 series aircraft (PA(28))
- Piper PA-44 Seminole (PA(44)180)).

Purdue Aviation, LLC personnel shall maintain and inspect for each aircraft in accordance with the requirements for aircraft operated for hire under Part 91 and Part 141.89, and with Purdue Aviation LLC's TCO for aircraft and equipment. Purdue Aviation, LLC personnel shall notify the FAA CHDO CMT Principle Inspectors of the aircraft make/model and registrationnumber via letter or electronic correspondence prior to conducting training flights with aircraft. The CHDO CMT PI's will be responsible for updating Purdue Aviation's e-VID record.

2.4 Chief Flight Instructor

The Chief Flight Instructor (Chief CFI) meets all requirements of 14 CFR Part 141.35. The duties include, but are not limited to "Duties of the Assistant Chief Flight Instructor" (listed below) and responsibilities as outlined in 14 CFR Part 141.85. The basic function of the Chief CFI is managing all flight school operations, maintaining training curriculum currency, supervising Instructor and support staff, while ensuring the highest teaching standards and safety of operations. Applicable Federal Aviation Administration (FAA) and Transportation Security Administration (TSA) regulatory compliance are cornerstones to this position.

2.5 Assistant Chief Flight Instructor

The Assistant Chief Flight Instructors (Assistant Chief CFI) meets all requirements of 14 CFR

Part 141.36. Duties include, but are not limited to being "on call" per 14 CFR Part 141.85(b) as assigned, conducting standardization flights as assigned, and performing additional duties as assigned by the Chief Flight Instructor or his/her designee. The basic function of the Assistant Chief CFI is to assist the Chief CFI in managing all flight school operations, maintaining training curriculum currency, supervising Instructors and support staff, while ensuring the highest teaching standards. Applicable Federal Aviation Administration (FAA) and Transportation Security Administration (TSA) regulatory compliance are cornerstones to this position.

2.6 Certified Flight Instructors

Certified Flight Instructors meet the requirements of 14 CFR Part 141.33 and shall follow the guidelines in this manual. The PAL Certified Flight Instructor is expected to professionally and efficiently provide excellent customer service through quality flight and ground instruction, while promoting a safe operational environment. The greatest level of professionalism in aviation is our standard, and safety is a natural byproduct of that professionalism.

2.6.1 Certified Flight Instructor Assignments

All Certified Flight Instructors meeting or exceeding the requirements in section 2.6 of this manual shall be assigned accordingly by the Chief Flight Instructor, after completing the applicable training and testing for each course of Part 141 instruction.

2.7 General Responsibilities of PAL Instructors and Students

Instructors and Students shall:

- Be professional and courteous while executing good judgment.
- Promote safety as a natural byproduct of professionalism.
- Seek excellence in airmanship; foster the same with our Students.
- Develop, exercise, and foster excellent aeronautical decision-making.
- Recognize and manage risks effectively; foster sound principles of risk management.
- Demonstrate and foster situational awareness, standard operating practices and personal operating limitations.
- Exercise and foster responsibility and accountability.
- Adhere to applicable law, regulations and policies.
- Understand and comply with the privileges and limitations of your certificates and ratings.
- Maintain the required level of flight currency.
- Foster situational awareness based on sound principles of airmanship, scenario-based instruction, and risk management.
- Utilize Crew Resource Management (CRM), and Single Pilot Resource Management (SRM) techniques.
- Understand the unfamiliar risks associated with flying at low altitude, in inclement

weather, at night, in congested areas, over water, and over rugged, mountainous or forested terrain.

- See and be seen. Demonstrate techniques for seeing and avoiding other aircraft and avoid congested airspace. Exercise prudent use of external lighting when flying.
- Listen and be heard. Monitor appropriate frequencies to remain aware of other aircraft, and accurately inform others of your position and intentions.
- Monitor and communicate; address safety concerns and compliance issues.
- Practice and foster sterile cockpits for taxi, takeoff, landing, and critical phases of flight.
- No maneuvers below 500 feet AGL except as required during takeoff, landings, and go arounds.
- Keep simulated emergencies from becoming genuine; always have a landing area in range.
- Recognize personal susceptibility to distraction, fatigue, stress, and hazardous attitudes; monitor your peers for the same.
- Return aircraft in an equal or better state of cleanliness than received.
- Develop appropriate personal operating parameters reflecting experience, proficiency, and currency in challenging conditions, including poor weather and night operations.

2.8 Security

Instructors and Students shall exercise or implement the following security practices:

- Seek to maintain the security of all persons and property associated with their aviation activities.
- Remain vigilant and immediately report suspicious, reckless, or illegal activities.
- Be familiar with the latest security regulations.
- Avoid special-use airspace except when approved or necessary in an emergency.
- Comply with all TSA regulations and training requirements during all phases of flight.
- Complete required initial and annual recurrent TSA security awareness training.
- Check NOTAMS thoroughly during preflight preparation, and obtain updates during long flights, with emphasis on NOTAMS for airspace restrictions and temporary flight restrictions.
- Periodically review military intercept procedures. Monitor 121.5 MHz when practicable.
- Report suspicious behavior and other security concerns to the appropriate authorities.
- Do not deviate from an active flight plan (IFR or VFR) or clearance without notifying the appropriate air traffic facility.
- To help avoid special use airspace, use ATC radar advisories when conducting VFR training flights, or consider flying IFR (if rated and equipped), whenever practicable.
- Confirm that ramp access gates are closed securely behind you to prevent unauthorized access.
- Observe and report irregularities, including unauthorized or suspicious people. Be

familiar with the means to report and deter suspicious activities, such as AOPA's Airport Watch (866-GA SECURE / 866-427-3287).

3.0 PAL Policies and Procedures

3.1 General

All Instructors are responsible for compliance with Federal Aviation Regulations and the policies set forth in this manual. All PAL Instructors and Students shall be particularly knowledgeable of 14 CFR Parts 61, 91 and 141 and shall be responsible for compliance with its provisions.

The procedures and guidelines in this manual are directed toward the safe and efficient operation of PAL flight activities. Additionally, all PAL Instructors and Students shall exercise prudence and good judgment in all flight operations. The policies and procedures outlined in this manual apply to all PAL aircraft operations.

3.2 Safety

It is the responsibility of all PAL employees, Instructors and Students to achieve the following safety directives:

- Provide a safe and healthy working environment for all employees, Instructors, and Students.
- Prevent aviation mishaps by exercising sound risk management and judgment.
- Incorporate risk management into flight planning, briefing and all aircraft operations.
- Identify and control hazardous conditions.
- In the case of an accident or incident refer to the Emergency Response Manual in Appendix B

3.2.1 Aviation Safety

Aviation safety is an attitude and a culture that must permeate the entire organization. It is the responsibility of each and every individual including Administration, Maintenance, Dispatch, Instructors, Students, and all PAL employees.

Safety is not a reaction to an occurrence (i.e., incident or accident), but an overall philosophy that is proactive in its approach to strive for complete elimination of occurrences during flight training.

There are numerous components to PAL's approach to safety that include:

- A Safety Officer, with defined duties and responsibilities (below)
- Initial and recurrent training of all employees
- A reporting and documentation system of all occurrences

- A Safety Procedures Manual
- A regular meeting schedule of the various components of the operation

3.2.2 Safety Officer

The Safety Officer is an employee of PAL. The responsibilities and duties are as follows:

- Counsel Instructors and/or Students who have been involved in an accident, incident or any other occurrence that effects safe operation of the flight school.
- Respond to safety concerns or suggestions as presented by employees and students.
- Receives documents and categorizes all occurrences into a data base for monitoring purposes.
- Recommends changes to procedures and practices relative to the operation of the flight school.

3.2.3 Safety Education and Training

The Chief Flight Instructor shall give initial training on this TCO/SPM Manual during indoctrination. The Chief CFI will give recurrent training on topics, such as, air traffic control procedures, seasonal weather, survival equipment, PAL procedures, and changes to 14 CFR Part 141, changes to this manual and medical aspects for aviators, during scheduled meetings with the instructors.

3.2.4 Occurrence Reporting and Documentation

Each occurrence will be reported, documented and categorized as to maintain a data base of information from which to assess possible problem areas in the operation of the flight school. The categories are as follows:

- Accident, as defined by NTSB
- Incidents other aircraft damage occurrences
- Aircraft departing illegally past an event, AD, etc.
- Runway/Taxiway incursions
- Communication errors
- Errors in judgment or decision making

Occurrence Reports shall be completed and delivered by any person involved in the occurrence and/or who witnessed the event being reported on the Occurrence Reporting Form in Appendix C.

3.2.5 Alcohol and Drug Policy

No Instructor or Student shall partake of alcoholic beverages of any kind while on duty or within 8 hours of anticipated flight duty (14 CFR Part 91.17). No Instructor or Student

shall partake of any substance not prescribed by a medical professional at any time. Accepting flight duty when breath alcohol content is .04% or higher, or when suffering from the after effects of alcohol consumption, regardless of the 8-hour rule, is illegal and shall not be tolerated and is grounds for immediate dismissal. Substance abuse of any kind shall not be tolerated and is grounds for immediate dismissal.

The pilot in command shall not allow a person who appears to be intoxicated, or who shows physical indications of being under the influence of drugs (except a medical patient under proper care), to be carried in PAL aircraft. Any situations involving unusual behavior or suspected alcohol or drug abuse shall be reported to the Safety Officer immediately.

3.2.6 Smoking

Smoking is prohibited in or near PAL aircraft and inside of any building at the LAF airport. Smoking is permitted in designated areas outside the Line Office and outside the fence.

3.2.7 Flight Instructor Duty Limits

Flight Instructors shall not provide more than 8 hours of flight instruction per day per 14 CFR Part 61.195. Instructors and Students shall determine individual readiness and their ability to fly in any given situation. If there is any doubt to the Instructor's or Student's readiness, the flight will be cancelled.

3.2.8 Aircrew Dispatch Form

To help Instructors and Students determine their readiness for flight, the PAL Aircrew Dispatch Form shall be conducted during aircraft dispatch. (See Appendix A).

3.3 Security Awareness and Procedures

3.3.1 Security Considerations

Aviation security is the responsibility of everyone at PAL. All Instructors, Students, and Dispatchers shall participate in the AOPA Airport Watch Program at: http://flash.aopa.org/asf/gasecurity/gasecurity.cfm

3.3.2 TSA Regulations Governing Flight Training

PAL flight training personnel will comply with all TSA regulations that are relevant to flight training providers.

3.3.3 TSA Security Awareness Training

TSA regulations require flight schools to provide security awareness training to employees who have direct contact with a flight school Student (regardless of citizenship or nationality), and to issue and maintain records of this training. This applies to ground

Instructors, Administrative Personnel, and current and active Flight Instructors. Whether providing flight training to U.S. citizens or non-U.S. citizens, all Instructors must complete the TSA security awareness training during indoctrination with the Chief CFI. New Dispatchers, must complete the training within 60 days of being hired or certificated. All records shall be kept in the Chief CFI's office.

3.3.3.1 Enforcement of Security Awareness Training Compliance

According to the TSA, flight school employees (and Flight Instructors) not in compliance may be subject to civil penalties under federal regulations. TSA may also deal with violators by issue verbal warnings and/or written notices.

3.3.3.2 Initial Security Awareness Training

All Flight Instructors and Dispatchers shall provide the Chief Flight Instructor with documentation that certifies completion of Initial Security Awareness Training. The following options to fulfill requirements for initial security awareness training are available:

- Initial security awareness training program offered by TSA, *The Flight* School Security Awareness Training for Aircraft and Simulators
- AOPA online General Aviation Security course found at: http://flash.aopa.

org/asf/gasecurity/gasecurity.cfm

• Alternative initial training program offered by a third Party or designed by the flight school itself. Refer to Subpart B of the TSA regulations.

3.3.3.3 Recurrent Security Awareness Training

All Instructors and Dispatchers shall provide the Chief Flight Instructor with documentation that certifies annual completion of Recurrent Security Awareness Training.

The purpose of the TSA recurrent security awareness training is to make Instructors and Dispatchers aware of security-related incidents, measures, and procedures that affect their main base of operation.

The Chief Flight Instructor shall provide recurrent training to ensure awareness of new local security measures or procedures, new threats posed by or incidents involving general aviation aircraft, and any new guidelines or recommendations concerning the security of general aviation aircraft, airports, or flight schools. Alternative recurrent training is available at:

• AOPA online General Aviation Security course found at: http://flash.aopa. org/asf/gasecurity/gasecurity.cfm

3.3.3.4 Applicability

Each PAL Instructor and Dispatcher shall receive recurrent security awareness training and testing, internally adapted for local operations and approved by TSA, at least every 12 months. All Instructors and Dispatchers should receive their recurrent security awareness training up to 1 calendar month before and no later than 1 calendar month after the month that the individual's previous security awareness training. Records shall be kept in the Chief CFI's office, and retained for a minimum of three years.

3.3.4 Flight Training to U.S. Citizens

The requirements for determining U.S. citizenship status for any Student, (U.S. or alien), applies to flight training towards an initial Student pilot certificate, private pilot certificate, instrument rating, or multiengine rating.

The student must show evidence of U.S. citizenship by presenting any of the following:

- Valid U.S. passport, or,
- Original or government-issued birth certificate of the U.S., American Samoa,

or Swains Island AND a government-issued picture ID, or

- Original certificate of birth abroad with raised seal (Form FS-545 or DS-1350) AND a government-issued picture ID, or
- Original certificate of U.S. citizenship with raised seal (Form N-560 or N-561) or a Certificate of Repatriation (Form N-581) AND government-issued pictured ID, or
- Original U.S. Naturalization Certificate with raised seal (Form N-550 or N-570) AND a government-issued picture ID.

PAL Instructor shall record the following in the Student's logbook or records:

• Make an endorsement in both the Student's training log folder and in the Student's logbook with, "I certify that [insert Student's name] has presented a [U.S. birth certificate or U.S. passport] establishing U.S. citizenship in accordance with 49 CFR 1552.3(h)."

PAL will retain a copy of the document(s) provided to prove citizenship for five years.

Students who change flight schools and/or locations shall be required to prove citizenship and receive a logbook endorsement.

3.3.5 Flight Training to Foreign Citizens

Foreign Citizens shall participate in the Alien Flight Student Program (AFSP) security threat assessment if:

• Seeking flight training inside or outside the United States for U.S. airman certificate under 14 CFR. This rule applies to flight training towards Student or private pilot certificate; multiengine or instrument rating; and any initial U.S. airman certificate issued by the FAA.

A Foreign Citizen is not required to participate in the AFSP security threat assessment if:

- Seeking recurrent training, such as a flight review, instrument proficiency check, or flight training listed under 14 CFR Part 61.31; or
- Is participating in a discovery or demonstration flight for marketing purposes.
- These and other exemptions are further clarified at www. flightschoolcandidates.gov.

PAL Instructor shall:

• Make an endorsement in both the Student's training log folder and in the Student's logbook with the following:

"I certify that [insert Student's name] has received TSA/ASFP authorization to receive [PVT, IFR, MEL] flight training at Purdue Aviation LLC under TR#______by [date]."

3.4 Aircraft Scheduling

All PAL aircraft and instructors will be scheduled for operation through the use of the online scheduling program located at www.lai.kal-soft.com.

Upon logging into the online scheduling program, using your individual username and password assigned during enrollment, complete your reservation by doing the following:

- Click the "Reserve" button
- Select the aircraft you want to fly
- Select the instructor assigned to you
- For "Flight Type", select Standard
- Select the date and time you want your lesson
- If you would like this reservation to be a repeating reservation, chose how often and how many times you want to repeat it. If you don't want it to repeat, ignore this.
- Add any comments you may wish to add.
- Click "Add"

Your reservation will be complete. You will know this because it will tell you, and you and your instructor will receive an email confirmation of this reservation

To make changes or cancel the reservation, click on your reservation on the schedule. A drop down box will appear and you can choose to edit or cancel the reservation. Choose what you would like to do. Make the edits as if you where scheduling new, as described above. To cancel, click on that choice and give your reason for cancelling. For both of these occurrences, you will receive an email confirming it.

In the event the student or instructor cannot access the schedule online for any reason, please contact the dispatcher at 765-743-9692. The dispatcher will take your reservation and/or change information over the phone. The dispatcher will make note of these changes and will apply them to the online schedule as soon as it is available.

3.5 Aircraft Dispatch Procedures

Aircraft shall not be dispatched to any Student or Instructor unless the individual dispatching the aircraft has verified that PAL procedures have been completed.

These procedures include the following:

• First, the Student presents himself/herself to the Dispatcher on duty and requests an aircraft and/or Instructor. The Student will be asked to present identification if the Dispatcher is

unfamiliar with the Student.

- Next, the Dispatcher will verify this student is scheduled in desired aircraft with the Instructor he/she identified on the online schedule.
- Once it is determined the Student is with the correct aircraft and/or Instructor, the Dispatcher will use the software package, FBO Director, (which has an annual subscription and is updated by the software provider) to dispatch the aircraft and Instructor.
- FBO Director verifies the aircraft is current on its inspections, the Student has all his/her records on file and is current in our system, and it verifies the Instructor is current with his/her records. If there is an issue with the aircraft, Student, and/or Instructor, the software informs the Dispatcher if one or more of them "failed". If there is a failure of any kind, the aircraft cannot be dispatched until the failure(s) is corrected. If there is not a problem, the software informs the Dispatcher the request "passes". At this time, or once the "failure" is corrected, the Dispatcher can dispatch the aircraft to the Student.
- Before giving the Student the Black Binder, without the keys, the Dispatcher will have the Student and Instructor complete the Aircrew Dispatch Form (Appendix A).
- Once FBO Director has verified the aircraft, Student and Instructor are current and the Aircrew Dispatch Form has been satisfactorily completed and signed, control of Keys (as mentioned in section 3.5.4) is given to Instructor or Student.

3.5.1 Black Binder

Instructors and/or Students shall determine aircraft status when accepting the aircraft for flight though use the Black Binder. The Binder organizes essential items for each flight and each aircraft and contains the following:

- Blank copy of the Discrepancy Report to be used if there is a Discrepancy
- White copies of the corrected Discrepancy Reports to establish trends
- Yellow copies of open discrepancies
- Aircraft Status sheet to delineate maintenance due times and AD's
- Aircraft checklist for that particular aircraft
- Tach and Hobbs sheet to record flight time
- VOR check sheet to verify the aircraft has a current VOR check
- Purdue Aviation Operations and Maintenance Contact information.
- Keys (controlled as described in 3.5.4 of this manual)

3.5.2 Dispatcher Actions

The individual dispatching an aircraft shall ensure the Instructor and/or Student meets the following:

- Completes the Aircrew Dispatch Form (Appendix A), by visually verifying
- Meets FAA and PAL currency requirements, by verifying in FBO Director
- Has a valid government picture identification on file with PAL, by verifying in FBO Director
- Has valid FAA Pilot and current Medical Certificates on file with PAL, by verifying
in FBO Director

- Has completed and signed the Rental Agreement and all associated paperwork, by verifying in FBO Director
- Has an account in good standing, by verifying in FBO Director

3.5.3 Dispatch Authorization

The following PAL employees are authorized to dispatch aircraft:

- Customer Service Representatives/Dispatchers
- Office Manager
- Chief Flight Instructor
- Company President

3.5.4 Control of Aircraft Keys

- A Dispatcher shall not release a Black Binder containing the aircraft keys for any aircraft to any Student until all items in 3.5 and 3.5.2 are completed, and;
 - If a Student is flying with an Instructor, the dispatcher shall ONLY release the aircraft keys to the Instructor. or;
 - If a Student is flying solo, all criteria in 3.5.5 have been met.
- Aircraft Black Binders and keys are kept in a locked cabinet when there is not a PAL
- employee present.

3.5.5 Dispatching to Solo Students

Aircraft shall be dispatched to Students engaging in solo flights under the following circumstances:

- All actions in section 3.5 and 3.5.2 have been completed.
- The Student's Primary Flight Instructor has completed and signed a valid PAL Solo Flight Authorization Form, aka "solo slip" and all requirements of that form have been met (Appendix D). The Chief Flight Instructor shall retain all solo slips for at least three years.
- The Primary Flight Instructor shall be present or have arranged for another PAL 14 CFR Part 141 Instructor to act as Supervising Instructor for the solo flight.
- The Supervising Instructor reviews the weather, limitations, preflight planning, and logbook endorsements as appropriate for the flight.
- The Supervising Instructor signs the Solo Flight Authorization Form and authorizes the Student to commence the flight.

If a Student makes an unscheduled landing, the aircraft shall not be re-dispatched without authorization of the Chief Flight Instructor or the Student's primary flight Instructor.

The Student must contact the Chief Flight Instructor or a qualified PAL 14 CFR Part 141 instructor to receive written authorization. This can be done via fax, email or text.

If any pilot makes a precautionary landing because of a suspected aircraft malfunction, the aircraft shall not be re-dispatched unless approved by the Director of Maintenance, or his/her, designated representative.

3.6 Aircraft Airworthiness

Prior to each flight, Students and Instructors shall ensure that the scheduled aircraft has been verified airworthy by reviewing the status sheet of aircraft in the dispatch-provided aircraft Black Binder. An example of the status sheet is found in (Appendix E). The student will verify that all information is current by reviewing the status sheet. Aircraft airworthiness will also be verified by the Dispatcher by using the FBO Director Software. This software tracks when the aircraft is due for its next inspections. Information is updated in the program by the Director of the Maintenance or, his/her designee, once maintenance is completed and before the aircraft is approved for returned to service.

3.6.1 PAL Discrepancy Reporting Procedure

All aircraft discrepancies will be reported using the Discrepancy Report form (appendix F). This form is available within the Black Binder or through the dispatch desk. When a discrepancy is discovered, the person identifying the discrepancy will complete the Discrepancy Report form and forward this information to dispatch personnel along with the Black Binder. Instructions for completing the form are located within section 3.6.1.1. It is vital that a thorough and concise description be provided for all discrepancies.

NOTE: If dispatch personnel are not available, contact the Chief Flight Instructor or the Director of Maintenance.

Upon receipt of the discrepancy report, the dispatch personnel shall review it for completeness and clarity. A determination will be made by the Director of Maintenance, or his/her designee regarding aircraft serviceability up to and including the removal from service. If it is determined the aircraft can remain in service, the white (upper) copy of the Discrepancy Form will be forwarded to the Director of Maintenance, or his designee, and the yellow copy will then be placed in the Black Binder. If it is determined the aircraft shall be removed from service, the entire Discrepancy Form will be placed in the Black Binder. If it is be placed in the Black Binder and the Black Binder will be forwarded to the Director of Maintenance, or his/her designee. The dispatcher shall place the aircraft out of service for maintenance, on the online schedule.

3.6.1.1 Completing the Discrepancy Report

When completing the Discrepancy Report the Instructor or Student must print legibly, and be descriptive in explaining what is not working. Include when the problem was experienced and what the effect was on the aircraft. Complete all items on the Discrepancy Report which include:

- N number of the aircraft
- Date of the Discrepancy
- Tach time on the aircraft
- Identify if you are a Student, Instructor or Renter
- The Discrepancy that occurred
- Print name
- Phone number of originator for contact if questions arise

3.6.2 Unplanned Landings and Discrepancy Reporting Off LAF

In the event that a maintenance discrepancy occurs while the aircraft is away from LAF, the Student or Instructor shall report the maintenance discrepancy by completing a "Discrepancy Report" form, which is provided in the Black Binder. A copy of the Discrepancy Report shall then be sent by fax, email or verbally transferred back to the Dispatch Office, who shall forward the report to the Director of Maintenance, or his/her designee.

The Director of Maintenance, or his/her designee shall determine the appropriate course of action. Depending upon the nature of the discrepancy, the Director of Maintenance, or his/her designee, may contract with a locally based, certificated aircraft maintenance provider to help assess the situation and provide appropriate assistance. (The certificates of this maintenance provider will be verified by asking the person for their Airframe and Power plant, Inspector Authority, or Repair Station number.) The certificated maintenance provider may utilize the authority provided by 14 CFR 91.213 (D) when applicable. When doing so, the provider shall placard the aircraft and make note on the Aircraft Status Sheet (Appendix E) in the Black Binder under "Additional Items". If necessary, the Director of Maintenance, or his/her designee, may choose to send one (or more) PAL Maintenance Technicians to the site to address the discrepancy. The Student and Instructor are not permitted to operate the aircraft in question until a written description of the corrective action, has been recorded on the lower section of the Discrepancy Report by the maintenance technician approving the aircraft for return to service. Or if the maintenance technician would prefer to release the aircraft to service using their company work order or other document satisfying the requirements of CFR Part 43.9, they may do so when approved by the Director of Maintenance, or his/her designee. The completed report shall be filed with the applicable aircraft maintenance records for that aircraft upon return to LAF. PAL aircraft maintenance records are retained for the specified periods as required by 14 CFR 91.417(a)(1). After the aircraft has been satisfactory approved for return to service by the Director of Maintenance, or his/her designee, the Director of Maintenance, or his/her designee approving the aircraft for return to service shall notify the Dispatcher. The Student or Instructor shall be notified by the Director of Maintenance, or his/her designee that the aircraft is approved for return to service, allowing for continued operation of the aircraft.

3.6.3 Inspections/Approval for Return to Service

The Director of Maintenance shall ensure aircraft inspection compliance by using the FBO Director software program, which has an annual subscription and is automatically updated by the software provider, that monitors the time remaining until the next inspection for each aircraft and alerts the Dispatcher when the time is near or arrived. The Director of Maintenance, or his/her designee, reviews a report each morning generated by FBO Director regarding time due items on all aircraft to assure no aircraft has reached its due time and to plan for those items coming due. Dispatch shall notify the Director of Maintenance when an aircraft has reached its inspection due time and shall remove the aircraft from service. The Dispatcher will notify the Director of Maintenance by completing a Discrepancy Form and putting it in the Black Binder. The aircraft is then removed from service on the Online Schedule and the Black Binder is given to the Director of Maintenance. The Director of Maintenance shall assign the inspection to a maintenance technician(s), who shall perform the inspection. Aircraft will be inspected and performed in accordance with 100 hour/annual inspections. When all inspection requirements and/or discrepancies are complied with, the required maintenance record entries in accordance with 14 CFR Part 43.11, shall be made. Upon completion of all maintenance record entries, the A&P/IA approving the aircraft to return to service shall notify the Director of Maintenance, or his/her designee, to update the due times of the aircraft in the FBO Director software and on the Aircraft Status sheets (Appendix E). The Maintenance Personnel shall record on the lower section of the Discrepancy Report that the entry has been made into the aircraft's permanent record and any description of the inspection or repair before it is returned to service. The completed white copy of the Discrepancy Report, shall be kept in the Black Binder for 10 reports. Once there are 10 reports in the Black Binder the Director of Maintenance or his/her designee will remove the oldest. The yellow copy of the Discrepancy Report will remain in the Black Binder until the Discrepancy is evaluated and fixed by Maintenance Personnel. This should alert Instructors, Students and Dispatchers there is an open Discrepancy that needs attention before an aircraft can be dispatched. With the Discrepancy Report complete and the aircraft returned to service, the Director or maintenance or, his/her designee, shall return the Black Binder to the Dispatch office and the Dispatcher shall make the aircraft available on the schedule.

3.6.4 Airworthiness Directives and Instructions for Continued Airworthiness

Airworthiness Directives (AD's) and Instructions for Continued Airworthiness (ICA's) are monitored and compliance tracked by the Director of Maintenance, and by FBO

Director software. Records are available for inspection in the Director of Maintenance's office.

4.0 Standard Operating Procedures

4.1 Preflight Requirements

All Instructors and Students on training flights shall:

- File a flight plan, with Flight Service, for any flight leaving the local area, leaving a copy at the Dispatcher.
- Have appropriate survival and safety equipment for the intended operation area, weather, and conditions is onboard the aircraft. This includes winter coats, hats, and gloves in the winter.
- Have sufficient fuel to fly to the point of intended landing, fly from there to an alternate airport, and then fly for an additional 45 minutes at normal cruise fuel consumption.
- Terminate the flight and land at the nearest appropriate airport when the total fuel remaining reaches 45 minutes at normal cruise consumption.
- Have full fuel for all cross-country flights from LAF, unless weight and balance limitations dictate otherwise and with Instructor concurrence.
- Have adequate tie-down equipment on board if landing at an airport without tie-down equipment.
- Have aircraft within weight and balance limits prior to each flight.
- Have loose items secured prior to flight.
- Comply with 14 CFR 91.103 and be familiar with the procedures and information in the aircraft's Pilot's Operating Handbook prior to flight.

4.2 Ground Operations

- Instructors and Students shall not taxi, takeoff, or land on surfaces with standing water, mud, more than ¹/₄ inch of snow, or ice (unless emergency situations dictate otherwise).
- All Personnel, Instructors and Students shall be aware of the location of the fire extinguishers, which are located on the fuel trucks, at the west end of the hangar, on the hangar between the two hangars on hangar 7 and on the floor of the line office as you open the door. The extinguishers shall be readily accessible during engine start and aircraft refueling.
- Line personnel shall tow aircraft needing relocation. Instructors and Students may use designated tow bars to move aircraft short distances or to reorient aircraft over a parking location, without exceeding the turn limit of the nose wheel or pushing down the tail to move the nose of the aircraft.
- Instructors and Students shall park aircraft only in designated ramp area.
- All unmanned aircraft shall have at least one wheel chocked and flight controls secured.
- All unmanned aircraft that are parked in winds exceeding 20 knots should be tied down.
- No one shall board or exit an aircraft with the engine operating.
- All personnel shall treat all propellers and exhausts as if the engine is about to start.
- When anyone approaches the aircraft, pilots shall ensure:
 - All personnel remain well clear of propeller arc, and

- Mixture is in the cutoff position, and
- Magnetos are off and key placed on glare shield in plain view.

4.3 Engine Starting and Taxiing

Aircraft Taxi and Ground Operations shall be conducted in accordance with the Pilot's Operating Handbook, the Aeronautical Informational Manual, PAL procedures, and any applicable procedure unique to the area of operation. Specifically Instructors and Students shall:

- Before starting engines, pilots shall turn on the rotating beacon or strobes, visually clear the immediate area, and warn nearby personnel of the impending engine start.
- Use caution to prevent damage as a result of propeller blast.
- Not allow engine to exceed 1,000 RPM until after the engine has warmed.
- Be thoroughly familiar with engine fire procedures during start. Including:
 - Use caution not to over prime,
 - If an engine fire occurs during start, continue cranking the starter with the mixture placed to Idle/Cut Off unless the manufacturers guidance dictates otherwise,
 - Do not endanger yourself or others,
 - Use of fire extinguishers should be attempted only if this can be done without endangering life,
 - Signal for help and call the fire department.
- Obtain taxi clearance at controlled airports, or self-announce taxi intentions at uncontrolled airports when appropriate.
- Not taxi within 10 feet of an obstacle without direction from a lineman, being wing-walked, or where designated taxi lines obviously provide clearance.
- Not exceed walking speed while taxiing in congested areas.
- Not taxi when ground visibility precludes safe operation.
- Follow FAA recommended aircraft lighting procedures during all phases of ground and flight operations. The following chart is the PAL Standard Lighting Procedure:

	Nav / Position Lights	Rotating Beacon Light	Wing Tip Strobe Lights ¹	Landing Light ²
Start and Taxi	ON	ON	OFF	OFF
On Runway, TO&L, Flight	ON	ON	ON	OFF

NOTE (1): On Aircraft not equipped with a rotating beacon, strobe lights shall be used during all ground operations unless this causes distraction.

NOTE (2): Landing/Taxi Lights should be used during night ground operations when needed, unless such use causes distraction.

4.4 Weather Minimums

4.4.1 VFR Weather Minimums

Per 14 CFR Part 61.89 basic cloud ceiling and visibility requirements for VFR training flights are shown in the chart below. At their discretion, Instructors may specify more restrictive minimums for their Students.

	Dual Flight		Solo Fligh	t
	Day	Night	Day	Night
Traffic Pattern	1100' AGL 3SM	1500'AGL 3SM	1500' AGL 3SM	Chief CFI Discretio n
Local Area	1500' AGL 4SM	2000' AGL 5SM	2000' AGL 6SM	Chief CFI Discretio n
Cross Country	3000'AGL 5SM	3500' AGL 7SM	3000'AGL 7SM	Chief CFI Discretio n

- Student shall not fly solo when:
 - 90° crosswind component or forecast exceeding 10kts
 - Surface winds or forecast for surface winds exceeds 20kts
 - 30 days have passed without a dual lesson.
 - Conducting simulated forced landings or short approaches.
- A students first 3 supervised solo flights are limited to three FULL STOP/TAXI-BACK take offs and landings.

4.4.2 IFR Weather Minimums

Basic cloud ceiling and visibility for IFR training flights:

	Minimum Ceiling	Minimum Visibility
Day	500	1
Night	1000	3

4.4.3 General Weather Limitations

The following weather limitations apply:

- Weather minimums for IFR takeoff shall be no lower than the lowest compatible circling and visibility minimums at the departure airport, or the takeoff minimums listed in the Terminal Flight Information Publication for that airport, whichever are greater.
- Flight into known/forecast icing is prohibited.
- Flight into IMC or visible moisture below +5°C is prohibited.
- Instructors and Students shall not takeoff in wind conditions that exceed the maximum demonstrated crosswind component limitation in the POH. An alternate airport experiencing winds under that limit should be used if the winds at the intended point of landing exceed the maximum demonstrated crosswind component.
- Instructors and Students shall not takeoff or land on a runway where the tailwind component exceeds 10 knots, or the maximum recommended tailwind component specified by the aircraft manufacturer, if less.
- Flight shall not be initiated if surface winds are forecast to be greater than 35 knots. Flights shall be terminated as soon as practical if surface winds exceed 35 knots.
- Flight under special VFR, as defined in 14 CFR Part 91, is limited to pilots with a current instrument rating, in an aircraft certified for instrument flight.

4.5 Winter Operations

The following guidelines for Instructors and Students in winter conditions apply:.....

- Below 15°F/-10°C, local Student solo flights are by Instructor discretion. Solo cross-country flights require the written approval of the Chief Flight Instructor or Assistant Chief Flight Instructor.
- Below 0°F/-18°C, do not practice pattern work, stalls, maneuvers requiring abrupt power changes, or prolonged periods without power.
- All aircraft occupants shall have clothing available suitable for prolonged periods in winter weather conditions.
- The Chief Flight Instructor or Assistant Chief Flight Instructor shall approve cross-country flights leaving with temperatures below 0°F/-18°C.
- If the temperature is below 20°F/-7°C, all engines must be preheated prior to initial starting. If the airplane has been hangared for more than one hour, or is still warm from a previous flight, this is sufficient.
- An airplane that is scheduled to be on the ground for more than one hour should be hangared if the temperature is below 0°F/-18°C.
- Do not pull the propeller through to aid in starting the engine (forwards or backwards).
- When the temperature is below 20°F/-7°C, starting techniques shall be as follows:
- Be generous with primer on cold days; up to 6 primer strokes. If the engine does not start after 5 rotations, stop and repeat the above procedure. Do not exceed 1200 RPM after start, even for an instant (i.e. make sure the throttle is very near idle during start.)

- Adhere to starter duty limitations and do not run the battery down in an attempt to start the engine. If the battery is dead, or nearly so, have the line personnel hook up a ground power unit. No attempt shall be made to hand prop the airplane.
- Check the oil pressure after start; oil can congeal with colder temperatures. If the oil pressure does not rise into the green arc after 60 seconds, shut the engine down.
- If the temperature if below 20F/-7C, do not use carburetor heat preemptively (if carburetor icing is suspected, use carburetor heat). All moisture in the air should be frozen and carburetor heat use can melt ice that will re-freeze further back past the venturi.
- Do not attempt to takeoff with any ice, snow, or frost adhering to any surfaces of the aircraft. Even frost can severely affect the performance of the aircraft.
- Touch and goes are not be permitted at LAF when snow removal is in progress.
- Check NOTAMS for runway conditions prior to departure. Solo cross-country flights shall not be allowed to airports where runway conditions are unknown.
- If braking action is poor, report this to the tower. (Remember, if the braking action is reported as poor, the airport will close until the runway is cleared off.) Runway 5 23 is not plowed at night; plan to use runway 10-28 for takeoffs and landings. Do not attempt to taxi on runway 5-23.
- If conducting cross-country flight, the airplane shall not stop for more than one half-hour.

4.6 Night Flight Limitations

The following operations are prohibited at night:

- Intentional unusual attitudes, stalls, approach to stalls, or, other than while landing, slow flight
- Operations at runways without approved lighting
- Visual or non-precision approaches to runways outside the local training area without visual glide path guidance
- Simulated forced landings, except to lighted runways from the established traffic pattern,
- Land and Hold Short Operations (LAHSO)

4.7 Foreseen/Unforeseen Circumstances

Aircraft operate in a very dynamic environment that can result in situations demanding good judgment by pilots. PAL personnel, Instructors, and Students are expected to be prepared for and react to foreseen and unforeseen circumstances to the best of their ability according to the guidelines set forth in this manual. In any of these circumstances, the Pilot-in-Command shall take every measure to ensure a safe termination of the training event and contact PAL personnel listed below at the phone numbers in the Black Binder. Examples of foreseen circumstances may include: change in weather conditions, mechanical issue with the aircraft, or an aircraft servicing situation. If a circumstance is encountered that exceeds the Instructor's or Student's level of knowledge and/or experience, they are expected, without hesitancy, to seek guidance and direction by contacting the appropriate PAL personnel listed below at phone numbers in the Black Binder:

- Weather/Flight: If encountering a change in weather that exceeds the limitations of the Instructor and or Student, the flight shall return to base if practicable. If impracticable, divert to an approved airport; if the situation dictates, divert to the nearest suitable landing area, or when encountering any Flight issues, contact the Chief Flight Instructor.
- Mechanical: If encountering a mechanical situation requiring termination of the flight, the flight shall return to base if practicable. If impracticable, divert to an approved airport; if the situation dictates, divert to the nearest suitable landing area, contact the Director of Maintenance.
- Aircraft-Servicing: If encountering an aircraft-servicing situation away from LAF related to fuel and airport service, contact the Manager of Line Services.
- Payment/Invoicing: If encountering problems with payment or invoicing of services, contact the Office Manager.
- Other Unforeseen Circumstances or if related PAL personnel are not available, contact the Safety Office.

The Instructor and/or Student in the foreseen/unforeseen situation should use all their resources to make the best decision. The Instructor and/or Student should control the situation, ask questions, and make a decision.

4.8 Designated Practice Areas

The designated practice areas for PAL local flight training is normally as depicted in Figure 3, and are within a 25 nautical mile radius of the geographic center of Purdue University Airport. Operations within the Hill Top MOA shelf are restricted to below 10,000 feet. All Pilots-In-Command (PIC) are responsible for collision avoidance. Refer to (Appendix G) for the FAA Advisory Circular 90-48C "Pilots Role In Collision Avoidance." The area must be clear of other aircraft prior to initiating any training maneuver; before beginning any maneuver, clear the area as recommended in the Airman Information Manual.

The following guidelines for Instructors and Students apply:

- Except for actual or simulated takeoffs and landings, the practice areas begins at 500 feet above sparsely populated surfaces, or 1000 feet above the highest obstruction within a populated areas or structures, and extends up to 12,500 feet MSL.
- Instructors and Students shall normally practice all flight maneuvers at least 5 statute miles from Purdue University Airport and other airports within the practice area. PAL aircraft shall remain clear of active MOAs and other congested airspace.



Figure 3. PAL Designated Practice Areas

4.9 Airports of Use

The following airports meet the requirements of 14 CFR Part 141.38. All Students and Instructors must adhere to the direction and guidance provided in any particular lesson when choosing a route/airport:

Code	City	State
3TR	Niles	MI
417	Greencastle	IN
50I	Kentland	IN
5I4	Sheridan	IN
AID	Anderson	IN
ALN	Alton	IL
ARR	Aurora	IL
ASW	Warsaw	IN
AZO	Kalamazoo	MI
BAK	Columbus	IN
BEH	Benton Harbor	MI
BFR	Bedford	IN
BMG	Bloomington	IN
BMI	Bloomington	IL
BRL	Burlington	IA
BTL	Battle Creek	MI
CFJ	Crawfordsville	IN
CGI	Cape Girardeau	МО
CMI	Champaign	IL
CPS	St. Louis	МО

CVG	Covington	KY
DAY	Dayton	ОН
DEC	Decatur	IL
DNV	Danville	IL
EKM	Elkhart	IN
EYE	Indianapolis	IN
FDY	Findlay	ОН
FKR	Frankfort	IN
FNT	Flint	MI
FWA	Fort Wayne	IN
GBG	Galesburg	IL
GGP	Logansport	IN
GRR	Grand Rapids	MI
GUS	Peru	IN
GYY	Gary	IN
HFY	Greenfield	IN
HHG	Huntington	IN
HUF	Terre Haute	IN
IKK	Kankakee	IL
ILN	Wilmington	ОН
IND	Indianapolis	IN
IRS	Sturgis	MI
IWH	Wabash	IN
JXN	Jackson	MI

LAF	West Lafayette	IN
LEX	Lexington	KY
LOU	Louisville	KY
LSE	Lacrosse	WI
LUK	Cincinnati	OH
LWV	Lawrenceville	IL
MCX	Monticello	IN
MDH	Murphysboro	IL
MFD	Mansfield	ОН
MIE	Muncie	IN
MKG	Muskegon	MI
MLI	Moline	IL
MQJ	Greenfield	IN
MQY	Smyrna	TN
МТО	Mattoon	IL
MZZ	Marion	IN
OSU	Columbus	ОН
OTM	Ottumwa	IA
OWB	Owensboro	KY
OXI	Knox	IN
PCW	Port Clinton	ОН
PIA	Peoria	IL
РКВ	Parkersburg	WV
RCR	Rochester	IN

RFD	Rockford	IL
RID	Richmond	IN
RWN	Winamac	IN
RZL	Rensselaer	IN
SBN	South Bend	IN
SDF	Louisville	KY
SER	Seymour	IN
SIK	Sikeston	МО
SPI	Springfield	IL
TIP	Rantoul	IL
TOL	Toledo	ОН
TVC	Traverse City	MI
TYQ	Zionsville	IN
UMP	Fishers	IN
UWL	New Castle	IN
VLA	Vandalia	IL
VPZ	Valparaiso	IN

4.9.1 Solo Cross Countries Routes

The following airports are approved for out and back solo cross-countries by students:

Identifier	City, State	NM (round Trip)	Aprox. Flight Time
AID	Anderson, IN	142	1.7
ASW	Warsaw, IN	142	1.7
BEH	Benton Harbor	208	2.4
BFR	Bedford, IN	194	2.3
BMG	Bloomington, IN	154	1.8
BMI	Bloomington, IL	180	2.1
СМІ	Champaign, IL	130	1.5

DEC	Decatur, IL	190	2.2
EKM	Elkhart, IN	178	2.1
FWA	Fort Wayne, IN	172	2.0
HHG	Huntington, IN	142	1.7
HUF	Terre Haute, IN	120	1.4
IKK	Kankakee, IL	114	1.4
IRS	Sturgis, MI	214	2.5
IWH	Wabash, IN	110	1.3
LWV	Lawrenceville, IL	208	2.4
MIE	Muncie, IN	142	1.7
МТО	Mattoon, IL	166	1.9
MQJ	Mount Comfort, IN	118	1.4
MZZ	Marion, IN	114	1.4
OXI	Know, IN	112	1.4
RID	Richmond, IN	208	2.4
SBN	South Bend, IN	164	1.9
SER	Seymour, IN	202	2.3
VPZ	Valparaiso, IN	124	1.5
3TR	Niles, MI	182	2.1

4.10 Minimum Altitudes

During any flight, Instructors and Students shall:

- Not fly below 1000 feet AGL unless required by specific regulation, airspace restriction, when accomplishing requirements of an approved maneuver, or during takeoff or landing operations.
- Not descend below 500 feet AGL unless established on a stabilized approach to a runway.
- Not descend below 500 feet AGL during practice simulated forced landings, except to approved runways, under PAL instruction.
- Ensure proper engine operation at least every 500' when performing simulated engine failures in single engine aircraft.
- Not perform stalls, turns over 45 degrees of bank, slow flight, or unusual attitudes below 2,000 feet AGL.

4.11 General Restrictions

Instructors and Students shall:

- Not receive flight instruction except from a qualified PAL Flight Instructor.
- Not takeoff with snow, ice, frost or other lift-altering substances on the aircraft.
- Not conduct simulated emergency procedures without a qualified PAL Instructor onboard.
- Not attempt to takeoff following an off-airport landing.

- Not attempt to takeoff following a precautionary landing for a suspected aircraft malfunction.
- Not perform intentional in-flight engine shutdowns, except as approved in the multiengine syllabus.

The PIC shall occupy the left front seat in PAL aircraft except when the pilot is a PAL Instructor providing flight instruction.

4.12 Refueling

The following shall be covered on the first prefight of the first lesson. During refueling operations, Instructors and Students shall:

- Turn off all aircraft power prior to refueling.
- Turn off all cell phones if near the aircraft during refueling.
- Visually verify the fuel was delivered and the fuel cap is replaced properly, if leaving for a flight.
- Do not refuel an aircraft on your own. Verify, by phone or internet, before your flight that there will be services available for your aircraft at your time of arrival. If in an unforeseen situation arises, where you must refuel on your own, contact the Manager of Line Services, before you begin refueling. He will instruct you on the proper method to refuel. The phone number for the Manager is in the Black Binder.

Appendix A



Student Instructor Yes No Yes No Illness-Do I have any symptoms? Medication-Have I been taking prescription or over-the-counter drugs? Stress-Am I under psychological pressure from job or school? Worried about financial matters, health problems, or family discord? Alcohol-Have I been drinking within 8hours? Fatigue-Am I tired and not adequatelyrested? Eating-Am I adequately nourished? Is my Medical current? Am I 90 days current for this flight? As a Solo student have I had a dual flight in the last 30 days? Is my TCO/SPM up to date? Is the aircraft returned to service? (Inspections/discrepancies) Green - cleared to dispatch Yellow - dispatch with CFI approval (Initial box)Red - do not dispatch

Student Signature	Date
Instructor Signature	Date

(This document will be retained by the dispatcher and kept in their files for 7 days)

Appendix B

EMERGENCY RESPONSE MANUAL

PURDUE AVIATION, LLC

1630 Aviation Drive West Lafayette, IN 47906

765-743-9692

FORWARD

The emergency response procedures described herein are intended as a guide for action should any of our aircraft, charter or rental, be involved in an accident or incident.

The procedures contained in this publication apply to aircraft owned or operated by Purdue Aviation, LLC

DEFINITIONS

Definitions in this document, defined by the NTSB, as follows:

NTSB - National Transportation Safety Board.

Aircraft Accident - an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

Fatal Injury - any injury which results in death within 30 days of the accident.

Incident - an occurrence other than an accident, associated with the operation of an aircraft, which affect or could affect the safety of operations.

Operator - any person who causes or authorizes the operation of an aircraft such as the owner, lessee, or bailee of an aircraft.

Serious Injury - any injury which (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fractures of fingers, toes or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves any internal organ; or (5) involves second or third degree burns, or any burns affecting more than 5 percent of the body surface.

Substantial Damage - damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure, damage limited to an engine, bent fairings or cowling, dented skin, small punctured holes in the skin or fabric, ground damage to rotor or propeller blades, damage to landing gear, wheels, tires flaps, engine accessories, brakes, or wingtips are not considered "substantial damage" for the purpose of this part. (Reference NTSB 830.2)

Definitions used in this document, defined by Purdue Aviation, LLC, as follows:

Overdue Aircraft - Purdue Aviation, LLC will consider an aircraft overdue when it fails to arrive at its intended destination or alternate within a reasonable time, fundamentally considered to be one hour, after its ETA and communications or location cannot be established.

Missing Aircraft - Purdue Aviation, LLC will consider an aircraft as missing and presumed to have been involved in an accident if it fails to arrive at its intended destination or alternate when fuel endurance has been exceeded and communication or location cannot be established.

GENERAL PROCEDURES

A. Employees

In the event of an aircraft accident, incident, or if an aircraft is overdue, missing and considered to have been involved in an accident, Purdue Aviation, LLC employees will:

- 1. Not discuss the occurrence with their co-workers except in the interest of aiding the investigation.
- 2. Not discuss the occurrence with anyone outside of Purdue Aviation, LLC unless specifically directed to do so by the President, Vice President or Director of Maintenance, members of the NTSB/FAA, or local law enforcement officials.
- 3. Forward copies of any correspondence generated or received by them concerning the occurrence to their immediate supervisor.

B. Employee Statement

The President or his designated representative, are the only persons authorized to dis cuss an aircraft accident, incident or occurrence of an overdue or missing aircraft with anyone outside of Purdue Aviation, LLC, other than the NTSB/FAA or local law enforcement agencies. If other personnel are asked for comments by the news media, clients, or next of kin, etc., the questions will be referred to one of the above.

C. Police Reports

In the event of a major aircraft accident or fatality, local law enforcement officials as well as the NTSB/FAA will be involved in the investigation. The President will normally fill out the police report; however, other personnel may be asked to assist in this matter.

D. Initial Response

The first company representative who becomes aware of an aircraft accident shall fill out the Accident/Incident Reporting Checklist on the next page. It is important that this is filled out to the best of your ability. Stay calm and ask all the necessary questions.

ACCIDENT/INCIDENT REPORTING CHECKLIST (Page 1)

Report Received at:	(date/time)	,	(by)
Informer:	(name)		(phone number)
	(address)		
Registration No.		, Type Aircraft	
Date/Time of Occurrence	e:		
Location:	(easily identifiable geographi	ic point)	
Medical Condition:	(of aircraft occupants)		
Number of: (survivo	ors) , (fatalities)	, (seriously inju	ured)
Location of Occupants:			
Other Involvement:	(persons not on board)		
Medical Condition of Ot	thers: (survivors)	, (fatalities)	(seriously injured)
Aircraft Damage:		(major, minor, etc.)	
Property Damage:		(major, minor, etc.)	
Notification:	(who else is	aware of the occurrence)
On the Scene: Fire	, Rescue, Law F	Enforcement, FA	AA, NTSB
Preservation of: Wreckag	ge, Mail	, Cargo	
NOTES:			

ACCIDENT/INCIDENT REPORTING CHECKLIST (Page 2)

ACCIDENT/INCIDENT NOTIFICATION

Primary Notification (Telephone):

Contact	Title	Phone Numbers	Advised
Jeff Pittard	President	765-474-5543 Home 765-714-3637 Cellular	Yes or No
Jim Paulsen	Chief Flight Instructor	703-498-7930 Cellular	Yes or No
Phil Lechuga	Dir. of Maintenance (DOM)	765-412-2497 Cellular	Yes or No

The following will be contacted by one of the above persons:

FAA (IND FSDO 317-837-4400), by Chief Flight Inst. or DOM(D\T)_____

If no answer at IND FSDO, use 800WXBRIEF:

FSS (800-992-7433), by Chief Flight Inst. or DOM	(D\T)
NTSB, (201-334-6420) by Chief Flight Inst. or DOM	(D\T)
Insurance Co., (317-442-5572), by President	(D\T)
Client Notification, by President	(D\T)
Family Notification, by President	(D\T)
Employee Notification, by President	(D\T)

PRESIDENT will:

- Act as the Company spokesman in so far as news media contact is concerned and will make the decision and be responsible for notifying the clients concerned, family concerned, insurance company and employees. In his notification to the employees he will remind them of the necessity to maintain confidentiality of information.
- Appoint representatives from the respective departments to assist the NTSB/FAA in their investigation of any reportable accident or incident.
- Retrieve the personnel records of those employees involved, crew training records of those crew involved, weather reports and trip papers for that specific trip, airframe and engine log books and any maintenance records for that particular aircraft.
- Notify the insurance company.

CHIEF FLIGHT INSTRUCTOR will:

- Retrieve weather reports for the airports closest to the location of the occurrence. These reports should include: SAs, FTs, Area Forecasts, Airmets, Sigmets, Severe Weather Warning Forecasts and NOTAMS.
- Assist the Pilot In Command with filing a report to the NTSB on Board Form 6120.1, or Board Form 6120.2 within 10 days after accident, or within 7 days after the disappearance of an aircraft. Where appropriate, he will also submit crew members' statements. Board Forms will be obtained from the NTSB when required.
- Notify the FAA and/or the NTSB of the accident or incident.

DIRECTOR OF MAINTENANCE will:

- hereby be designated as the "Team Leader" of the Accident Investigation Team. The "Team Leader" is responsible for the supervision of the Company Accident Investigation Team and will provide the primary liaison with the NTSB/FAA.
- Inform airframe, engine and equipment manufacturers if a major accident occurs and, if deemed appropriate, ask them to participate in our investigation.
- Will appoint and dispatch Accident Investigation Team members to an accident scene as appropriate to the situation. Team members being dispatched will be reminded of our requirement to secure the scene and preserve the aircraft, wreckage, mail, cargo, and records.
- Secure and preserve the wreckage per NTSB 830. Do not move wreckage until released by NTSB/FAA.

Appendix C

Occurrence Reporting Form

Reporting Individual:	Cell Number:	
Date of Event: Time	of Event:	
Type of Training: (Circle One) Dual Solo	Route of Flight	
Location of Event:	Aircraft N Number:	
Event Description: (Give as much detail as pos weather, ATC, facilities, etc.)	ssible, who, why, how, etc. Include relative factors such as	
(Use	e backside if necessary)	
Please submit this form to the Safety Officer.		

Appendix D

Student:	Flight Date:
Primary Instructor:	Supervising Instructor:
Flight Type Pattern Work (LAF) No Other Airports No Other Airports White county Frankfort, IN Delphi, IN Other: Cross Country Route: Courses and Checkpoints Round Trip Distance Total Time & Wind Calculation Minimum Fuel Required: Points of refueling:	Image: Second State Sta
	Limitations
Surface Wind:Crosswind:	Visibility:Ceiling:
Other Limitations:	· · · · ·

Authorization for Solo / Solo Cross Country Flight

Authorization

I certify that the student is prepared and qualified to perform the solo flight listed above. I have made the proper certificate and logbook endorsements, and have reviewed the Purdue Aviation, LLC solo flight rules with my student.

Primary Instructor Signature

I certify that the students preflight planning and preparation with regards to the solo flight listed above is correct. The weather for the intended route is satisfactory and any restrictions specified by the primary instructor have been met. I have verified the student is properly endorsed for the flight. I will remain at Purdue Aviation, LLC or within the local practice area during a local solo flight. During a solo cross-country flight, I will be reachable by telephone.

Supervising Instructor Signature

I am familiar with FAA/FSS procedures and regulations. I have read and understood the applicable portions of the Purdue Aviation, LLC Flight Operations Manual. During a cross-country flight, I will update my flight plan as necessary and promptly close my flight plan upon return.

Student Signature

Appendix E

Directions for completing the Aircraft Status Sheet

<u>N#</u>, Enter the aircraft's registration number.

<u>S/N</u>, Enter the aircraft's serial number

<u>Annual</u>, this is the date of when the next mandatory annual inspection is due. The date is determined by adding 12 calendar months beyond the date the inspection was completed (i.e., if the inspection was completed on 12/8/2015, the next annual is due by 12/31/2016, and 12/31/2016 would be entered on this line).

50 Hour, this is a non-mandatory inspection. The time is determined by adding 50 hours to the time when the inspection was completed. (i.e., if the inspections was completed with a tach time of 850, the next inspection is due at 900 hours, and 900 would be entered on this line).

<u>100 Hour</u>, this is a mandatory inspection. The time due is determined by adding 100 hours to the time the inspection was completed (i.e., if the inspection was completed with a tach time of 850 hours, the next inspection is due at 950 hours, and 950 would be entered on this line).

500 Hour Mag, this is a mandatory inspection of the magnetos of the aircraft. The time is determined by adding 500 hours to the time the inspection was completed (i.e., if the inspection was completed with a tach time of 850 hours, the next inspection is due at 1350 hours, and 1350 would be entered on this line).

<u>Static Pressure</u>, this is a mandatory inspection. The inspection is due every 24 calendar months. The date is determined by adding 24 months beyond the date the inspection was completed (i.e., if the inspection was completed on 12/8/2015, the next Static Pressure inspection is due by 12/31/2017, and 12/31/2017 would be entered on this line).

<u>Altimeter</u>, this is a mandatory inspection. The inspection is due every 24 calendar months. The date is determined by adding 24 months beyond the date the inspection was completed (i.e., if the inspection was completed on 12/8/2015, the next Altimeter inspection is due by 12/31/2017, and 12/31/2017 would be entered on this line).

<u>Transponder</u>, this is a mandatory inspection . The inspection is due every 24 calendar months. The date is determined by adding 24 months beyond the date the inspection was completed (i.e., if the inspection was completed on 12/8/2015, the next Transponder inspection is due by 12/31/2017, and 12/31/2017 would be entered on this line).

<u>ELT Battery</u>, the date of expiration of the batteries is determined by the battery manufacturer. This date is found on the battery itself. Enter the date of expiration on this line.

<u>14 CFR 91.207</u>, this is a mandatory inspection. The date is determined by adding 12 calendar months beyond the date the inspection was completed (i.e., if the inspection was completed on 12/8/2015, the next inspection is due by 12/31/2016, and 12/31/2016 would be entered on this line).

<u>Recurring AD's</u>, are mandatory inspections. The AD's will vary by either flight hours or calendar time. If the AD is due by flight time, add the amount of time necessary for the AD to the tach time determined by the completion date of the inspection, and enter that time on this line. If it is a calendar time item, add the appropriate days to the date of completion of the inspection, and enter the date on to this line.

Signature, signed by the Director of Maintenance, or his/her designee.

Date, the date when this form was changed/updated.

Purdue Aviation, LLC Aircraft Status

N#_____ S/N _____

INSPECTIONS

ANNUAL	0.0
50 Hour	0.0
100 Hour	0.0
500 Hour Mag	

STATIC PRESSURE
ALTIMETER
TRANSPONDER
ELT Battery replace
14 CFR 91.207

RECURRING AD'S

ADDITIONAL ITEMS

Note: The times listed above are reference to tachometer

Signed_____Date____

Appendix F
DISREPANCY REPORT

N				
Date	Tach			
StudentInstructor	Renter			
DISCREPANCY:				
			-	
Print Name		_		
Phone Number		-		
CORRECTIVE ACTION:				
	Dat	e		
Signature and A&P/IA#				

Appendix G



Advisory Circular

Subject: Pilots' Role in Collision Avoidance

Date: 4/19/16 AC No: AC 90-48D Initiated by: AFS-800 Change:

- PURPOSE. This advisory circular (AC) is issued for the purpose of alerting all pilots to the potential hazards of midair collisions and near midair collisions (NMAC), and to emphasize those basic problem areas related to the human causal factors where improvements in pilot education, operating practices, procedures, and improved scanning techniques are needed to reduce midair conflicts.
- 2 CANCELLATION. AC 90-48C, Pilots' Role in Collision Avoidance, dated March 18, 1983, is cancelled.
- 3 BACKGROUND.
- 3.1 Midair Conflicts. From January 2009 through December 2013, a total of 42 midair collisions occurred in the United States. During this same time period, there were 461 reported NMACs. Statistics indicate that the majority of these midair collisions and NMACs occurred in good weather and during daylight hours.
- 3.2 Collision-Avoidance Programs. The Federal Aviation Administration (FAA) has several significant programs designed to reduce the potential for midair collisions and NMACs. This AC is one of those programs, and is directed towards all pilots operating in the National Airspace System (NAS), with emphasis on the need for recognition of other aircraft and maintaining visual separation, improved workload management, and the human factors associated with midair conflicts, particularly in high-volume traffic areas. While the FAA is engaged in the Next Generation Air Transportation System (NextGen) project to transform the NAS for safer, more efficient air traffic management, pilots must remember that they have a regulatory responsibility to see and avoid other aircraft.
- 4 ACTION. The following areas warrant special attention and continuing action on the part of all pilots to avoid the possibility of becoming involved in a midair conflict.
- 4.1 See-and-Avoid Concept.
- 4.1.1 <u>Regulatory Basis</u>. The flight rules prescribed in Title 14 of the Code of Federal Regulations (14 CFR) part 91 set forth the concept of "See and Avoid." Part 91, § 91.113 prescribes that when weather conditions permit, regardless of whether the operation is conducted under instrument flight rules (IFR) or visual flight rules (VFR), each person operating an aircraft shall maintain vigilance so as to see and avoid other aircraft.

- 4.1.2 <u>Vigilant Lookout</u>. Pilots should also keep in mind their responsibility for continuously maintaining a vigilant lookout regardless of the type of aircraft being flown. Remember that most midair collision accidents and reported NMAC incidents occurred during good VFR weather conditions and during the hours of daylight.
- 4.1.3 <u>Preflight Planning</u>. Pilots are encouraged to include the use of <u>http://www.seeandavoid.org</u> in their preflight planning. The SeeAndAvoid.org portal is a valuable resource for civilian and military pilots. It provides information and education on airspace, visual identification of various aircraft, aircraft performance, and mutual hazards to safe flight, with the ultimate goal of reducing close calls and eliminating midair collisions.

4.2 Visual Scanning.

4.2.1 <u>Attention and Response to Traffic Movement</u>. The pilot's responsibility is to fly the aircraft safely. All other duties should be secondary while flying. Pilots should remain constantly alert to all traffic movement within their field of vision, as well as periodically scanning the entire visual field outside of their aircraft to ensure detection of conflicting traffic. Remember that the performance capabilities of many aircraft, in both speed and rates of climb/descent, result in high closure rates limiting the time available for detection, decision, and evasive action. Research has shown that the average person has a reaction time of 12.5 seconds. This means that a small or high-speed object could pose a serious threat if some other means of detection other than see and avoid were not utilized, as it would take too long to react to avoid a collision. This is particularly important with small Unmanned Aircraft Systems (sUAS).

Event	Seconds
See Object	0.1
Recognize Aircraft	1.0
Become Aware of Collision Course	5.0
Decision to Turn Left or Right	4.0
Muscular Reaction	0.4
Aircraft Lag Time	2.0
TOTAL	12.5

Table 1. Aircraft Identification and Reaction Time Chart
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4.2.2 <u>Refocusing Eyes</u>. The probability of spotting a potential collision threat increases with the time spent looking outside, but certain techniques may be used to increase the effectiveness of the scan time. The human eyes tend to focus somewhere, even in a featureless sky. If there is nothing specific on which to focus, your eyes revert to a relaxed intermediate focal distance (10 to 30 feet). This means that you are looking without actually seeing anything, which is dangerous. In order to be most effective, the pilot should shift glances and refocus at intervals. Most pilots do this in the process of scanning the instrument panel, but it is also important to focus outside to set up the visual system for effective target acquisition.

- 4.2.3 <u>Refocusing When Switching Views</u>. Pilots should also realize that their eyes may require several seconds to refocus when switching views between items in the cockpit and distant objects. Proper scanning requires the constant sharing of attention with other piloting tasks; thus, it is easily degraded by psychophysiological conditions, such as fatigue, boredom, illness, anxiety, or preoccupation.
- 4.2.4 Eye Movements. Effective scanning is accomplished with a series of short, regularly spaced eye movements that bring successive areas of the sky into the central visual field. Each movement should not exceed 10 degrees, and each area should be observed for at least 1 second to enable detection. Although most pilots seem to prefer horizontal back-and-forth eye movements, each pilot should develop a scanning pattern that is most comfortable and then adhere to it to assure optimum scanning.
- **4.2.5** <u>Spotting Threats</u>. Peripheral vision can be most useful in spotting collision threats from other aircraft. Each time a scan is stopped and the eyes are refocused, the peripheral vision takes on more importance because it is through this element that movement is detected. Apparent movement is almost always the first perception of a collision threat, and probably the most important, because it is the discovery of a threat that triggers the events leading to proper evasive action. It is essential to remember, however, that if another aircraft appears to have no relative motion, it is likely to be on a collision course with you. If the other aircraft shows no lateral or vertical motion, but is increasing in size, take immediate evasive action.
- **4.2.6** Nighttime Searches. Visual search at night depends almost entirely on peripheral vision. This is due in part to the night blind spot that involves an area between 5 and 10 degrees wide in the center of the visual field. By looking approximately 10 degrees below, above, or to either side of an object, "off center" viewing can compensate for this night blind spot. In order to perceive a very dim lighted object in a certain direction, the pilot should not look directly at the object, but scan the area adjacent to it. Short stops of a few seconds in each scan will help to detect the light and its movement. Lack of brightness and color contrast in daytime and conflicting ground lights at night increase the difficulty of detecting other aircraft. Modern aircraft lighting and light pulse systems present a noticeable improvement toward detecting other aircraft in flight over previous legacy systems. Many of these systems and light-emitting diode (LED) bulbs use less power, last longer, and are brighter than minimum operating equipment, improving aircraft safety in poor lighting conditions or reduced visibility (see paragraph 4.5). Operators should consider installing these systems to improve operational safety. Pilots utilizing Night Vision Imaging Systems (NVIS), such as night vision goggles (NVG), must be aware that some LED obstruction and aircraft anticollision lighting may not be visible through the NVGs. When flying with NVGs, pilots should also be looking around the binocular assembly frequently, outside of the NVG view, to detect lighting that may not be visible through the NVGs.
- 4.2.7 <u>Physical Obstructions</u>. Pilots are reminded of the requirement to move one's head in order to search around the physical obstructions, such as door and window posts. The doorpost can cover a considerable amount of sky, but a small head movement may uncover an area which might be concealing a threat. This is especially important for

pilots utilizing NVIS, since there can be a tendency to reduce head movement and only scan the view through the device looking straight ahead.

4.2.8 <u>Assistance and Additional Equipment</u>. Pilots should consider the assistance of other crewmembers or passengers to help in looking for hazards and notifying the pilot immediately when they are concerned. This is particularly important in high-traffic areas, low-altitude flights, or when the pilot's workload is high. If the aircraft is to operate in these environments for any length of time, operators are encouraged to install and use additional equipment (as described in paragraph 4.5) to assist the pilot in minimizing impact risks to other aircraft, terrain, and/or obstacles.

Note: Additional information related to vision in flight can be found in the Aeronautical Information Manual (AIM), chapter 8, Medical Facts for Pilots, paragraph 8-1-6.

4.3 Clearing Procedures.

4.3.1 Pilots' Responsibilities. Pilots should:

- Prior to taxiing onto a runway or landing area for takeoff, scan the approach areas for possible landing traffic by maneuvering the aircraft to provide a clear view of such areas. It is important that this be accomplished even though a taxi or takeoff clearance has been received.
- During climbs and descents in flight conditions which permit visual detection of other traffic, execute gentle banks left and right at a frequency which permits continuous visual scanning of the airspace about them.
- Execute appropriate clearing procedures before all turns, abnormal maneuvers, or acrobatics.
- Following the AIM, chapter 4, Air Traffic Control, section 3, execute pattern entries and departures for the runway in use appropriate to the airport configuration and information depicted.
- 4.4 Airspace, Flight Rules, and Operational Environment. Pilots should be aware of the type of airspace in which they intend to operate in order to comply with the flight rules applicable to that airspace. Aeronautical information concerning the NAS is disseminated by three methods: aeronautical charts (primary); the AIM; and the Notices to Airmen (NOTAM) system. The general operating and flight rules governing the operation of aircraft within the United States are contained in part 91.

4.4.1 Use of Resources. Pilots should:

- Use currently effective aeronautical charts for the route or area in which they intend to operate.
- Note and understand the aeronautical legend and chart symbols related to airspace information depicted on aeronautical charts.

- 3. Use a current Airport/Facility Directory (A/FD). The A/FD is designed to be used in conjunction with charts and is published every 56 days. The A/FD also contains the Aeronautical Chart Bulletin. The purpose of the bulletin is to provide major changes in aeronautical information that have occurred since the last publication date of each VFR Sectional, Terminal Area, and Helicopter Route Chart listed.
- Develop a working knowledge of the various airspace segments, including the vertical and horizontal boundaries.
- Develop a working knowledge of the specific flight rules governing operation of aircraft within the various airspace segments.
- 6. Use the AIM. Chapter 3, Airspace, describes the current NAS and airspace classifications. Chapter 4, Air Traffic Control, and chapter 5, Air Traffic Procedures, provide information on pilot and controller responsibilities depending on the airspace. Chapter 7, Safety of Flight, contains additional information pertaining to safe flight operations, avoiding unmanned balloons and UASs, and scanning for other aircraft.
- Contact the nearest FAA Flight Service Station (FSS) for any pertinent NOTAMs pertaining to their area of operation, including temporary flight restrictions (TFR) in the area of their intended operation.
- 4.4.2 Special Operational Environments. Pilots should also be familiar with, and exercise caution in, those operational environments where they may expect to find a high volume of traffic or special types of aircraft operation. This includes the need to be aware of various features and airspace contained on a VFR chart that might not be depicted on an IFR chart, particularly when operating in visual meteorological conditions (VMC). These areas include airport traffic patterns, particularly at airports without a control tower in Class G airspace and also Class E surface areas; Class B, Class C, and Class D surface areas, including any Class E extensions; VFR practice areas associated with local area flight training schools; Federal airways; the vicinity of very high frequency omni-directional range stations (VOR); restricted areas; warning areas; alert areas; Military Operations Areas (MOA); intensive student jet training areas; military low-level high-speed training routes; instrument approach areas; areas of high density jet arrival/departure routings, especially in the vicinity of major terminals and military bases; VFR helicopter routes; and Gulf of Mexico offshore operations areas, particularly near the shoreline. Pilots should be alert to temporary areas of high volume generated by events such as air shows or a news media event, scenic areas of interest to air tour operations, areas designated by Special Federal Aviation Regulations (SFAR), or areas indicated on an aeronautical chart as urban due to population density. Special care should be taken when operating in these areas, and pilots should consider the benefits of installing and using equipment noted in paragraph 4.5. Electronic News Gathering (ENG) aircraft and air tour aircraft should also have established communication procedures when operating in the vicinity of other aircraft at the same location or on the same route.

4/19/16

4.5 Aircraft Systems and Technologies.

- 4.5.1 <u>Recommended Safety Equipment</u>. For improved safety and to aid in collision avoidance, the following safety equipment is recommended:
 - 1. High-intensity anticollision white strobe lights visible from all directions.
 - 2. Pulse light (collision avoidance) systems for the aircraft landing lights.
 - 3. Dual very high frequency (VHF) aircraft communications radios.
 - Traffic advisory systems (TAS), Traffic Alert and Collision Avoidance System (TCAS) I, TCAS II, or those aircraft equipped with Automatic Dependent Surveillance-Broadcast (ADS-B) In and display capability.
 - High-visibility propeller tip markings (includes main and tail rotor blades for rotorcraft).
 - Appropriate instrumentation to recover from inadvertent entry into instrument meteorological conditions (IMC). The installed equipment should meet or exceed 14 CFR part 135, § 135.159 night VFR instrumentation standards.
 - Weather avoidance system (such as satellite weather mapping).
 - 8. Altitude hold monitoring/alerting equipment.
 - 9. Cockpit/flight data recording systems.
 - 10. Satellite tracking systems to track the flight path of aircraft.
 - Terrain awareness and/or ground proximity warning systems (Terrain Awareness and Warning Systems (TAWS), radar altimeter with audible alerts).
- 4.5.2 <u>Collision-Avoidance Technologies</u>. Understanding the differences between TAS, TCAS, and ADS-B is an important part of using such technologies to minimize workload and aid in collision avoidance. Pilots should make every effort to communicate with other aircraft and coordinate activities whenever practical, particularly in areas known to contain traffic related to air tour operations, low-level sightseeing, operations over congested areas, or news-gathering operations. Pilots should respond to traffic advisories (TA) by attempting to establish visual contact with the alerting aircraft and other aircraft which may be in the vicinity.
 - 4.5.2.1 A TAS independently interrogates nearby transponder-equipped aircraft and determines bearing and range from the replies within a given range (depending on the power of the system installed). TAS is not radar-coverage limited. It is important to recognize this system *will not* see aircraft that are not currently using a transponder that is not transmitting in the "ON" or "ALT" modes. Depending on the system, it may provide TAs in addition to displaying nearby traffic.
 - 4.5.2.2 ADS-B is a system for air traffic surveillance. The FAA has mandated ADS-B Out by 2020 on all aircraft operating in current Mode C airspace

(around Class B and C airspace and above 10,000 feet). With ADS-B, each aircraft broadcasts its own Global Positioning System (GPS) position along with other information like heading, ground track, groundspeed, and altitude (ADS-B Out). To see other aircraft, you must be equipped with ADS-B In to process the data signals. Depending on the system, it may provide TAs in addition to displaying nearby traffic.

- 4.5.2.3 There are two types of TCAS, TCAS I and TCAS II. TAS systems are almost identical to TCAS I systems; in fact, they use the same set of requirements or Minimum Operational Performance Standards (MOPS). Both systems actively interrogate nearby Mode A, C, and S transponders and issue TAs ("TRAFFIC, TRAFFIC"). The difference is that TCAS I systems can detect the number of nearby TCAS systems and thus send a more powerful interrogation when fewer aircraft are nearby. TCAS II systems are intended for turbine-powered aircraft and go beyond TCAS I systems by issuing TAs and Resolution Advisories (RA). RAs recommend maneuvers that will either increase or maintain the existing separation from an alerting aircraft. If the alerting aircraft is TCAS II-equipped, the RAs will be coordinated to ensure that complementary RAs are selected (e.g., "CLIMB, CLIMB" for one aircraft, "DESCEND, DESCEND" for the other aircraft). Further information concerning TCAS operation can be found in the current edition of AC 120-55, Air Carrier Operational Approval and Use of TCAS II.
- 4.5.3 <u>Active Traffic Systems</u>. Active traffic systems (including TAS and TCAS) use Mode A, C, or S transponder interrogations to determine aircraft bearing and distance. Altitude is determined by reported Mode C altitude. After 2020, aircraft will be required to broadcast ADS-B Out and this data can be interpreted by aircraft with ADS-B In, but aircraft will still be required to have a Mode C or S transponder in airspace where it is currently required; thus, active traffic systems will continue to function. Most TAS systems will have ADS-B In capability available as an upgrade so these systems can interpret signals from either source.
- 4.5.4 <u>Active Traffic Systems in an ADS-B Environment</u>. Active traffic systems are valuable for three reasons in an ADS-B environment. First, even after January 1, 2020, not all aircraft will have ADS-B Out, particularly in airspace which does not require it. Thus, without an active traffic system, those unequipped aircraft would not display on a cockpit traffic display even if you had ADS-B In. Second, an active traffic system will display all aircraft independent of the type of ADS-B Out, since all aircraft will still be required to have a Mode C or Mode S transponder. Third, ADS-B is dependent on GPS signals, so during periods of poor satellite geometry or solar storms, GPS position and thus ADS-B could be disrupted and less reliable, meaning an active traffic system can act as a backup to ADS-B in the cockpit.
- 4.5.5 <u>Maintaining Vigilance</u>. Traffic information equipment does not relieve a pilot's responsibility to see and avoid other aircraft. Managing distractions caused by the use of technology in the cockpit is critical to the safety of the flight. While new aircraft systems can provide pilots with a wealth of information, they can also cause fixation on the

4/19/16

displays and draw a pilot's attention inside the cockpit and away from the outside environment. Any newly installed technology and its limitations should be thoroughly learned and understood on the ground first as much as possible. For all pilots using advanced technologies in the cockpit, extra vigilance is required to avoid excessive heads-down time.

- 4.6 Use of Communications Equipment and Air TA Services. One of the major factors contributing to the likelihood of NMAC incidents in surface areas that have an operating air traffic control (ATC) system has been the mix of known arriving and departing aircraft with unknown traffic. The known aircraft are generally in radio contact with the controlling facility (local, approach, or departure control) and the other aircraft are neither in two-way radio contact nor identified by ATC at the time of the NMAC. This precludes ATC from issuing TA information to either aircraft. Although pilots should adhere to the necessary communications requirements when operating VFR, they are also urged to take advantage of the air TA services available to VFR aircraft. Pilots should:
- 4.6.1 <u>Use the AIM</u>. Chapter 4, sections 1–4, and chapter 5, sections 2–4, contain additional information on services available to pilots, including information on VFR advisory services, radar traffic information services for VFR pilots, recommended TA practices at nontowered airports, and radio communication techniques.
- 4.6.2 Use the A/FD. The A/FD contains a list of all major airports showing the services available to pilots and the applicable communication frequencies.
- 4.6.3 <u>Develop a Working Knowledge of Those Facilities Providing TA Services and the Area</u> in Which They Give These Services. In some cases, this should include talking with local operators about their own or other local procedures in effect.
- 4.6.4 <u>Initiate Radio Contact</u>. Initiate radio contact with the appropriate terminal radar or nonradar facility when operating within the perimeters of the advertised service areas or within 15 miles of the facility when no service area is specified.
- 4.6.5 <u>Monitor the Appropriate Facility Communication Frequencies</u>. When it is not practical to initiate radio contact for traffic information, at least monitor the appropriate facility communication frequency, particularly when operating in or through arrival/departure routes and instrument approach areas.
- 4.6.6 <u>Self-Announce Position</u>. Utilize established frequencies to self-announce position regularly when operating in VFR practice areas, VFR routes established for air tour operations, and high-volume traffic environments.
- 4.6.7 <u>Remember Controller Limitations</u>. Remember that controller observation of aircraft in the surface area is often limited by distance, depth perception, aircraft conspicuity, and other normal visual acuity problems. Limitations of radar (when available), traffic volume, controller workload, unknown traffic, etc., may prevent the controller from providing timely TA information. TAs are secondary to the controllers' primary duties (which are separating aircraft under their control and issuing safety advisories when aware of safety conflicts). Therefore, the pilot is responsible for seeing and avoiding

other traffic. TAs should be requested and used when available to assist the pilot to see and avoid other traffic by assisting, but not substituting in any way, the pilot's own visual scanning. This is especially true while operating under flight following. It is important to remember that advisories which ATC may provide are not intended to lessen in any manner the pilot's obligation to properly scan to see and avoid traffic.

- 4.7 Airport Traffic Patterns. A significant number of midair collisions, as well as NMACs, have occurred within the traffic pattern environment. Pilots should:
- 4.7.1 <u>Maintain Contact with the Tower</u>. When operating at tower-controlled airports, maintain two-way radio contact with the tower while within the surface area. Make every effort to see and properly avoid any aircraft pointed out by the tower, or any other aircraft which may be in the area and unknown to the tower.
- 4.7.2 Look for Other Aircraft. When entering a known traffic pattern at a nontowered airport, keep a sharp lookout for other aircraft in the pattern. Enter the pattern in level flight and allow plenty of spacing to avoid overtaking or cutting any aircraft out of the pattern.
- 4.7.3 <u>Observe the Airport Layout and Local Traffic</u>. When approaching an unfamiliar airport, fly over or circle the airport at least 500 feet above traffic pattern altitude (usually at 2,000 feet or more above the surface) to observe the airport layout, any local traffic in the area, and the wind and traffic direction indicators. Never descend into the traffic pattern from directly above the airport.
- 4.7.4 <u>Use Extra Caution when Landing</u>. Be particularly alert before turning to the base leg, during the final approach course, and during the final approach to landing. At nontowered airports, avoid entering the traffic pattern on the base leg or from a straight-in approach to the landing runway. Per the AIM, chapter 4, section 3, make all traffic pattern turns to the left unless the A/FD, other approved light signals, or visual marking indicate turns should be made to the right per §§ 91.126 and 91.127.
- 4.7.5 <u>Compensate for Blind Spots</u>. Compensate for blind spots due to aircraft design and flight attitude by moving your head or maneuvering the aircraft.
- 4.8 Flying in Formation. Several midair collisions have occurred which involved aircraft on the same mission, with each pilot aware of the other's presence. Pilots who are required, by the nature of their operations, to fly in pairs or in formation are cautioned to:
 - Recognize the high statistical probability of their involvement in midair collisions.
 - Make sure that adequate preflight preparations are made and the procedures to be followed are understood by all pilots intending to participate in the mission.
 - Always keep the other aircraft in sight despite possible distraction and preoccupation with other mission requirements.

- Avoid attempting formation flight without having obtained instruction and attained the skill necessary for conducting such operations.
- 4.9 Flight Instructors, Pilot Examiners, and Persons Acting as Safety Pilots. The importance of flight instructors training pilot applicants to devote maximum attention to collision avoidance, while conducting flight operations in today's increasing air traffic environment, cannot be overemphasized. Flight instructors should set an example by carefully observing all regulations and recognized safety practices, since students consciously and unconsciously imitate the flying habits of their instructors.
- 4.9.1 <u>Flight Instructors' and Safety Pilots' Responsibilities</u>. Flight instructors and persons acting as safety pilots should:
 - 1. Guard against preoccupation during flight instruction to the exclusion of maintaining a constant vigilance for other traffic.
 - Be particularly alert during the use of advanced cockpit technology and the conduct of simulated instrument flight where there is a tendency to "look inside" excessively and forget see-and-avoid responsibilities.
 - Take the time to teach new and advanced cockpit technology on the ground. Thoroughly review features as well as limitations of the equipment and the pitfalls of fixation and overreliance on technology.
 - Place special training emphasis on those basic problem areas of concern mentioned in this AC where improvements in pilot education, operating practices, conflicts, procedures, and techniques are needed to reduce midair conflicts.
 - At tower-controlled airports, notify the control tower operator of students' first solo flights.
 - 6. Explain the availability of and encourage the use of expanded radar services for arriving and departing aircraft at terminal airports where this service is available, as well as the use of radar TA services for transiting terminal areas or flying between en route points.
 - Understand and explain the limitations of radar that may frequently limit or prevent the issuance of radar advisories by air traffic controllers (refer to the AIM).
 - Understand and explain the benefits and limitations of collision avoidance technologies installed on the aircraft.
- 4.9.2 Pilot Examiners' Responsibilities. Pilot examiners should:
 - During any flight test, direct attention to the applicant's vigilance of other air traffic and an adequate clearance of the area before performing any flight maneuver.
 - Direct attention to the applicant's knowledge of the airspace, available FAA air traffic services and facilities, essential rules, good operating practices,

procedures, and techniques that are necessary to achieve high standards of air safety.

- 4.10 Collision Avoidance Educational Resources. For further information on training courses, documents, and events related to collision avoidance and visual scanning techniques, please visit <u>http://www.faasafety.gov</u>. Additional information can also be obtained from the FAA Safety Team (FAASTeam) Program Manager at any FAA Flight Standards District Office (FSDO).
- 5 WHERE YOU CAN FIND THIS AC. You can find this AC on the FAA's Web site at <u>http://www.faa.gov/regulations_policies/advisory_circulars</u>. You can view Federal Aviation Regulations at <u>http://www.faa.gov/regulations_policies/faa_regulations/</u>.

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John S. Duncan Director, Flight Standards Service

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